The Semiotic Infrastructure of Financial Markets

A Sociological Inquiry into Valuation Practices

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Composition of the thesis jury

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General introduction

> "More than a year ago, I highlighted how index providers like MSCI funnel U.S. dollars, including from American mom and pop investors and Wall Street, to hostile Chinese companies that are involved in the Communist Party's military, espionage, human rights violations, and Made in China 2025 industrial policy" (Marco Rubio, 12/16/2020)

Marco Rubio is a Florida senator for the Republican Party. In December 2020, he is attempting to mobilize American patriotism against a recent decision by a stock index provider. This stock index provider, MSCI, recently included Chinese stocks in one of its most important indices, the MSCI Emerging Markets Index. As this index is followed by many (US) investors, Marco Rubio denounces the resulting financing of Chinese companies. More recently, in November 2023, unearthing a *Wall Street* Journal article claiming that MSCI's decision had been forced by pressure from China (Bird, 2019), he revived the debate and tabled a proposal for legislation to regulate the power of stock market index providers, the *Index Provider Transparency and Accountability Act*[1]. Don Weinland, *Financial Times* consultant in Beijing, takes a different view. In his opinion, the relationship between MSCI and Chinese power is indeed asymmetrical, but in the other direction: the inclusion of Chinese equities in the MSCI Emerging Markets Index was conditional on certain changes in the regulation of Chinese financial markets, particularly with regard to foreign investors' access to derivatives markets (Weinland, 2019).

The construction of certain stock market indices has thus become sufficiently important for the Chinese government to bow to the demands of the index provider (or put pressure on him), and for a US senator, a former presidential primary candidate, to agitate to make an affair of it. Two figures from traditional state regulation are thus grappling with this new player, which is both fully private and endowed with quasi-regulatory power, over an indicator that seems capable of modifying the reality it quantifies. The situation undoubtedly deserves more public attention, but it also deserves better than Senator Rubio's conservative agitations. It deserves the attention of the social sciences, in order to unravel what is at stake. Such is the ambition of this thesis. To explore the indices, grades and rankings that derive their power from their influence on the valuation of financial securities. To grasp in as much detail as possible the

[1] For more information on this proposal, see Marco Rubio's personal website: https://www.rubio.senate.gov/rubio-reintroduces-index-provider-transparency-and-accountability-act/.

conditions under which they are produced and the ways in which they intervene in the decision-making process of financial actors. And, perhaps, to draw out the implications of these explorations for the power of these "private regulators" and for our ability to make financial markets more efficient, stable and sustainable.

This general introduction has three aims. Firstly, it presents the theoretical approach that has guided this doctoral work (Section I). For a start, we propose to define this approach in terms of what distinguishes it from three alternative theoretical proposals: neoclassical investment theory (Section I.1a), behavioral finance (Section I.1b) and Marxist and neo-Marxist structuralism (Section I.1c). Then, we identify the characteristics of our approach, which draws on Callonian-Goffmanian sociology of markets (Section I.2a), the economics of convention (Section I.2b) and Peircian semiotics (Section I.2c). At the end of this theoretical development, we will be in a position to clarify our positioning with respect to the various references mobilized during the development of our research program (Section I.3).

Secondly, we discuss the methodology used in this work. The methodological choices made throughout the course of this doctoral project are not the result of a coherent, a priori-defined plan. Rather, they have been adjustments, in order to obtain answers to our research question, but also in response to unforeseen circumstances. It would therefore be artificial, and hardly faithful to our pragmatist position, to present the methodology of this work as a closed, unified system. In a more realistic and lively way, we retrace our research path, highlighting the reasons that led us to adopt such tools (Section II.1). We then look in more detail at our main methods: qualitative analysis of quantification (Section II.2a), ethnography of a "reception milieu" (Section II.2b) and capital flow mapping (Section II.2c). This methodological plurality is the response given in this work to the challenge of grasping the valuation of financial securities, both in terms of its situational stakes and its institutional conditions.

Thirdly, we outline the main thrust of the thesis. We thus present the three parts of this work designed to shed sociological light on valuation practices in financial markets. The first traces the historical establishment of the place of these practices: we set out the conditions in which market participants find themselves today, addressing the computerization of markets (Section III.1a) and the advent of asset managers (Section III.1b). The second part, which forms the main body of the work, analyzes four valuation tools that have become central to traders and asset managers in the various segments of the financial markets: the Bloomberg Terminal (Section III.2a), stock market indices (Section III.2b), central bank announcements (Section III.2c) and oil benchmarks (Section III.2d). Finally, the third part, which serves as a conclusion

to this work, discusses some of the implications of the influence of these financial conventions on the issue of market regulation (Section III.3).

Following this general introduction, the body of this thesis is presented in eight chapters. This work is a “thesis by articles”: each chapter is therefore a paper that has either been submitted, accepted or published in a scientific journal (the exact status of each being specified in a footnote at the beginning of the chapter). To ensure that the work flows smoothly, a brief commentary precedes each chapter, situating it in context. As for the general conclusion, it has not been published, but aims to identify certain extensions of this thesis, particularly in relation to regulatory issues. In the hope that these pages will demonstrate both the value of a sociological approach to analyzing financial markets and the importance of this “hidden” research object at the heart of the contemporary financial system, it remains for me to thank you for your attention to my work.

I. Towards a sociology of financial markets

Last November, an article in *L'Écho* informed us of the latest financial news (Nille, 2023). It began with these words: "Equity markets failed to maintain the rally they started at the beginning of the month. European stock exchanges [*les bourses européennes*] were badly hit by the still hawkish comments of central banks". A few lines later, it continued: "Europe's stock market indices ended with a decline. Investors regained their wits after their marked optimism". The journalist then develops the main point: "These comments [from central banks], deemed restrictive in relation to the expectations of the markets, which have been betting since last week on a Fed rate cut in the second quarter of 2024, have pushed up US and European bond yields. Traders are now betting with a probability of around 60% on a first Fed rate cut". This type of comment is common to hundreds of daily articles, and therefore hardly seems foreign to us. And yet, the main actor in the story is shrouded in mystery: Who is s/he? What is her nature? Alternately "stock markets", "stock exchanges", "stock market indices", "investors" and "traders", this actor seems capable of movement ("decline"), of forming anticipations ("market expectations"), even of feeling emotions ("optimism").

Financial markets are one of those aggregate categories that have sufficiently penetrated everyday vocabulary to no longer be problematized. There is therefore a great risk of reproducing, in an academic work, this "fetishistic" attitude – inevitable for professionals in the sector, and excusable for daily journalists – by using the term aggregated without questioning the aggregation operation itself. An obvious analytical counterpoint is to distrust all aggregation and stick to what may appear to be the "elementary cell" of financial markets: the individual. This option is that of the methodological individualism that dominates contemporary economic theory. In this theoretical section, we begin by following economic theory in this direction, through an examination of its principles and main results (Sections I.1a and I.1b). Faced with some blind spots in this approach, we will explore another analytical strategy – structuralism – which reverses causality in favor of collective instances (Section I.1c). Unsatisfied with these two positions, we will base the theoretical orientation of this work instead on pragmatist-inspired propositions, such as the economics of convention and Peirce's semiotics (Section I.2).

1. A theory of financial decision-making

How do individuals who buy and sell financial securities make their decisions? This is our starting point to address the valuation of financial securities. This thesis does not stand out for the originality of this initial question, which has occupied many economists, sociologists and industry professionals for a long time. What sets it apart is the research angle adopted to answer it. Unlike most studies devoted to this question since the birth of investment theory in the 1950s, it does not use rational choice modeling to answer it. In the first part of this section, we justify this position with a brief presentation of the shortcomings of this classical approach (Section I.1a). These shortcomings have long been recognized and have given rise to a number of alternative theoretical proposals, the most successful of which is behavioral finance. By lifting certain neoclassical hypotheses, which are shown to be unrealistic, behavioral finance aims to explain how markets work on the basis of real investors' decisions, which are made up of inconsistencies and precipitations. While acknowledging these contributions, the approach adopted in this work departs from behavioral finance, distinguishing itself in particular on the issue of framing (Section I.1b). Going against the grain of the "psychological" branch of investment decision theory, several structuralist approaches have shed light on the workings of the economy based on the constraints on the actions of market participants. We won't go along with this last proposition either, as it fails to account for the uncertainty faced by the traders we met. The last part of this section develops this final distinction (Section I.1c).

a. Neoclassical theory and the "homogeneous expectations" problem

Modern financial theory is structured around two complementary results. The first – microeconomic – explains investor decision-making, while the second – macroeconomic – characterizes price movements. The former is generally referred to as the "capital asset pricing model" (CAPM), the latter as the "efficient-market hypothesis" (EFM). The CAPM is of primary interest to us, as it aims to provide an answer to the question that forms the starting point of this thesis. It is based on a seminal article which earned its author, Harry Markowitz, the "Nobel Prize in Economics" in 1990[2] ; his formulation of the research question, set out in the very first lines, was to have a lasting impact on financial theory:

The process of selecting a portfolio may be divided into two stages. The first stage starts with observation and experience and ends with beliefs about the future performances of available securities.

[2] Officially entitled the "Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel", this is the only prize to have been recognized – and administered since 1969 – by the Nobel Foundation without having been created by Alfred Nobel's will. For a socio-political analysis of its genesis, see Offer and Soederberg (2016).

The second stage starts with the relevant beliefs about future performances and ends with the choice of portfolio. This paper is concerned with the second stage (Markowitz, 1952: 77).

In other words, the problem addressed by Markowitz – and most financial theorists in his wake – concerns which financial securities to buy and sell, *given their expected return*. Uncertainty about this return is built into the reasoning, but in a very limited way: this uncertainty follows a probability law known to all market participants. For example, all investors know that the return on Apple shares will be 5% in half the cases, and 8% in the other half, so they all identify the expected return at 6.5%[3]. The question of how this knowledge is acquired (from what information? by whom? etc.) and disseminated among market participants is beyond the scope of this study. The leading textbook on financial theory, first published in 1984 and still dominant today, popularizes this reasoning with the following example:

Suppose that you are wondering whether to invest in shares of Coca-Cola or Reebok. You *decide* that Reebok offers an expected return of 20 percent and Coca-Cola offers an expected return of 10 percent. After looking back at the past variability of the two stocks, you also *decide* that the standard deviation of returns is 31.5 percent for Coca-Cola and 58.5 percent for Reebok. Reebok offers the higher expected return, but it is considerably more risky (Brealey & Myers, 2002: 188; emphasis added).

Given that security prices vary differently (correlation < 1), Markowitz demonstrates that buying several securities (i.e. composing a "portfolio") can improve the risk/return obtained; he thus highlights the benefits of diversification. However, this important result is based on a strong assumption: the expected return on all financial securities is known to all investors. In many respects, this assumption is more demanding than the better-known assumption of investor "rationality": the rationality assumption, borrowed from neoclassical economics, allows us to move from recommendation ("an investor should buy...") to prediction ("investors will buy..."), by assuming that all market participants maximize their expected utility and therefore follow Markowitz's advice. Based on these two key assumptions, the CAPM extends Markowitz's teachings, making them easier for professionals to use. To determine how to compose her portfolio, an investor simply needs to take into account a security's contribution to the risk incurred, now measured by the sensitivity of its return to the "market" return (known as "beta"). If this "beta" is more than offset by its expected return, this constitutes a "buy signal" and invites the investor to acquire the security – thereby increasing the price of the security and re-establishing the correspondence between its "beta" and its expected return. Consequently, CAPM predicts that investors will buy a stock only if its risk

[3] The expected return is obtained by summing the returns multiplied by their probability of occurrence. Here, (0.05 * 0.5) + (0.08 * 0.5) = 0.065.

(its "beta") is offset by its expected return, that is if it is situated on (or, momentarily, above) the "security market line". In his founding paper on CAPM, William Sharpe, co-recipient of the Nobel Prize in 1990, reiterated the model's main hypothesis and, at the suggestion of a reviewer, gave it the apt name of "homogeneity of expectations":

> We assume homogeneity of investor expectations: investors are assumed to agree on the prospects of various investments - the expected values, standard deviations and correlation coefficients [...]. Needless to say, these are highly restrictive and undoubtedly unrealistic assumptions. However, since the proper test of a theory is not the realism of its assumptions but the acceptability of its implications, and since these assumptions imply equilibrium conditions which form a major part of classical financial doctrine, it is far from clear that this formulation should be rejected (Sharpe, 1964: 433-434).

Thus, the acceptability – and therefore the success – of this theory of investment results from its compatibility with the theoretical foundation of neoclassical economics, as its founding father himself admits. To test the theory's validity, it is necessary to quantify "expected returns", which means making the assumption of homogeneity of expectations even more onerous. Generally speaking, it is assumed that the expected returns on a stock are equivalent to its actual returns ("rational expectations"). To calculate expected returns over a given period, we simply average the returns observed over the period. However, the results of these empirical tests – for which Eugene Fama was awarded a Nobel Prize in 2013 – do not show such a clear relationship between risk (measured by beta) and return (Fama & French, 1992). Nonetheless, the "defenders" of this theory can counter by pointing out the conceptual difference between expected returns and average returns: "The key issue in investments is estimating expected return. It is neither explaining return nor, as Fama and French suggest, explaining average return" (Black, 1993: 36).

These discussions have occupied many financial theorists for years and continue today to justify publications in the discipline's most reputable journals (Fama & French, 2004; Kumar et al., 2023). A subpart of these discussions has focused precisely on the assumption of homogeneity of expectations. Most of the research effort has gone into replacing this notoriously unrealistic assumption with one of heterogeneity of expectations, and then observing the effects of this change on the CAPM (e.g. Lintner, 1969; Williams, 1977; Levy et al., 2006). The resulting revised models, necessarily more complex, are populated by investors who have access to different information, and even interpret it in different ways. That said, the constraints of neoclassical formalization greatly limit the "heterogeneity" allowed, and hence the gain in realism: investors' expectations are no longer identical, but follow a postulated probability distribution (the mean of which is generally equal to the expected return of the

original CAPM). However interesting these extensions may be, their contribution to understanding the workings of financial markets still seems insufficient to us.

This is because, even if one of these models comes close to the actual expectations of market participants, nothing is said about the *process* by which these individuals come to adopt such an expectation. What information do they mobilize? How do they weigh the importance and credibility of each piece of information? Is this weighting specific to each investor, or is it based on shared conventions? All these questions, although closely linked to the initial research question on the decision-making process, are not addressed by neoclassical investment theory. Nor are they addressed by the other pole of modern financial theory, the "efficient-market hypothesis" (EFM). More macro-economically inspired, this theory no longer starts from decision-making processes, but from price movements. To explain their apparently random movement, it argues that this "random walk" reflects the arrival – also random – of financial information. In a perfect market where all information is public and investors are rational, this information will instantly give rise to buy and sell orders, so that "the current price of a security 'fully reflects' available information" (Fama, 1970: 386). Before accumulating empirical studies of price movements supporting this hypothesis, Eugene Fama suggests three circumstances that favor market "perfection":

> For example, consider a market in which (i) there are no transactions costs in trading securities, (ii) all available information is costlessly available to all market participants, and (iii) all agree on the implications of current information for the current price and distributions of future prices of each security. In such a market, the current price of a security obviously "fully reflects" all available information (Fama, 1970: 387).

Condition (iii) is a reformulation of the assumption of homogeneity of expectations. Hence the complicity of the two results that structure neoclassical investment theory. They rest on the same foundations. The resulting conception of financial markets is therefore the same: individuals decide which securities to buy according to their expected return and risk, which they deduce from financial information whose random appearance gives stock prices their "random walk" form. This concept was to have a lasting influence on financial theorists, whose links with the world of investment have historically been very close (Bernstein, 1993). In particular, it fostered the emergence of an investment technique – passive management – which revolutionized the role of stock market indices (see chapter IV). From an analytical standpoint, its blind spot lies in the deductive process by which market participants translate the information mobilized into buying or selling decisions. The aim of this doctoral work is to shed light on this process. It shares this ambition with another theoretical current, built on a critique of

neoclassical theory: behavioral finance. The following section discusses the contributions of this second theoretical proposal, as well as the elements that distinguish it from the approach adopted in this work.

b. Behavioral finance and the framing problem

Behavioral finance stems from a shared dissatisfaction: the two fundamental assumptions of neoclassical theory – homogeneity of expectations and rationality of investment decisions – are too unrealistic. So, we need to question them. On the one hand, expected returns, calculated on the basis of information available to the individuals who populate real markets, often do not coincide with actual returns observed a posteriori. On the other hand, the decision-making of these individuals does not always follow Markowitz's advice, which maximizes their expected utility. The approach taken in this work shares these observations, but we won't draw the same lessons from it. According to behavioral finance, the real world differs from the neoclassical conception because individuals often make mistakes. This is summarized by Richard Thaler (recipient of the "Nobel" in 2017) and Nicholas Barberis in the review book *Advances in Behavioral Finance*:

> Behavioral finance is a new approach to financial markets that has emerged, at least in part, in response to the difficulties faced by the traditional paradigm. In broad terms, it argues that some financial phenomena can be better understood using models in which some agents are *not* fully rational. More specifically, it analyzes what happens when we relax one, or both, of the two tenets that underlie individual rationality. In some behavioral finance models, agents fail to update their beliefs [i.e. anticipations] correctly. In other models, agents [...] make choices that are normatively questionable, in that they are incompatible with [the maximization of expected utility] (Barberis & Thaler, 2005: 1).

In concrete terms, behavioral finance theorists will identify cognitive and emotional factors that can systematically divert the formation of expectations and the decision-making of market actors from neoclassical predictions (De Winne & D'Hondt, 2017). Several original metrics have thus been developed to quantify the emotions of market participants and test their correlation with returns and uncertainties, such as the number of occurrences of "emotionally charged" words in the media (Agarwal et al., 2024). On this basis, Richard Taffler's research demonstrates the emotional underpinnings of cycles of sharp rises and falls in asset prices (Taffler et al., 2024), even attempting to associate each stage of the crisis cycle with an emotional state using a psychoanalytical approach (Taffler et al., 2022). As we shall see when discussing André Orléan's model, our sociological approach differs from these works by linking crises in particular, and price variations in general, to characteristics of the financial situation (high uncertainty, mimetic rationality...), rather than to a psychological state (Orléan, 2004;

Bourghelle, 2023). The lessons to be learned from these two perspectives can therefore be complementary.

In behavioral finance, these cognitive and emotional factors that systematically divert the formation of expectations and the decision-making of market actors from neoclassical predictions are called "biases". They often inherited powerful labels that ensured their posterity. Here, we mention three that are at the heart of this literature and which relate to our theme of interest, i.e. the process by which individuals translate certain financial information into buying or selling decisions.

- *Overreaction* (Bondt & Thaler, 1985): individuals react to a highly unlikely positive or negative event by buying or selling stocks excessively. For example, following a company's exceptional underperformance, the stock will be "oversold", so that its price falls below its "fundamental value". In other words, overreacting investors will adopt overly pessimistic expectations about the stock's expected return. Hence, the stock will be undervalued.

- *Disposition effect* (Shefrin & Statman, 1985[4]): individuals tend to sell their rising-price stocks too early, and their falling-price stocks too late. In other words, they are more likely to "take their gain" than to "cut their loss". Notably due to "regret aversion", these investors have therefore overly pessimistic expectations for their rising-price stocks, and overly optimistic expectations for their falling-price stocks.

- *Overconfidence* (Daniel et al., 1998): investors overestimate their capacities. In the literature, this bias can take three forms (Merkle, 2017): overestimation (investors overestimate the performance of their investments), overplacement (investors consider themselves to be better than they are relative to others) and overprecision (investors underestimate the uncertainty of their predictions). This last form is of particular interest to us, since it directly concerns the formation of expectations: biased individuals underestimate the variance of the return.

[4] Interestingly enough, these authors base their seminal article on empirical observations from the doctoral thesis of a young psycho-sociologist, Ira Oscar Glick. On reading this thesis, however, it becomes clear that Glick's analyses correspond little to the cognitivist register of "bias", but more to the perspective of pragmatist sociology (this is what we tried to demonstrate in a review paper published in *Finance & Society*: Duterme, 2022a).

These biases have the virtue of being easily translated into alternative behavioral hypotheses. On this basis, behavioral finance theorists have proposed alternative models, in order to give a more accurate account of price trends or certain stock market events. Perhaps the best-known example is the "behavioral CAPM". Its ambition is representative of the spirit of the behavioral finance approach:

> We provide a behavioral theory of capital asset prices and the volume of trade. The theory centers on a market where both information traders and noise traders participate. Information traders use a proper [rational] learning rule to form estimates of returns while noise traders commit errors as they employ non-[rational] rule (Shefrin & Statman, 1994: 323).

Behavioral finance, at least in its dominant branch, does not contest the existence or desirability of the neoclassical conception of the investor, but only its universality. Some individuals deviate from generally accepted assumptions, so that neoclassical results are frequently disavowed by the facts. The most ambitious theorists of behavioral finance even argue that their role should not be limited to acknowledging these cognitive biases, but also to eliminating them. Various devices have been suggested, and sometimes implemented, to "correct" irrational behavior and restore market efficiencies (Thaler & Sunstein, 2003). For example, in order to encourage US employees to devote more of their savings to a pension plan (a behavior consistent with rationality assumptions), several authors recommend setting a relatively high "default" contribution rate: the "anchoring effect" is thus circumvented (Cai, 2020). During the "GameStop saga" discussed later in this work (see chapter III), several behavioral economists similarly recommended interventions to limit the impact of "noise traders". A number of legal experts have also addressed this issue, arguing that financial regulation needs to be rethought in the light of behavioral finance (Langevoort, 2002).

In short, behavioral finance draws on insights from psychology to account for behaviors that deviate from the neoclassical conception of the investor. To avoid any confusion, it is worth pointing out which branch of psychology informs behavioral finance: contrary to what this name might suggest, it is not behaviorist psychology, but cognitive psychology. Indeed, as Christophe Schinckus (2011) notes in his "Archeology of Behavioral Finance", mentalistic explanations, such as the "biases" mentioned above, are rejected by behaviorist psychology, which bases its teachings solely on observable associations between stimuli and reactions. The result is a divergence between "behavioral finance" and the pragmatist approach to cognition, though often described as "behaviorist", which will guide this work.

On the one hand, then, behavioral finance is not behaviorist. On the other hand, pragmatist behaviorism, represented above all by George Herbert Mead, is distinguished from classical behaviorism by a marked social inclination: far from the mechanistic sequences to which this school of thought is often reduced, pragmatist theory grasps cognition, and more generally action, as a dynamic, reciprocal transaction between stimuli (which are selected from a field of possibilities in order to provoke an anticipated response) and responses (which may in turn constitute stimuli during reflexive moments). And yet, as Louis Quéré (2024) points out, this selection of stimuli and this reflexivity are not carried out by an autonomous mind, but by a self, that is via an integration of the point of view of others into one's own point of view. Intersubjective, pragmatist behaviorism is also "interobjective": the objects that populate the situation are also to be considered, for what they enable humans to do, but also for what they make them do. These two issues constitute our points of demarcation with behavioral finance: in this work, we will analyze the decision-making of financial market participants as a process that is both intersubjective (each individual reasoning by anticipating the anticipation of a "generalized Other") and interobjective (each individual relying on a set of valuation tools enabling her to make decisions).

While the work of behavioral finance is invaluable in shedding light on the gaps observed between human behavior and the hypotheses of *homo economicus*, they do not attempt to explain the process by which rational investors construct their expectations. Our unanswered questions from the previous section – what information is used? How is its credibility assessed? Is this assessment shared by the financial community? – remain unanswered. For behavioral economists, the mystery lies in deviating from, rather than respecting, rationality assumptions. To complement their findings, our approach reverses the questioning and examines the conditions that enable individuals to behave in accordance with neoclassical models.

Why should rational behavior, in line with neoclassical assumptions, also be examined? With Michel Callon, whose contribution we will be discussing later, the Social Studies of Finance answer: because it's not instinctive, and – as Mead's social behaviorism pinpointed – it requires a very specific shaping of the situation. For an individual to be able to derive from financial information an expected return that turns out to be equal to the average return observed a posteriori, she needs to be heavily equipped. Without her Bloomberg Terminal, which broadcasts relevant information continuously, her pricing software, which reveals the theoretical impact of parameters on prices, and a trading room where she can interact with

colleagues covering other products, she would be unable to act in accordance with the assumptions of rationality.

By contesting the universality of neoclassical rationality, behavioral finance has made great strides towards realism. The Social Studies of Finance propose to take a further step by analyzing the conditions of rational behavior. The result is a new conception of rationality: neoclassical rationality – calculating and optimizing – has been supplanted by a rationality that is both weaker and stronger. Weaker because it is "limited": human calculating capacity is limited, so that it is incapable of instantly updating its anticipated return (Simon, 1997). Stronger because "reflexive": aware of this limitation, the individual relies on "judgment heuristics", but also and above all on his "milieu" (De Munck, 1999). In analytical terms, this new conception of rationality translates into a different approach to the situational components affecting individual behaviors, that is to the issue of "framing". In neoclassical theory, framing is not considered, since it has no impact on the reasoning of *homo economicus*. In behavioral finance, the individual is no longer a flawless monad, but can be affected by various external issues, including the way in which information is presented:

> Our decisions and behaviors are influenced by the way information is framed. The same information can be perceived differently depending on what features are highlighted. A yoghurt that is framed as '90% fat-free' for instance, comes across very differently to one that is framed as '10% fat'. How something is said is therefore as important as what is said (Samson, 2023: 56).

In this enriched framework, framing is a source of bias (Tversky & Kahneman, 1986): the rational individual is not influenced by variations in information presentation (e.g. it doesn't matter if it is a yogurt labeled "90% fat-free" or "10% fat"). Finally, in the Social Studies of Finance, the individual, aware of his cognitive limits, relies on situational clues to be able to act despite uncertainty. These situational clues, which enable the individual to understand what is happening and to act correctly, constitute framing in the sense of Goffman and Callon, which we will develop in a later section.

It is time to assess this comparison between behavioral finance and the Social Studies of Finance. On the cost side, the sociological broadening complicates formalization and thus the dialogue with the rest of the economic discipline… In contrast to the cognitive biases incorporated into "behavioral CAPM", sociological analyses of individuals characterized by limited, reflexive rationality, immersed in a universe where uncertainty is irreducible to the information available, and supported in their "duty to decide" by an entire socio-technical *assemblage* (computers, software, trading room...) are not "ingestible" by traditional models.

On the yield side, this same broadening results in a gain in realism. Sociological approach takes account of market participants as they are: forced to make decisions in a context of uncertainty, they rely on what they can, that is on their limited cognition and everything that can make it more powerful (computers, advisors, colleagues...). In any case, uncertainty is never eliminated, as actual performance depends on too many factors, many of which are impossible to quantify or even imagine. Such is the condition of market participants. Charles W. Smith, a trader turned sociologist, offers a vibrant, if somewhat dramatized, description of this condition:

> In acting sensibly, the major difficulty is not simply that there are numerous markers that must be monitored but that these markers come and go. The crucial task here is not to become fixated on any given set of markers at any given time, since new markers of importance are apt to appear suddenly while others are likely to disappear. [...] Some key markers take the form of the expected not happening: these markers make their mark by continuing to remain dormant. [...] When a marker appears, it still needs to be interpreted within the existing context (Smith, 2011: 279-284).

Thus, in Social Studies of Finance, market participants must act in a situation of limited cognition, but also of limited information. In his pioneering doctoral thesis, *A social psychological study of futures trading*, completed under the supervision of Everett C. Hughes as part of the Field Training Project (Cefaï, 2002), Ira Oscar Glick finely clarifies this point when discussing the issue of rumors:

> In the context of the informal, social, system, and by way of conversation with other traders, much of [the] information becomes shared by the professionals. There is some inclination, by both traders and students of futures markets, to refer to this communication as rumor. But to categorize the exchange of information among members of this social system by using a term implying unreliability of content and instability of communication patterns is misleading. For it suggests that a more certain type of information is available to these men, and such is not the case. Reports, tips, hearsay, and conjecture are the only type of information they have access to in this uncertain situation; there is no other type of information which indicates what subsequent prices will be. These reports, therefore, are all doubted to some extent, but with the accompanying notion that they might be true - true in the sense that some of them might be acted on by other traders and thus resulting in a change of value for the commodity. In an attempt to anticipate other traders' actions, market news of all types and degrees of probability become the basis for decisions and the content of communication among professionals (Glick, 1957: 207-208)[5].

This description seems to us in line with what can still be observed in trading rooms today. However, it does not fit into the models of financial theory – whether neoclassical or behavioral. Does the return exceed the cost? We dare to think so, and that is why, in this work, we adopt a resolutely realistic approach to analyzing these behaviors, but one that eschews the charms of modeling. Our approach therefore complements behavioral finance, which sheds

[5] In a short paper published in the journal *Finance & Society*, we offered an analysis of this thesis, highlighting its links with contemporary financial market sociology (Duterme, 2022a).

light on the psychological dimension of certain violations of neoclassical rationality assumptions.

c. (Neo-)Marxist structuralism and the "reflection" problem

The sociological register is an obvious response to the dissatisfactions outlined in the previous section. As a counterpoint to its rival discipline, psychology, it aims to denaturalize human behavior: the decision-making of market participants, whether or not it conforms to neoclassical hypotheses, must be enlightened in its determination. But what kind of determination are we talking about? Several sociological theories are candidates. We will look at three of them in this section, and try to explain why we have decided *not to* adopt them for the purposes of this work.

In our field of economic sociology, Marxist theory seems a serious contender. In principle, it allows us to explain the behavior of social actors in terms of their position in the social order, rather than their psychological disposition. However, this structuralist inclination is a double-edged sword: its level of generality can make us lose sight of what's going on in the trading room. The "macroeconomic" side of Marxism is no exception. It refers to financial actors only in terms of aggregates that have already been constituted and stabilized – "fictitious capital", "investment needs", "interest-bearing capital", etc. – which seem to be driven by a logic independent of any decision (Alves, 2023). Thus, financial evolution appears dictated by a kind of invisible intentionality: "In short, the different basic forms of fictitious capital [credit, public debt, stock market capitalization] combined to *ensure* that, overall, this category expanded across the whole period in question, including after the 2008 crisis" (Durand, 2017: 65; emphasis added). In the most "organic" version of this Marxist theory, the almost exclusive explanatory factor is economic: capitalism's need for development. For example, the 2007 financial crisis could be "predicted a posteriori" from this register:

> Rather than the crisis being purely of the financial system's own making, it is actually the consequence of the decline in the profit rate in the productive economy - a decline that Marx predicts will tend to occur in boom. As the profit rate falls, investment in productive capital becomes less attractive, opening the way to investment in fictitious capital, creating bubbles that must inevitably burst (Potts, 2011: 457-458).

Moreover, this quotation reveals one aspect of the inadequate treatment of financial markets in Marxist macroeconomics: the financial sphere is the site of illusions, of "fictitious capital", and must not distract us from the real sphere, that of productive capital, where the course of history is determined. Although Marx came late to recognize the importance of

financial markets[6], his analysis of capitalism generally confines the financial sphere to the status of an epiphenomenon: "The phenomenon which thus appears as a crisis of the financial market expresses in reality anomalies in the process of production and reproduction itself" (Marx, 1993 [1885]: 311). What's more, paradoxically enough, the market itself has received little attention in Marxist socio-economics, not least because of its "passivity" in the value-creation process: profit comes from exploitation (hence the keen interest in the sphere of labor), whereas the market is merely an exchange of equivalents (Christophers, 2014). In short, few Marxists have seriously examined finance, let alone financial markets. And when they have, particularly since the 2007 crisis, they have done so from a very high angle, covering up the multitude of interactions between market participants with anonymous, autonomous aggregates.

Yet – and this is the main weakness of this approach – this multitude of interactions is *not sufficiently* constrained by these macrosocial logics to be summed up in them. As we shall see throughout this work, it is grappling with a plurality of issues – irreducible to "the expanding agenda of capitalism" (Cabello, 2013: 193) – that deserve closer scrutiny in order to be understood and explained. To take the example of the 2007 crisis, while the increase in available savings that would result from a fall in the profitability of "productive investments" may indeed be a factor in the growth of financial markets, this factor tells us nothing about the type of markets favored (equities, bonds, derivatives...), the actors particularly involved (mutual fund manager, traders in a hedge fund or investment banker) and *in fine* about the actual direction of capital flows. The outcome is therefore not inevitable – "bubbles that must inevitably burst" – but dependent on a plurality of factors that analysis can never fully embrace. While Marxist macroeconomists tend to forget this, market participants are acutely aware of it: uncertainty remains.

This "economistic" version of Marxism has left many researchers dissatisfied, even within Marxism itself (Wood, 1981). This dissatisfaction has given rise to another sociological theory – "political Marxism" – which lightens the weight of economic determination somewhat, in order to do justice to other factors (Brenner, 1985). In this alternative version, the active role of social actors – especially collective actors such as social classes – is considered. Individuals are no longer just automatic cogs in a macroeconomic system, but political actors capable of organizing themselves to ensure the triumph of their interests (Streeck, 2023). From this

[6] "[S]ince 1865, when the book was written, a change has taken place which today assigns a considerably increased and constantly growing role to the stock exchange [...], so that the stock exchange becomes the most prominent representative of capitalist production itself" (Marx, 1993[1885], quoted in Perelman, 1987).

perspective, the evolution of financial markets is no longer the result of capitalism's needs, but of power relations between social classes. In particular, their liberalization, which began in the 1970s, would thus mark the "revenge of capitalists" whose interests had been thwarted by the social state of the *Trente Glorieuses* (Volscho, 2017). Through their influence on taxation, capitalists are said to have succeeded in replacing taxes with public debt as a means of financing the state (Streeck, 2017). Thus, financial market actors seem to constitute a relatively homogeneous social group with interests that run counter to those of the working classes. According to sociologist Wolfgang Streeck (2017), this opposition is now at the heart of the state, which is torn between two sovereigns: the *Staatsvolk* and the *Marktvolk*. The former, through the ballot box and in the street, demands social justice; the latter, through its power of assessment and retention, demands a *bondholder state*.

This perspective is also shared by several French economic sociologists. In a recent book entitled *La démocratie disciplinée par la dette*, Benjamin Lemoine (2022) discusses the influence and political project of the financial community, which is now in a position to influence the state through its ownership of public debt. In a review published in the journal *Lectures*, we welcomed the book's impact on this debate threatened by expertocracy, but also regretted the "under-problematization of the constitution of the class – in itself and for itself – of holders of public debt" (Duterme, 2022b: 3). In a very similar vein, Marlène Benquet and Théo Bourgeron's (2021) book, *La finance autoritaire. Vers la fin du néolibéralisme*, ambitions to explain the Brexit through the seizure of power by a fraction of the financial executives. To this end, they identify the influence of this social group in the origin of *Leave* campaign donations, then presents its "liberal-authoritarian" political project. Again, in a review published in the same journal, we offered a similar critique:

> At the end of the book, Benquet and Bourgeron may give the impression of having tried to do too much with too little. Indeed, the empirical material they have used seems too light to attest to so many social phenomena: the emergence of a new engine of economic growth, the federation of actors into a social group capable of acting as one, the decision-making process within British political institutions, the ways in which national economic interests are translated into European relations... So much so, in fact, that the authors often have to short-circuit the explanation, relying on their materialist-inspired analytical hypotheses without being able to back them up convincingly. It is therefore regrettable that this survey has not focused on one of these issues, followed "more closely" (Duterme, 2021a: 4).

Let's summarize our position. The approach adopted by Lemoine and by Benquet and Bourgeron, representative of "political Marxism" on this point, remains tempted by a reductionist explanation of action. Membership of a social class determines an individual's interests and conduct. The numerous mediations between these elements are not (sufficiently)

problematized, even though, in practice, they frequently pose problems: how does an individual come to identify himself as part of a collective? How does this group come to represent itself in such a way as to be able to "speak as one"? How does the hierarchy of the individual's participation in different collectives evolve? The current of political Marxism pays little attention to these questions, which are resolved in advance by an explanatory principle already present in Marx:

> I'm far from painting the capitalist and landowner in a rosy light. But these people intervene here only as personifications of economic categories, as bearers of class relations and determined interests (Marx, 1992 [1867]: 9).

This second version of Marxism is less mechanical than economistic theory. It introduces an extra-economic factor, "the political", which does more justice to the complexity of the social world. But not much. Admittedly, the course of history is no longer dictated by the needs of the economic system. But the uncertainty opened up by this renunciation of economicism is quickly stifled by a narrow conception of social conflict. Not much more than the first theory, this "political Marxism" offers little space for exploring the motivations behind the decisions of market participants. Financial markets seem entirely devoted to the cause of a social group – what Bresser-Pereira (2010) calls the "financists" – who profit from their expansion. Some Marxist analyses, such as that of Bourgeron and Banquet, are subtler, distinguishing within the "financial sphere" various "sub-classes" with partially divergent interests. But the main problem lies elsewhere: the decisions of financial market professionals are hardly informed by this type of explanation. That these decisions are guided by the ambition to maximize profit, in order to satisfy their material interests (and those of their capitalist clients), is a truism that does little to advance our understanding of the workings of the financial markets. In fact, in an unlikely rapprochement with neoclassical economists (Orléan, 2011), both "economic" and "political" Marxists deny the gap between expected and actual returns, that is the irreducible uncertainty that surrounds investor decision-making.

To be fair, some Marxist authors recognize this uncertainty, but consider it insignificant (Fine, 2005). Of course, "macrosociological" analysis doesn't tell the whole story about financial flows, but it would be able to account for "trends". It would explain the origin of the amounts absorbed by the financial markets – regardless of whether these amounts benefit Tesla or Apple. In other words, the relevance of our research question is called into question here. We (fortunately) contest this position. On the one hand, it is trapped in an "under-differentiated" conception of the social order, in which the functioning of the financial subsystem mirrors that

of the industrial subsystem. However, the financial subsystem has become partially autonomous, and its operating logics are singular, so that it cannot really be understood without fully immersing oneself in it (Hessling & Pahl, 2006). Even to grasp the "major trends", it is essential to explore the financial system for itself. This is what the 2007 crisis has taught us – or reminded us of. On the other hand, as the various chapters of this work will attempt to demonstrate, the concrete orientation of capital flows matters. The impact of the financial subsystem is such that the "micro-decisions" of the individuals who populate the trading rooms cannot be considered insignificant. These decisions deserve to be sociologically clarified. But the two Marxist theories we discussed seem ill suited to this purpose[7].

Our quest for a sociological approach attentive to the complexity of individual decision-making then leads us to more subtle versions of structuralism, such as Pierre Bourdieu's "constructivist structuralism" (1987). More interested in issues of perception and individual cognition, the Bourdieusian approach may indeed seem suited to our ambition, offering an alternative to the dilemma between the psychologism of behavioral finance and the sociologism of Marxist theories. Individuals are neither grasped independently of their place in social space, nor scorned as mere vehicles for economic or political forces. Thanks to the "field/habitus" couplet, Bourdieu's sociological theory aims both to grasp the determinations that weigh on action (and cognition) and to do justice to the singularity of personal trajectories (Frère, 2008). In *Les structures sociales de l'économie,* Pierre Bourdieu (2000) himself puts this approach to the test by analyzing a concrete market, that of suburban housing. In it, he once again sets out the two dimensions – captured by the conceptual couplet "field/habitus" – of his theory:

> Against the anhistorical vision of economic science, we need to reconstruct, on the one hand, the genesis of the economic dispositions of the economic agent, and especially his tastes, needs, propensities or aptitudes (for calculation, saving or work itself), and, on the other hand, the genesis of the economic field itself, i.e. the history of the process of differentiation and empowerment that leads to the constitution of this specific game (Bourdieu, 2000: 18).

As luck would have it, a sociologist has taken the same approach to study the subject of our work: the valuation practices of financial market participants. Through participant observation in the trading room of a major European bank, Olivier Godechot aims to uncover the social origins of traders' decision-making processes. He thus shares our ambition to provide

[7] Incidentally, these two versions of Marxism are sometimes coupled. For example, the "carbon quota" trading system – which we studied briefly in this work (see the general conclusion) – has been analyzed through a "doubly Marxist" prism: "it is the combination of these two elements - the promotion of specific growth sectors and the construction of a political coalition - that constitutes the principal political virtue of carbon markets" (Paterson, 2012: 82).

a sociological account of the behavior of market participants, whether deemed "rational" or "irrational" by economists:

> To study rationality sociologically [...] is not to assert dogmatically "everything is calculation" or "nothing is calculation", but to try to account inductively for the ordinary reasoning of ordinary people. To do this, we must endeavor, insofar as this is possible, to describe the diversity of forms of reasoning and try to find out what determines them socially (Godechot, 2000: 17-18).

The main result of his survey follows logically – and this seems to us to be a weakness (we will come back to it later). Traders have access to a variety of reasoning techniques when making decisions to buy or sell financial securities, and their adoption of one technique over another is favored by their social position. Individuals with low economic capital and high cultural capital tend to use mathematical reasoning. According to Godechot, they "make a cultural and academic investment, demonstrate cultural (in this case, scientific) goodwill, and seek to extend their academic experience [...] by availing themselves of their mathematical expertise in the trading room" (Godechot, 2001: 238). As for "technical analysis" (or chartist analysis), based on observation of past price movements and less valued in the academic field, it is used more by individuals from modest backgrounds, unaware of legitimate hierarchies. Conversely, "fundamental analysis", based on the study of macroeconomic data and corporate balance sheets, is more likely to be mobilized by those from higher social backgrounds. In a subsequent analysis of a debate between two financial analysts, one "fundamentalist", the other "technical", Godechot (2008) comes to very similar conclusions. In contrast to the Marxist approaches mentioned above, Bourdieusian theory, as adopted by Olivier Godechot, constitutes a genuine sociology of cognition, and is therefore closer to our ambition.

Nonetheless, we felt that this approach was not the most appropriate to account for the decision-making of financial market participants. Bourdieusian theory seeks to explain the reproduction of social order on the basis of the – falsely spontaneous – correspondence between the positions taken by individuals and their social positions. This "immediate agreement between embodied structures, which have become unconscious, [...] and objective structures" (Bourdieu, 1994: 127) almost automatically ensures the felicity of social interactions: everyone knows their place, conforms to it, and even comes to desire it. Although for different reasons, Bourdieu reaches the same conclusion as neoclassical economists about the accuracy of individuals' expectations:

> Habitus theory helps explain the apparent truth of the theory it contradicts. If a hypothesis as unrealistic as that on which the theory of action or rational anticipation is based can appear to be validated by the facts, it is because, due to the empirically established statistical correspondence between dispositions

and positions, agents form, in the vast majority of cases [...], reasonable expectations, i.e. expectations adjusted to objective chances (Bourdieu, 2000: 330).

However, as we have already mentioned, in financial markets, the validity of expectations – the match between expected and actual returns – is never as fully assured as the Bourdieusian approach suggests. The configuration of the situation facing market participants is such that coordination between individuals, which is supposed to support the reproduction of the social order, does not "flow naturally". Failures of coordination (and therefore of reproduction), disappointments and confusion, and adjustments in behavior and reasoning are commonplace. But these realities cannot be integrated into Pierre Bourdieu's theoretical system. At least, this is what Olivier Favereau maintains in a highly critical analysis of the links between Bourdieusian sociology and neoclassical economics:

The habitus/field pairing is such that reproduction is thought of in terms of a configuration of complete reproduction, with individual agents whose rationality is perfectly (and therefore exclusively) attuned to this configuration of complete reproduction. From this proposition follows this corollary: Pierre Bourdieu's sociology excludes the failures of reproduction just as the "Standard (Extended) Theory" [i.e., neoclassical theory] excludes the failures of coordination (Favereau, 2001: 284).

While this theoretical perspective can easily accommodate social spaces whose codification has made it possible to stifle the risk of unforeseen events, provided such spaces (still[8]) exist, it is difficult to analyze configurations where uncertainty – and therefore disappointment – is omnipresent. This difficulty may provide a key to understanding Godechot's early work. Despite his initial ambition and apparent radicalism ("to study rationality sociologically"), Godechot ultimately confines himself to explaining a phenomenon at the margins of the functioning of financial markets: the legitimacy of information processing techniques. Our hypothesis is that this symbolic hierarchy, in which fundamental analysts dominate technical analysts, is one of the few privileged areas for a Bourdieusian analysis of financial markets. This is where Godechot took refuge. This helps us to understand why Godechot, despite his meticulous fieldwork[9], gives little account of the testing of financial reasoning (fundamental, technical, mathematical). Why do traders experience failures in their reasoning? What do they rely on to account for these failures? How do they adjust to be able to make new decisions? Tackling these questions, which lie at the heart of how markets work, would have required a theoretical opening that would have allowed us to take seriously the

[8] According to Danilo Martuccelli's (1999) analysis, Bourdieu's theory corresponds to pre-modern societies in which the match between dispositions and positions was effectively assured.
[9] His ethnographic survey appears to be under-exploited: while interview extracts are abundantly exploited, very few situational observations are proposed in his monograph (Godechot, 2001).

issues of uncertainty management, environmental support and reflexive capacity. This is the direction we are trying to take in this work, supported by other theoretical proposals presented in the next section.

Each in its own way, the three theories put forward seem to us to err on the side of simplifying the decision-making process of financial market participants. In neoclassical investment theory, all individuals form the same expectations: like computer software, they continuously process information in such a way as to estimate returns that correspond to the actual returns of financial securities. Behavioral finance makes the picture more complex (and realistic), by admitting (and sometimes regretting) that some individuals deviate from the neoclassical model. The existence of such "faulty software" is explained by the cognitivist register of "bias". Finally, structuralist approaches claim to remedy these shortcomings by revealing the "code" of this software, that is the social cause *reflected* in the decision-making of market participants. For some Marxists, this "code" is economic, with the needs of capitalism at the helm. For others, it is political, with individual decisions reflecting class interests. This paradigm of reflection, characteristic of (neo-)Marxist structuralism, finds a culmination, rather than a rupture, in Bourdieusian theory: here, the "code" is plurifactorial, idiosyncratic as the inheritor of a complex trajectory, but ensuring the same predictability of perceptions, interpretations and decisions (these three moments merging into a routinized action, experienced as self-evident and unproblematic).

While these three approaches do have their virtues (particularly in terms of formalization), they also give rise to a general dissatisfaction: their simplification operation makes invisible processes that are essential to the functioning of today's financial markets. Market participants are not software. And they know it, so they equip themselves accordingly. These "decision supports", human and non-human, are the first players to be reintegrated into the analysis. They populate the environment[10] of market participants and interact with them: they incorporate shared conceptions of markets, but also make their users do things. In this way, the main financial decision-making tools are now making their mark on capital allocation on a global scale. They therefore deserve our attention. To account for these processes, we adopt an approach that draws on three theoretical sources: Goffmanian-Callonian sociology of markets, economics of convention and Peircian semiotics.

[10] As will be explained later in this theoretical introduction, we are using this entangled concept of "environment" in this work in the pragmatist sense of "milieu", rather than in the systemic sense of "outside".

2. A theory of financial markets

Our discussion of three decision theories has convinced us of the need to integrate the "decision supports" mobilized by individuals buying and selling financial securities. From then on, the decision-making process is no longer seen as a solitary intellectual effort, but as a collective cognitive process. In other words, our focus shifts from the individual's brain to the interactions that make up the market as a whole. Our quest for a theory of financial decision-making becomes a quest for a theory of financial markets. To advance along this path, we begin with the sociology of markets initiated by Michel Callon's reinterpretation of Erving Goffman (Section I.2a). This approach, which has become dominant in the field of the Social Studies of Finance, aims to shed light on the socio-technical devices and infrastructures that enable market participants to act. In order to elaborate the institutionalist position of our inquiry, we then turn to the economics of convention program (Section I.2b). In particular, we will mobilize two authors from this theoretical school: André Orléan (for his work on financial rationality) and Alain Desrosières (for his socio-historical approach to quantification). Finally, we will turn to the semiotics of Charles Sanders Peirce to refine our theoretical positioning (Section I.2c). The concepts of this American philosopher shed light on the plurality of meanings embodied by the valuation tools that constitute the "semiotic infrastructure" of financial markets.

a. Goffmanian-Callonian sociology of markets

We have suggested that the Social Studies of Finance approach adopted in this work differs from behavioral finance on the issue of framing: the ability of individuals to act appropriately is not threatened by, but enabled by the configuration of the situation. To shed light on this issue, we need to clarify the meaning of the concept of frame/framing, from its theorization by Erving Goffman to its reinterpretation by Michel Callon. In his 1974 book *Frame Analysis*, Goffman focuses on the principles that enable individuals to identify "what's going on here", which he calls "frames". When engaging in a situation, individuals, Goffman notes, are generally able to identify these principles and act on them, that is appropriately. Crucially, then, these principles are both subjective – they characterize a state of consciousness – and objective – they concern the situation. Although the ambition of pragmatism is to overcome this duality, several passages in the book underline its persistence:

> I assume definitions of a situation are built up in accordance with principles of organization which govern events – at least social ones – and our subjective involvement in them (p. 10).

This book is about the organization of experience – something that an individual actor can take into his mind (p. 13).

Here I want only to mention the belief that in many cases the individual in our society is effective in his use of particular frameworks. The elements and processes he assumes in his reading of the activity often *are* ones that the activity itself manifests – and why not, since social life itself is often organized as something that individuals will be able to understand and deal. A correspondence or isomorphism is thus claimed between perception and the organization of what is perceived (p. 26).

The frame incorporates both the participant's response and the world he is responding to (p. 85).

Given their understanding of what it is that is going on, individuals fit their actions to this understanding and ordinarily find that the ongoing world supports this fitting. These organizational premises – sustained both in the mind and in activity – I call the frame of the activity (p. 247).

There a is cognitive organization to the world we are in such that correctives to error, deception, and delusion often emerge (p. 493).

Frames are therefore something other than "repertoires" mobilized by actors or coloration of information. As a "cognitive organization to the world", they are not continually invented by individuals, but can be twisted by "motivational forces" (p. 447). Goffman analyses at length the various vulnerabilities of frames, which are never immune to more or less benign transformations (theatrical or cinematic staging, criminal plotting, ordinary deception, etc.). From a heuristic point of view, this concept of frame – and the whole edifice that accompanies it and which we present in chapter III.2 of this thesis – is undeniably fruitful for microsociological investigations. For example, it enables us to analyze in detail the ambiguities of certain democratic devices, which vacillate between deliberative and representative organizational principles (Berger, 2024a). It is with a similar ambition that we mobilize this theoretical framework in chapter III to study market participants' doubts about the relevant frame during the GameStop saga. To understand how individuals orient themselves and make decisions in situations of uncertainty, the Goffmanian concept of frame is invaluable: it enables us to problematize the situational drivers of cognition.

Why, then, should we call on the work of Michel Callon to position this thesis theoretically? What does his concept of frame add to Goffman's proposal? In our view, Callon's conceptualization has the merit of supporting the semiotic dimension of Goffman's concept, at the expense of its phenomenological dimension, enabling the deployment of a fruitful sociological research program. Before developing Callon's contribution, let's expand on this point by relaying some of *Frame Analysis*'s critical receptions. In particular, the articulation between the two "poles" – subjective and objective – of the frame concept has been the subject of much debate. Several authors considered that the concept's ambition to respond to the

criticism that Goffman "had not fixed upon a set of analytic tools that were consistent and that allowed him to capture both the actor's definition of a situation and the structural, normative, or external constraints under which the actor worked" had not been achieved (Manning, 1980). For example, Gamson (1975) and Brooks (2007) consider that Goffman provides few insights into how individuals manage to identify the relevant frame, that is how subjective and objective dimensions fit together. Indeed, throughout the book, Goffman marvels at our ability to identify the relevant frame, despite its fundamental vulnerability, sometimes linking it to a characteristic of human nature:

> Here is the first illustration of what will be stressed throughout: the very remarkable capacity of viewers to engross themselves in a transcription that departs radically and systematically from an imaginable original (p. 145).

> While watching the show, the audience can follow along and read off what is happening by attending to the relevant framing cues. *That* is the great lesson, and it tells us about a crucial human capacity exercised in regard to actual events as well as fictive ones (p. 186).

> Persons seem to have a very fundamental capacity to accept changes in organizational premises which, once made, render a whole strip of activity different from what it is modeled on and yet somehow meaningful (p. 238).

> We do come to be sharply in the wrong but – as argued throughout – only exceptionally. Our very considerable capacity for perceptual discrimination in regard to matters of frame seems to be what saves us (p. 343).

> A further exception that proves the rule regarding our capacity to correctly interpret the world: the comedies of Shakespeare (p. 444).

These passages suggest that the tension that might be generated by the duality of the frame concept is disarmed by our perceptive and interpretative capacity. Several authors have associated this "solution" with the influence, both theoretical and biographical, exerted by the phenomenological school of thought on the "last Goffman": Dean MacCannell thus regrets Goffman's concessions, and reverences, to Schutz's desire to "center sociological knowledge on individuals' subjective apprehension of their immediate, present-to-hand situation" (MacCannell, 1983: 12). This "spontaneist presentism" is indeed somewhat repellent, ignoring in particular the stakes of materialization and institutionalization that the pragmatist conception of cognition invites us to take into account. This is what Bruno Latour bluntly criticizes the ethnomethodologists and interactionists, among whom he includes Erving Goffman:

> The very existence of interaction presupposes a reduction, a prior partition. But how can we explain the existence of these frames, these partitions, these reductions, these nooks and crannies, these firewalls

that prevent social contagion? Interactionists are silent on this point, contenting themselves with metaphorically using the word "frame" (Latour, 1994: 589).

Admittedly, Goffman's "enclosure" of the situation – an analytical commitment that underpins his entire sociology, from his doctoral thesis to *Frame Analysis* – is open to criticism: the external markers that penetrate the situational membrane, such as Latour's objects, are probably too little integrated into the analysis[11]. But we must immediately add that Goffman has elements to remedy this shortcoming, "against himself". In other words, as Dean MacCannell (1983) and Fernando Andacht (1992) are delighted to report, there is a semiologist Goffman to counterbalance the phenomenologist Goffman. The match between the two "poles" of the frame is not just the result of human aptitude, but (also) of a material configuration of the situation that makes sense to individuals. Mathieu Berger has highlighted this aspect of Goffmanian theory, which sets it apart from other approaches to frames:

> The Goffmanian approach also places greater emphasis on the concrete, material aspects of frames. As a "structure of context", the frame cannot be limited to a "pattern in the brain", as Bateson put it: it is an inseparably cognitive and practical device. When accused by his critics of having misunderstood Bateson, Goffman readily admits that his conception of the frame departs from that of the Briton: "Bateson conceived of framing as a psychological process; for me, [...] it is inherent in the organization of events and [cognition]". Indeed, Goffman's frame is not just a pattern, it's also a setting (Berger, 2024b, 18-19).

Thus, throughout *Frame Analysis*, we can find suggestions on the role of signs and their materiality – suggestions that will be favored and developed by Michel Callon's sociology of markets:

> Here again I argue that the meaning of an object (or act) is a product of social definition and that this definition emerges from the object's role in the society at large, which role then becomes for smaller circles a given, something that can be modified but not totally re-created. The meaning of an object, no doubt, is generated through its use, as pragmatists say, but ordinarily not by particular users. In brief, all things used for hammering in nails are not hammers (p. 39).
>
> Collusion managed through framing cues, some of which are is standardized and have a social history (p. 84).
>
> In doings involving joint participation, there is to be found a stream of signs which is itself excluded from the content of the activity but which serves as a means of regulating it, bounding, articulating, and qualifying its various components and phases (p. 210).

[11] We are grateful for our exchanges with Mathieu Berger on this point in particular, and on the spirit of this section in general.

Once again it can be seen that as long as activity contains materials of any kind, including individuals, a range of connections will link the activity to the ongoing world, a world from which the activity's resources came and to which these resources will be returned (p. 292).

So Goffman was not unaware of the importance of the semiotic configuration of a situation for an individual to find his or her place in it and be able to act upon it. However, when it comes to studying the financial markets (a place crowded with objects that mediate all interactions), Goffman's material and semiotic dimension deserve to be reinforced. This is the opinion of Risto Heiskala (1999), who believes that to move from Goffmanian sociology to semiotic sociology, we need to extend the scope of signs beyond their expressive dimension. Indeed, in Goffman's analysis, a sign is first and foremost an expressive act, whether intentional or not, on the part of an individual. This becomes clear when he discusses the issue of "context", which his *Frame Analysis* aims to densify:

It is obvious that a given appearance can on different occasions have different meanings. He who cleans off his dinner plate can be seen as starved, polite, gluttonous, or frugal. But usually the in context, as we say, rules out wrong interpretations and rules the right one. (Indeed, context can be defined as immediately available events which are compatible with one frame understanding and incompatible with others.) (p. 440)

[…] "expression," namely, events that could "leak" information about a player's situation (p. 455).

And yet, when a stock market index jiggles on one of an equity trader's six screens, we are dealing with a semiotic phenomenon that cannot be reduced to human expressivity. To do justice to the mediators populating the financial markets, we need to delve deeper into the material and semiotic dimensions of the Goffmanian concept of frame. This is precisely the ambition of the reconceptualization proposed by Michel Callon. His proposal, developed in the following pages, aims to analyze the "work" of networks of humans and objects that manage to mark out the meaning of a situation. In so doing, the process by which individuals manage to act correctly is fully problematized: the active role in this process of the socio-material configuration on which these individuals rely is an integral part of sociological analysis. At the same time, the analysis gains in historical depth. In *Frame Analysis*, Goffman frequently evokes the evolution of "frame conventions" from one society to another, and from one period to another. That said, these evocations are rarely developed, and typically boil down to a judicious but very general comment:

So, too, frame change through time […]. It might be added that most of these changes have been sufficiently slow and separate, one from another, so that during any one occasion participants could feel that a particular frame prevailed and would be sustained (p. 51).

The rightness of existing limits can arouse deep feelings of support, and yet next year these limits can be quietly breached and the year thereafter the breach can be ratified. Apparently in matters of frame, rulings can change very rapidly – if contemporary experience is a fair measure (p. 73).

Direct address appears to have been common in medieval morality plays, the Western version of the audience not having yet become fully developed, and to have declined rather fully by the turn of the seventeenth century, by which time, in the West, plays had become relatively self-contained realms – this change constituting a good illustration of how framing practices vary over time (pp. 231-232).

An obvious limit also exists in regard to roles in sexual interaction. And here one must attend to the complexities involved in the question of changing frame conventions. A "daring" act on stage or screen strikes at two matters: what producers can get away with staging and what actors can stage without becoming personally contaminated. The recent legalization of hard-core pornographic films would seem to reflect more change in the former than in the latter (p. 278).

By inviting a closer look at the role of socio-material devices in the framing of the situation, Callon opens the way to investigations into the genesis of certain devices: their emergence as a source of authority for a community, their gradual stabilization, their advent which confirms their necessity (their "performativity"[12]). In the course of our doctoral work, we will follow this path, tracing the advent of financial devices on which participants in contemporary financial markets rely, such as the Bloomberg Terminal or stock market indices. Or are these objects infrastructures, rather than devices? To explore this conceptual distinction – and to demonstrate the value of such a distinction – we worked with David Pinzur on an article that constitutes the next section. By way of introduction, it may be useful to clarify the impact that Michel Callon's importation of the Goffmanian concept of frame has had on the sociology of markets. Callonian theory – also known as the "STS" approach to markets – has been a runaway success, becoming the discipline's mainstream.

In a paper looking back at his early work, Olivier Godechot (2016a) identifies what distinguishes his Bourdieusian approach from the perspective he rightly identifies as dominating the Social Studies of Finance, namely the "science and technology studies" (STS) approach. Firstly, Godechot identifies rationality as a matter of *people*, whereas the STS approach would see it as a matter of *technology*. This first point largely overlaps with our discussion of "decision supports" and "valuation tools": cognition needs to be grasped in its "milieu", which means integrating into the analysis all the technological apparatus that populates financial markets. While the extent of "interiorisation" allows Bourdieusian theories to focus on individual reasoning (since it already contains everything), this is no longer the case for alternative approaches, such as STS, which have to broaden the scope. Secondly, Godechot

[12] This successful concept is discussed more specifically in the next section of this introduction.

apprehends action as a *mental*, rather than *bodily,* fact. Works in the STS tradition often take account of the physical inscription of actors in the situation: reasoning is embodied, that is anchored in a sensory space. Conversely, despite its marked attention to "incorporation", Bourdieusian theory does not do justice to the agency of the body, which is only one reflection among many. Several critical analyses have emphasized this over-hasty treatment, and regretted its consequences for the analysis of reflexivity or of "pre-collective" relations of familiarity (Thévenot, 1998; Favereau, 2001). Thirdly and finally, Godechot explains a *plurality* of rationalities, whereas the STS approach tends to study the unification of reasoning resulting from *standardization* operations. Indeed, knowledge instruments and their effects on the world have been extensively studied by STS-inspired sociologists of markets.

These three distinctions proposed by Godechot seem to us to be quite judicious, and offer a first glimpse of the conceptual contours of Callonian sociology of markets (also known as the "STS" approach to markets). This theory understands market participants' decisions as technological, bodily and standardization processes. It became dominant in the field of the Social Studies of Finance at the turn of the 2000s, in the wake of sociologist Michel Callon's influential work (see the two review volumes: Knorr-Cetina & Preda, 2005, 2012). Co-founder of the actor-network theory with Bruno Latour, the latter proposed to study the role of economic theory in the construction of markets (Callon, 1998a). Following in the footsteps of sociologist Marie-France Garcia's pioneering study (1986), Callon suggests investigating the operations by which neoclassical hypotheses become true: they are able to impact the shaping of markets to the point of verifying themselves. In a contested mobilization of Austin's concept of "performativity" (Mäki, 2013; Sparsam, 2019; Walter, 2023), Callon thus opened up a sociological research program that has been enthusiastically followed and generated important work in the field of the Social Studies of Finance (e.g. MacKenzie, 2006a; Muniesa, 2014; Braun, 2016).

This theoretical approach is of particular concern to us. Not only is it at the heart of sociological work on our research object, but it seems to respond to several of the dissatisfactions raised in the previous section. Indeed, it aims to do full justice to the uncertainty that surrounds the decision-making process of market participants, by refusing to postulate adequacy between expected and actual returns. What's more, it aims precisely to identify what, in the actors' "milieu", enables them (or not) to achieve this accuracy of anticipation. To do this, it proposes to analyze cognition as a collective process involving human entities (the deciding trader, informing brokers, co-presenting colleagues...) and non-human entities (a theoretical

asset valuation model, software that continuously "runs" this model, an information platform...). This heterogeneous collective, called *assemblage*, shapes the market situation and equips individuals to act upon it. Here we find the concept of framing: it is now an indispensable operation for action. Our desire to combine financial decision theory and financial market theory is therefore at the heart of this research program, as explained by two major authors of this school, Michel Callon and Fabien Muniesa:

> Markets are collective devices that enable compromises to be reached, not only on the nature of the goods to be produced and distributed, but also on the value to be attributed to them. The result is all the more remarkable given that the initial situations are often ambiguous, that they frequently involve a large number of agents with conflicting conceptions and interests, and that the quality and characteristics of the goods are generally surrounded by profound uncertainties. The efficiency of markets lies precisely in the fact that they enable complicated calculations that produce practical solutions to problems that no theoretical modeling could solve (Callon & Muniesa, 2003: 191).

Our doctoral work is therefore fully engaged with this Callonian sociology of markets, both empirically and theoretically. On the empirical level, as the chapters at the heart of this thesis hope to attest, our analyses of unexplored devices have deepened our understanding of what underpins the decision-making of financial market participants. On the theoretical level, our perspective does not fully conform to Michel Callon's program, and proposes an original inclination to it based on other theoretical sources, such as the economics of convention and Peircian semiotics.

Still on the theoretical front, during our research stay at the Sociology Department of the London School of Economics (LSE), we had the opportunity to take part in a discussion on certain conceptual ambiguities in Callonian sociology of markets. The main aim of these discussions was to clarify the relationship between certain concepts in Callon's program and a new concept in vogue among sociologists of finance, that of "infrastructure". This issue may seem excessively specific, but this lack of conceptual clarity leads to confusion in this field of research and prevents us from exploiting the explanatory richness that lies in the distinction between concepts. With David Pinzur, professor at the LSE, we therefore worked on this theoretical problem and came up with some instructive results (at least from our point of view). We therefore decided to present these results in a paper that was submitted to an economic sociology journal, *Journal of Cultural Economy*, in September 2023. This paper first presents the theoretical argument, then illustrates its interest using two empirical cases (stock market indices and stock exchanges). For the sake of consistency, we reproduce the theoretical part in the following pages, reserving the illustrations for a later section of this thesis.

This part of the paper first deepens our discussion of Callonian sociology of markets. Its key concepts, mobilized in several of the papers at the heart of this thesis, are presented and developed. Then, as we did in the previous section, we point out certain weaknesses in this theoretical approach and consider “remedies”. This critical line of inquiry reveals the points on which the approach adopted in this work differs from Callon’s program, and on which it is necessary to draw elsewhere. Finally, this article bears witness to work carried out as part of this doctoral thesis, between September 2022 and September 2023.

Market devices and infrastructures: How they differ and why it matters

Since at least the pioneering work of Michel Callon in the 1990s, social scientists have attempted to understand markets as emerging from hybrid, sociomaterial processes[13]. A vast body of work, using concepts such as actor-networks, sociomaterial assemblages, market devices and market *agencements* has utilized this ANT-inspired framework. Recently another term with roots in both science and technology studies (Bowker & Star, 2000; Star & Ruhleder, 1996) and political economy (Mann, 1984) has found favor in the study of markets: infrastructure. The excitement around the concept of infrastructure has led to a flowering of new work. But, as has already been noted about the notion of "performativity" (Sparsam, 2019; Walter, 2023), the success of these concepts may have led to some confusion, sometimes to the point of threatening their explanatory power. The ambition of this paper is to clarify the relationship between two concepts regularly used in the sociology of markets - and particularly in the social studies of finance: device and infrastructure. At the same time, the proposed distinction between these two concepts will make it possible to identify two meanings of another frequently used notion, that of frame.

The contribution of this article is not limited to a purely semantic issue. Uncovering the differences between concepts that are often confused constitutes a heuristic opening on three levels. Firstly, it facilitates their operationalization. A clearer distinction between infrastructure and device makes it possible to identify criteria that are indispensable to empirical research, but also to assess their explanatory power more accurately when they are put to the test. Secondly, the conceptual distinction opens the way to discovering the relationship between infrastructure and device, both in a static (how one relies on the other) and dynamic (how one becomes the other) framework. Thirdly, it offers a new, more systematic view of the work already done on infrastructures and devices, revealing new connections and highlighting gray areas that need clarification.

The rest of the paper is structured as follows. First, we outline the context of the emergence of the three concepts studied - device, frame, and infrastructure - and their main mobilizations. We then develop the body of the argument, outlining key differences between

[13] This article, co-authored with David Pinzur, was submitted to the *Journal of Cultural Economy* on September 22, 2023.

devices and infrastructures, which in turn prompt us to draw new distinctions in Callon's use of framing. On the basis of these distinctions, we analyze features of both the static and dynamic relationships between infrastructures and devices, drawing, in part on studies of stock market indices and European stock exchanges[14]. In conclusion, we review the main findings of this paper and draw some implications for future research.

Origins: the socio-material turn in the sociology of markets

In this section, we briefly trace the history of the three concepts at the heart of this article: device, frame, and infrastructure. This history is structured around two key moments: first, the introduction by a founder of ANT of the conceptual binomial "device-frame", and then the importation of the concept of infrastructure, which opened the way to greater empirical precision.

Device and frame: a network and its effects

Michel Callon, co-founder of ANT with Bruno Latour, introduced the socio-material turn in the sociology of markets in the late 1990s. Prior to this point, sociologists tended to conceptualize markets and their actors as "embedded" with broader social contexts of laws and regulations, organizational rules, relationally-enforced norms, or status hierarchies (Krippner et al., 2004). This way of thinking understood economic action simply as a variety of social action, amenable to the usual tools of sociological analysis (Fourcade, 2007). In contrast, with Callon, the goal of analysis became to trace how *homo economicus* and the market he operated in were constructed through continually weaving together particular networks of individuals, organizations, texts, discourses, and physical objects. Callon refers to this operation of *assemblage* that gives consistency to the market and its actors as "framing", and the entity that carries out this operation as a "device".

Thus, at their core, the concepts of device and frame are mutually defining. Markets do not constitute a part of social reality that is already there and can be analyzed sociologically, but a heterogeneous construction - still in the process of being made - that is based on the establishment of a boundary between what is part of the market and what is not (the framing), this operation being carried out by devices. This definition of the device by its function is

[14] These empirical illustrations have been decoupled from the rest of the article and appear in a later section (cf. p. 157).

explicit among the authors of this approach: market devices are "material and discursive assemblages *that intervene in the construction of markets*" (Muniesa, et al., 2007: 2; emphasis added). More concretely, devices define what elements of the environment market actors take into account and how - they frame the situation (Callon, 1998b). In this way, market devices create an environment where actors share both a conceptual framework and a set of practical and analytical tools, which enable calculation, valuation, and material engagement (Çalışkan & Callon, 2010; Callon & Muniesa, 2005). Several researchers quickly adopted the device/frame binomial to analyze their field. The role of economic models in the construction of different markets has been particularly well studied (Garcia, 1986; MacKenzie, 2006a; Svetlova, 2012): models constitute *assemblages* of heterogeneous entities (theoretical hypotheses, researchers, computer software allowing their mobilization by market professionals, etc.) that lead to a qualification of the market reality (by the parameters of the model as much as by its results). Other scholars studied order matching software (Muniesa, 2000), traders' screens (Knorr Cetina & Bruegger, 2002; Arnoldi, 2006) or the spatial configuration of trading rooms (Beunza & Stark, 2004) as instances of market devices that frame and organize economic interactions.

Each of these studies is based on Callon's initial conceptualization of the device, which relies on three identification criteria: 1) it is a heterogeneous assemblage (criterion of socio-materiality); 2) it is never stabilized once and for all (criterion of dependence on actualization practices); 3) it participates in defining the situation (criterion of situation shaping). The appearance of the concept of infrastructure will not invalidate these three criteria, but will introduce others in order to qualify the phenomena studied in greater detail. In fact, these additional criteria will lead to some re-evaluation of previous theoretical language: we will discover instances where assemblages that had been referenced as "market devices" are better understood as "market infrastructures".

Infrastructure: a vehicle for clarification or confusion?

In several respects, work in the sociology of markets that has mobilized the concept of infrastructure shares key similarities with earlier device-focused work. Infrastructures are sociomaterial hybrids, heterogeneous assemblages of material tools, distributed and organized practices, and conceptual frames (Jensen & Morita, 2017). Thus, when Pardo-Guerra (2019) talks about the infrastructure of automated stock exchanges, he refers not only to the algorithmic matching engine technology at its heart, but to the cohesive wholes these form with particular organizational roles, rules about how these can be inhabited, arrangements for determining

commissions, and ideas about what makes markets competitive, efficient, and fair. A correlate of this sociomateriality is that infrastructures also are instantiated through active practices. The infrastructures that underlie the creation and dissemination of market information, for instance, must be sustained through coordinated everyday activity, such as the ongoing "database work" that feeds electricity markets (Özden-Schilling, 2016). Infrastructures do not simply exist, but "emerge" or "occur" through the ongoing relations and practices of relevant actors (Star & Ruhleder, 1996). Finally, infrastructures actively shape the market, defining what it is and what it is not. Individuals and their capacities are formatted through their relation with the infrastructure (Pardo-Guerra, 2019) - as Star (1999: 380) notes, "we see and name things differently under different infrastructural regimes".

In sum, infrastructures, like devices, respect the three criteria - sociomateriality, dependence on actualization processes, and situation shaping - held to by ANT-inspired, device-focused work. So, is infrastructure simply a "duplicate concept" that does not offer clarification but rather adds to the confusion? Our answer is a firm "no". In the following section, we systematize trends present in this field of research to offer a two-dimensional conceptual distinction between the device and infrastructure. This distinction then allows us to, first, refine Callon's overly broad notion of framing and second, to explore the static and dynamic relations present when infrastructures and devices meet.

Elements for a conceptual clarification

Device, infrastructure: a distinction in two dimensions

With a few exceptions (Kjellberg et al., 2019; Pflueger et al., 2019), scholars have not explicitly contrasted market infrastructures and market devices. They have, however, discussed the distinctive features of infrastructures more generally (e..g, the lists of their features in Bernards & Campbell-Verduyn, 2019; Kjellberg et al., 2019; Star, 1999). In the following section, we summarize and present these features along two dimensions, placing infrastructures at one end of each dimension and devices at the other. Our proposed distinction unavoidably conflicts with some existing uses of the term "device" - i.e., some arrangements that have been called devices in previous work we would argue be re-labelled as infrastructures. This revision, while not the goal of our work, is one facet of our claim that Callon's version of device / framing is too loose, papering over important intra-market dynamics.

The first way that scholars have distinguished market infrastructures is by noting what we call their "inescapability". Research has focused on networks that are indispensable to the functioning of the markets concerned. Infrastructures carry out "basic but crucial enabling functions" (Bernards & Campbell-Verduyn, 2019: 776). The order-matching software - and all the actants it carries with it - that Pardo-Guerra (2019) analyzed comprises the transactional ground that market participants experience. The same is true of the grades studied by Pinzur (2016): these indicators that establish - with the support of a complex of humans and non-humans - the quality of the commodities traded on the futures market *define* the products traded. Traders cannot escape engagement with either system without leaving the market entirely. This first dimension does not imply the independence of the infrastructure from human practices (which would violate the criterion of dependence pinpointed above): without the support of market participants, the infrastructure dies out. But this support is compelled from the moment of entry into the market framework. Of course, as we shall see in the next section, actors remain capable of challenging and destabilizing some infrastructural components, but this can only be done by stopping the market - that is, either by leaving it or by threatening its current functioning.

This feature of infrastructure contrasts with devices that more closely resemble "toolkits", which, when mobilized, guide actors towards a particular course of action. The use of such devices is less imperative, more optional. It is even often distinctive: recourse to a more sophisticated theoretical model should enable a bank to beat its competitors, that is, to guide its traders towards practices that are not generalized (Stark, 2009). This leads to a characteristic of devices, a correlate of their "escapability": they operate in a competitive situation (Erturk et al., 2013). Unlike infrastructure, which by definition enjoys a monopoly in any given market, a device must deal with rival devices that claim to perform the same function. This plurality means that, except in rare cases, the abandonment of a valuation model does not threaten the existence of the market concerned, since traders can rebound on an existing alternative. This same plurality limits the naturalization of devices: confronted with one example among others, actors are more inclined to engage with them reflexively (Leins, 2018). They mobilize, often strategically, a device to reduce uncertainty and support their decision. They are generally aware of its presence and handiness and can thus avoid it, if they choose. Conversely, the structuring power of infrastructure is less suspected and more profound: its lack of presence, often described as "invisibility" is an important part of what makes it impossible to avoid.

This first dimension thus makes it possible to distinguish between certain ready-to-hand equipment and the underground network that supports it. The asset valuation models mobilized by real estate agents are devices, but rely on an infrastructural system of data production and collection (Jalas & Rinkinen, 2022). Similarly, traders arrange the content of their work screens in their own way (device), while generally ignoring the involvement of the order-matching algorithms and clearing software that translate their clicks into capital flows (infrastructure) (Knorr Cetina & Bruegger, 2002). A manager can express his talent by rethinking the spatial configuration of a trading room's desks (Beunza & Stark, 2004), but this freedom relies on the cables and servers that have reconfigured the spatial interconnections between financial centers (Eichengreen et al., 2016). The device is at the disposal of the market participant. The infrastructure is imposed on him, often behind his back.

The second dimension along which infrastructures have been distinguished is the extension of the network. The ANT-STS perspective, which has inspired numerous works mobilizing the concepts of device and infrastructure, aims to go beyond the macro/micro divide through its "flat ontology" (Latour, 2005): only networks count from now on, brought back to a "plane of immanence". However, it is still possible to distinguish between networks according to their extension: some involve few actors and therefore have a limited hold on the course of action, while others extend in space and time thanks to multiple participations. Infrastructure belongs to the latter category. Kjellberg et al. (2019) precisely define market infrastructures as ecologies of interacting market devices. They trace the digitalization of market infrastructure of grocery stores, showing how individual devices - beginning with barcodes, scanners, and UPC standards - became linked up with a broader set of devices and practices, including redesigned checkout counters, shopping carts, label printers, UPC-compatible scales, scannable coupons, etc. In this way, multiple devices link up into an attuned infrastructure that several distinct actors rely upon to feed and support their own calculative efforts. The device, on the other hand, is more local. To take the ideal-typical case of the valuation model, it is - in most cases - doubly idiosyncratic: specific to a type of product (e.g., option, future, equity) and to an organization (Svetlova, 2012). This is undoubtedly even truer with respect to the spatial organization of the trading rooms analyzed by Beunza and Stark (2004). The perimeter of the actants involved remains irreducible to a paperboard or a mathematical formula *in abstracto*, but is more restricted than in the case of infrastructure.

Interestingly, the two dimensions - extension and inescapability - are linked. An often-studied infrastructure is telling in this regard: SWIFT, the interbank communication network,

increases its inescapability as more banking institutions join (Scott & Zachariadis, 2012; Dörry et al., 2018). However, the two dimensions remain irreducible and allow hybrid cases to emerge. Some networks are very large, but remain contested and therefore optional. This is the case of traditional stock exchanges, which have considerable influence (order matching, publication of official quotes, indices production, etc.), but are challenged by new trading platforms (see below for a development of this illustration). It may also be the SWIFT's fate if a competing network, such as the one currently being developed by China (Nölke, 2022), manages to make it dispensable. Conversely, other networks enjoy a niche monopoly and undisputedly rule over a limited perimeter, e.g., the Botswana Stock Exchange, which is the only one to establish market data on the 38 securities listed on it.

This summation of trends in the literature identifies dimensions of difference that we propose to associate to market infrastructures on one hand and devices on the other. In the remainder of the article we justify this distinction through tracing its resonances with other theoretical concepts (particularly framing) and its empirical usefulness in highlighting and analyzing important, intra-market dynamics present in how infrastructures and devices rely on each other in everyday use and how they evolve over time.

Framing: radical and instrumental

In the sections above, we have argued that Callon's characterization of devices - summarized by the three criteria of socio-materiality, dependence, and situation shaping - has proved to be excessively permissive when we wish to integrate the concept of infrastructure. We have therefore added two criteria for identifying devices: optionality and network limitation. What effect does this further specification of devices have on the related concept of framing? Intimately associated with the concept of device, it cannot remain indifferent to these new criteria. In fact, like its conceptual binomial, we argue that Callon's notion of framing appears too loosely defined: the proposed distinction between device and infrastructure allows us to bring to light two meanings of framing - radical and instrumental - both of which are already present in sociological literature engaged more directly with Goffman's original conceptualization of the frame.

Radical framing, in accordance with the Goffmanian conception, designates the operation that makes it possible to define the situation; that is - to use Goffman's terms - to answer the question "what is going on here". It is radical because it concerns the order of

interaction (involving humans and non-humans), drawing a boundary between what is part of the situation and what is not. As the pragmatist sociologists Cefaï and Gardella (2012) have noted, this framing largely eludes the individuals who are confronted with it when they engage in the interaction. Goffman illustrates this point with an example at the heart of this paper: "The individuals I know don't invent the world of chess when they sit down to play, or the stock market when they buy some shares, or the pedestrian traffic system when they maneuver through the streets. Whatever the idiosyncrasies of their own motives and interpretations, they must gear their participation into what is available by way of standard doings and standard reasons for doing these doings" (Goffman, 1981: 63). By imposing itself on individuals, this radical framing impacts individuals as soon as they "step on stage".

If they do not invent the order of interaction, individuals must nevertheless be sufficiently equipped to know how to behave in it and thus ensure its reproduction. This is the purpose of instrumental framing: by shaping information, it enables the individual to find her way around, to rank the signals coming to her and to deduce a relevant action. Further from the conception proposed by Goffman, this understanding of the concept is the one that has been most successful in sociology, particularly in fields such as media studies and organization studies (Vliegenthart & van Zoonen, 2011; Cornelissen & Werner, 2014). It is characterized as instrumental because it delivers tools to individuals, but also because it often results from a strategic approach, i.e., the instrumental adoption of a frame. Rather than establishing what constitutes the interaction, this second meaning of framing refers to a "coloring" of the information intended to guide the individual towards a particular reading of reality, with or without her consent. Instrumental framing serves to "select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation and/or treatment recommendation for the item described" (Entman, 1993: 52, quoted *in* Devereux, 2007).

In light of the distinction made in the previous section, we can see how these forms of framing align with infrastructures and devices. Infrastructures, by virtue of their extension and inescapability, their insistence on shaping the groundwork of the market, engage in radical framing. Particularly noteworthy in this regard are the infrastructures of new markets, which can have widespread and long-term impacts. Çalışkan (2020) has shown that market infrastructures enframe distinct market positions and "structure possible fields of action in identifiable ways", while Pinzur (2021b) has claimed that they additionally "endogenously shape practitioners' economic perspectives". Devices, by virtue of their optionality and strategic

deployment, are involved in instrumental framing. Valuation models, for instance, propose a hierarchy of information - the significance of market parameters being informed by the theoretical coefficients attached to them - which impact the interpretation of market players.

Recognizing the meaningful differences between devices and infrastructures thereby draws attention to Callon's overly broad perspective on framing. Callon makes no distinction between radical and instrumental framing, instead hugging them together. His concern is "the part played by market devices in configuring economic calculative capacities and in qualifying market objects" (Muniesa et al., 2007: 5) - the operation of qualification of reality and that of equipping individuals are thus combined as a function of the devices. Callon's lack of discrimination between these two meanings of framing can likewise be seen in the related notion of "overflowing": framing is the operation of processing the minute-to-minute flow while in the market, which implies both a channeling of individuals' attention (to avoid "instrumental overflowing") and a selection of the elements that constitute the market reality (to avoid "radical overflowing"). Our perspective, by contrasts suggests that these distinct forms of framing emerge in connection with unavoidable, expansive infrastructures on the one hand and optional, particular devices on the other. Radical framing, produced via infrastructures, constitutes the market as a calculable space; instrumental framing, accomplished through the use of devices equips calculative, profit-seeking actors.

By bringing together Callon's conceptual binomial of device/frame, trends in recent work on infrastructure, and modern applications of Goffman's original notion of framing, we have established a series of distinctions that accompany the split between infrastructures and devices (summarized in Table 1, below). In the remainder of the article, we demonstrate the heuristic interest of this conceptual clarification, tracing both the static and dynamic relations between these market components.

Device	**Infrastructure**
Heterogeneous assemblage (criterion of socio-materiality)	
In the making (criterion of dependence on actualization practices)	
Defining the situation (criterion of situation shaping)	
Optional	Inescapable
Restricted	Extended
Instrumental framing	Radical framing

Table 1 - Summary of the distinction between device and infrastructure

What relationships between devices and infrastructures?

Thus far, we have claimed that infrastructures and devices are interdependent, but also that they differ critically in their optionality, extension, and framing. In the following sections, we explore the significance of this complex relationship. We first examine the static dynamics between infrastructures and devices in their everyday operation, exploring their relation at a single point in time. We then take a dynamic view, investigating how the relations between market infrastructures and devices can change over time.

Static: boundaries and balance

From a static perspective focused on the everyday, interdependent operation of infrastructures and devices, we can highlight two important asymmetries in their influence on markets as wholes and on individual market actors. These are ever-present features of markets and shape their everyday dynamics.

First, by their radical framing, infrastructures have a silent influence on everything that happens in their market(s), including the emergence and stabilization of devices. In other words, by collectively constituting an order of the situation, they institute "limiting causes" (Pinzur, 2016; Wright, Levine & Sober, 1992) that non-deterministically constrain the zones of activity offered to the devices. Most of the time, market participants will therefore mobilize devices that are compatible with the infrastructure supporting them. A computer programmer who wants to implement new, more efficient software for the automatic processing of interbank communications will have a better chance of succeeding if her proposal is compatible with SWIFT, the messaging system that currently holds a monopoly on the interbank market. Of course, not all devices proceed from human intention - some appear as unintended consequences. But no matter the origins, a condition of felicity of a device is very often its compatibility with the infrastructure of the market in which it operates. As this occurs the infrastructure, in turn, "gains ground", expanding with the arrival of new devices that are dependent on it (Kjellberg et al., 2019).

The relation in the opposite direction is different. Devices - rather than acting as limiting causes establishing a zone of possibilities - may act as "forcing causes" that, through persistent bricolage in pursuit of novel instrumental frames and renewed profits, push infrastructures into an accommodating form. A novel device, initially handicapped by its incompatibility with market infrastructure, manages to "reverse the stigma" and motivate an amendment to an

infrastructural component, or even to the entire market. Consider, for example, the first algorithms used by small high-frequency trading companies (MacKenzie, 2021). Initially, their emergence was complicated by a component of the NYSE and NASDAQ infrastructure: these stock markets published only the best bid and offer prices, while masking the rest of the order book, preventing the algorithms from exploiting these signals. In a second phase, however, faced with the emergence of new trading platforms more adapted to high-frequency trading (that is, faced with the loss of a monopoly and therefore the destabilization of the infrastructure), the traditional exchanges amended their radical framing by publishing their order book. The device, while it is most often dependent on the infrastructure that it helps to reinforce, can also be a vector of transformation.

The second, and (possibly) more profound asymmetry is in how devices and infrastructures rely on one another in mundane practical terms (i.e., how they join together in market *agencements*). Infrastructures, because of their inescapability and extension throughout a vast network, become enmeshed in and critical to vast numbers of market processes. On the positive side, this means that the utility and value of any given device is correlated with to the infrastructure it is associated with (Kjellberg et al., 2019). On the negative side, a breakdown of infrastructure thus means an immediate and profound misalignment across myriad market actors. Central counterparty clearing offers a good example. Clearing houses disentangle and settle parties' post-trade obligations, calculating credits and debits accrued during a given period, netting deals between parties, managing collateral, and transferring securities (Genito, 2019; Millo et al., 2005). By shifting these processes out of the cognitive and physical presence of market actors, they make it possible for financial actors to use a range of calculative devices that presume an essentially non-existent default risk. If the clearing house ever collapsed, all of the banks' sophisticated calculations would be obsolete (Thiemann, 2022). The devices of financial markets run second-order calculation on the taken-for-granted base of the clearing house's first-order techniques for managing default risk. Devices rely on infrastructures, but not the other way around.

This asymmetry in terms of extension and optionality offers a mechanism by which infrastructural actors, through their ability to upset alignments of many framings at once, can exert outsized "infrastructural power" (Pinzur, 2021a) and influence. Having discretion to engage in or withdraw from the labor that instantiates an infrastructure offers leverage over the myriad local, device-mediated calculations and action which that infrastructure enables. This power is wielded by workers doing the critical, but mundane tasks of making an infrastructure

run (Mitchell, 2013), organizations positioned in critical nodes of an infrastructural network (Pinzur, 2021a) or monopolizing access to critical services (Petry, 2021), and - exceptionally - by protesters clogging the streets of Frankfurt's central business district, preventing bank employees from reaching their desks to undertake their everyday work (Folkers, 2017)[15].

And yet, despite these two asymmetrical relationships, devices and infrastructures generally connect harmoniously in mundane, everyday action. To grasp this, rather than considering how one shapes or constrains the other, we must consider how they cooperate. Possibly useful in this regard is the concept of "boundary objects" (Star & Griesemer, 1989). Boundary objects "both inhabit several intersecting social worlds *and* satisfy the informational requirements of each of them. [...] [They] are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. [...] They have different meanings in different social worlds but their structure is common enough to more than one world to make them recognizable, a means of translation" (Star & Griesemer, 1989: 393). Boundary objects can be artifacts (e.g., repositories, indices), concepts (e.g. ideal types, classes), or methods (e.g., standardized forms) embedded in arrangements of work processes. Whatever their form, they enable different groups, working in different environments, with different sets of concerns, to nonetheless collaborate in the production of a complex, intertwined system. Boundary objects are able to move between being ill-structured at the general level and well-structured in particular organizational practices as tools for maintaining "interpretive flexibility" in their collaborative work.

We can, in fact, see in prior research instances of boundary objects between underlying market infrastructures and ready-to-hand market devices working in two directions. Consider the boundary between the assemblage of devices that forms around individuals at a trading desk - including screens, analytical reports, databases and ongoing conversations - and the underlying infrastructures - composed in part by networks, servers, exchange protocols and algorithms - that produce the figures on the screens, enable their dissemination, and make them actionable (MacKenzie, 2021; Pardo-Guerra, 2019). Or similarly, take market devices like statistics, prices, or rankings - e.g., LIBOR values, the Dow Jones Industrial Average, the price of Brent crude oil - in relation to the vast "infostructures" (Campbell-Verduyn et al., 2019) and widespread "database work" (Özden-Schilling 2016) required to produce these, which remain

[15] This usage shares certain features with prior uses of the term "infrastructural power" in political economy (Mann, 1984; Braun, 2020) - namely the influence that comes from occupying a critical operative position upon which higher order actions rely - while adding a focus on the materiality of infrastructures that is characteristic of SSF.

invisible when these outputs are incorporated into discrete market devices that guide cognition and behavior (Duterme, 2023a). In both cases, various indices, types, classes, and standards enable connection and cooperation across vastly different settings with disparate goals. Boundary objects also matter in the opposite direction: not infostructures feeding into devices, but infrastructures that take up and execute the actions of devices at a broader level. For instance, investment banks and clearinghouses decompose a complex derivative transaction differently to suit their own purposes - the derivative serves as a boundary object enabling distinct practices, while maintaining a single identity in both environments (Genito, 2019; Millo et al., 2005). Financial risk management techniques also serve as boundary objects, being differentially incorporated into the workings of trading firms, clearinghouses, and regulatory bodies, operating as "a 'plastic' medium ... able to accommodate different practices while allowing awareness about the common elements of the practices to evolve and strengthen the connections among the actors" (Millo & MacKenzie, 2009: 651).

These perspectives highlight the delicate balancing act that occurs as a matter of course at the boundary between devices and infrastructures. For market actors, these must work together to enable normal trading and meaning-making. Flexible boundary objects do key work in facilitating this coordination. This cooperation occurs within a matrix of asymmetrical relations stemming from the extension and optionality of infrastructures and devices. On one hand, infrastructures acting as limiting causes tend to hold devices in line with a general framework. On the other hand, actors wielding infrastructural power can leverage their position to make massive changes to the market assemblage. And, of course, it is always possible for new devices - in favorable circumstances - to force larger, infrastructural changes. These constant tensions admit of no easy answers. Rather they demand a level of scholarly attention that infrastructures - invisibly sunk into the background of the market - are only beginning to receive.

Dynamic: (de-)infrastructuralization in two dimensions

So far, we have reasoned in a static framework, but the relationship between device and infrastructure is also a matter of time. If we take up the two dimensions of our distinction, a device becomes an infrastructure if it expands and becomes inescapable - and vice versa. These two evolutions represent actually the two paths - temporal and spatial - of the institutionalization process: the extension of the network feeds *generalization*, while the increase of its necessity represents *stabilization*. As for the reverse path, it can take the form of a restriction of the

network (peripheralization of the governed market) or, more frequently, of the appearance of competition. Given the self-reinforcing dynamics already mentioned - stable and widespread networks are more likely to attract new market participants, while precarious and marginal networks are open to rival innovations - it would be an exaggeration to speak of a continuum: devices and infrastructures do constitute empirically identifiable objects. That said, since any network remains dependent on actualization practices and is condemned to perpetually work on clarifying its perimeter, positions are never pure or fixed. It is therefore important to have the means to identify hybridities and their movements (see Figure 1, below)[16].

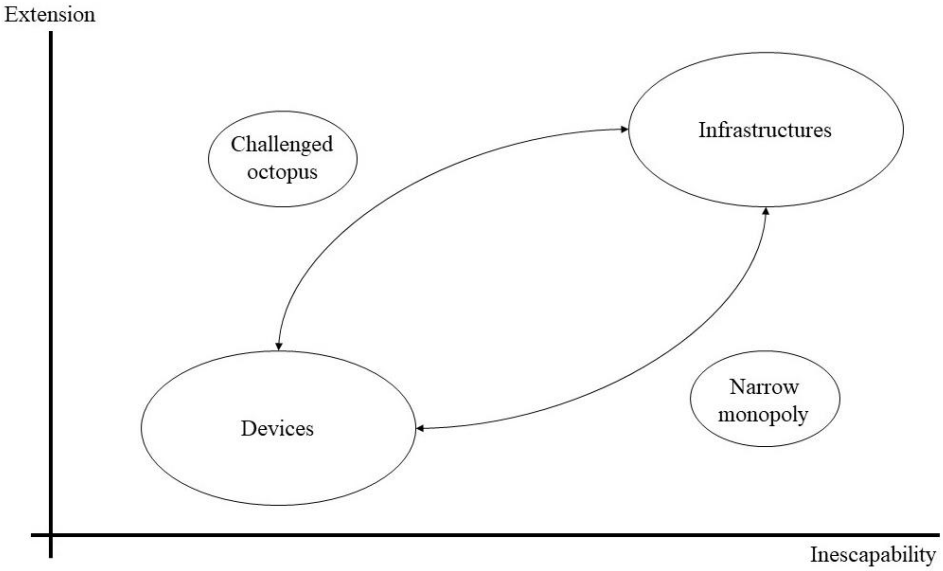

Figure 1 - Device-infrastructure dynamics

Conclusion

This article has sought to clarify the conceptual boundaries of two widely used and closely related terms in the sociology of markets: infrastructures and devices. Our argument has proceeded in three steps.

We first summarized trends in the literature on infrastructures that note their uniqueness along two dimensions: their sociomaterial networks are less optional and more extensive than many devices. We then draw out the implicit contrast with local, optional devices, linking this to a related distinction between radical and instrumental framing. Together, these established a core for our claim that Callon's original usage of the device / framing conceptual binomial was too loose, drawing together elements with distinct impacts and processes with divergent aims. Finally, we used these distinctions to draw attention to several understudied dynamics at work

[16] The empirical section that follows in the submitted version of this paper is integrated into a later part of this work (cf. p. 157).

between infrastructures and devices. These include the asymmetries of infrastructural power and limiting versus forcing causes, which are present in the relations of interdependences between infrastructures and devices. They also include the processes of (de-)infrastructuralization that take place over time and the hybrid forms these produce.

What is the value of this argument? First, based on the distinction drawn between infrastructure and device, it is possible to appreciate in a new light the works that structure this field of research: prior work that purports to study market "devices" might now better be understood as about market "infrastructures". We can see that infrastructure is best thought of not as a subset of devices, but rather as a distinct variety of hybrid network defined by extension and inescapability, as well as the performance of radical framing. But this is not the main point. Above all, this conceptual distinction sheds light on the relationships between devices and infrastructures, which are at the heart of many economic phenomena. Market *agencements* are crisscrossed by plural dynamics, which the concepts of infrastructure and devices help us to unravel. Consequently, rather than a theoretical discussion, this article calls for the mobilization of this conceptual distinction and the notions derived from it - radical framing, boundary objects, infrastructural power, limiting causes - in new fields.

b. The economics of convention

The Goffmanian-Callonian sociology of markets provides answers to most of the objections put forward in the previous section: actors' anticipations are not postulated or subordinated to a fundamental cause, but described and explained on the basis of an analysis of the socio-technical assemblage that makes up contemporary markets. It is therefore a fruitful theoretical framework for studying the decisions of individuals who buy and sell financial securities. Nevertheless, our paper with Pinzur raises a flaw, apparently local, but which concerns the entire Callonian theoretical framework: its insufficient structuring. Several central concepts - device, framing, objects... - are too vaguely defined and end up covering a reality that is too vast, too ill-defined. Hence the need to restrict and clarify the scope of the concepts of "device" and "frame". Our proposed clarification does not, however, exhaust the problem. As a counterpoint to Bourdieusian theory, judged to be excessively restrictive, Callonian sociology of markets is built on an excessively permissive conceptual foundation, which makes it both permeable to dubious mobilizations and incomplete.

These dubious mobilizations were quickly pinned down and mocked by critical authors, often from a Marxist background (Fine, 2003, 2005; Mirowski & Nik-Khah, 2007). They generally exploit ANT's "flat ontology" by accentuating the significance of insignificant components of the financial environment: since the existence of financial capitalism is no longer seen as a force that overhangs individuals, but as a permanent construction of the latter and their non-human supports, it is found in - or even boils down to - certain very local devices encountered by social scientists. It is then all too easy for Marxists to ridicule the naivety of these authors who base financial capitalism on the "ingenious", "complex", "hybrid" spatial configuration of a New York trading room. We experienced a similar dissatisfaction when reading the book by a dedicated author of the Social Studies of Finance, *Taking the Floor: Models, Morals, and Management in a Wall Street Trading Room* (Beunza, 2019). In a critical review, we joined the Marxist critique on this point and regretted that the author did not bother to hierarchize the scope of the devices explored[17] (Duterme, 2022c).

This over-openness of Callonian sociology prompted us to supplement it with a perspective that was both institutionalist (in order to differentiate between the more and less instituted mechanisms encountered) and non-structuralist (in order to analyze the decision-making process without having to reduce it to a determining cause). To this end, we found the

[17] The device/infrastructure distinction, as proposed by David Pinzur, is intended to clarify this hierarchization.

economics of convention (EC) program particularly well-suited. We have been using it since our master's thesis in sociology[18] and, more or less explicitly, in most of our work since then. Several of its theoretical principles (bounded rationality, reflexivity, critical capacity, etc.) and major authors (Favereau, Orléan, Thévenot, etc.) have not waited for this section to be invoked in this work. It is now time to present the main thrusts of this approach, with particular reference to the problems raised by the Callonian sociology of markets.

EC offers an alternative explanation of (market) coordination to neoclassical theory. The meeting of buyer and seller is no longer taken for granted. Its conditions of possibility are problematized: how do buyers and sellers meet, in time and space? How do they jointly identify a good to be exchanged? How do they agree on its value? Plunged into this (realistic) context of uncertainty, individuals will have to rely on conventions, i.e. on stabilized reference points to define the object exchanged and its value (Eymard-Duvernay, 2006). The proximity of this approach to Callonian sociology is already apparent: in particular, the two theories share a "material" conception of cognition (which is not confined to the human brain) and a "situationalism" (attention to the complex enabling actors to act in situation) (Diaz-Bone, 2011). But, more explicitly than Callonian sociology, the EC position, described as a "complex pragmatist institutionalism" (Diaz-Bone & de Larquier, 2024), differentiates the components of a situation according to their "stability": some meanings are more fragile than others, and not all are conventions enabling coordination.

In short, the EC opens the way to a fruitful answer to our research question: financial market participants decide which securities to buy and sell in a situation of uncertainty, which they try to manage using a multitude of socio-material cues, some of which - conventions - have acquired a stabilized meaning. We are now very close to the definitive formulation of our research project. We propose to base this problematization on the work of authors from the EC who have addressed our research theme. In particular, the work of two founders of this theoretical school will help us refine our theoretical position. On the one hand, André Orléan studied convention-based coordination in financial markets. On the other, Alain Desrosières has traced the stabilization of the objects that populate contemporary statistics. The former is a representative of the "cognitive" approach to the EC, while the latter embodies the "pragmatist" side (Salais, 2007; for variations on this distinction, see Favereau, 1986 and Gomez, 1994). Our

[18] Completed under the supervision of Jean De Munck, this dissertation is entitled *Sociologie du BEL 20. Genèse, mise en forme et mobilisation de l'indice de la Bourse de Bruxelles* (Duterme, 2020).

ambition with this work is to marry these two tendencies, in order to establish a pragmatist perspective on financial cognition.

André Orléan has proposed an "internal critique" of the neoclassical model, building an alternative model in which agents make decisions based on what they anticipate others will do (Orléan, 1986, 1990, 1992). In such a mimetic model driven by speculative logic - the sole objective is to anticipate price trends in order to resell at a higher price -, "bubbles" are not the unfortunate consequence of "irrational exuberance", as is the case with behavioral finance economists (Shiller, 2000), but the implacable result of this self-referential rationality (Orléan, 2004; Bourghelle, 2023). Equilibrium, always unstable, is only reached when a *salience* manages to polarize collective attention (Orléan, 1999). This salience is the convention in Orléan's sense: a rule of interpretation on which there is consensus. The crisis can therefore be understood as a destabilization of the convention: a loss of confidence exposes the convention's arbitrariness, that is its lack of objective foundation, leading to a wave of uncertainty that generally ends in mass selling (Orléan, 2009). The emergence and stabilization of a new convention will restore stability to the financial markets, but only momentarily, as the fundamentally unstable self-referential logic remains.

As noted by David Bourghelle (2023), this innovative theory leads to a reconceptualization of the notion of financial value. The break with the objectivism of neoclassical theory is total: there is no basis for an *essence* of security value (there is no authentic expected return that we would have to identify), and value is based solely on the intersubjective convergence of opinions in the financial community. The result is a fruitful opening towards a sociological research program. Indeed, Orléan's model is both radical and seductive, since it suggests that a sociology of finance capable of identifying the beliefs of market players will reveal what guides capital flows. In an article on the question of the unity of the social sciences, Orléan (2005) thus argues for an ambitious path for economic sociology: rather than being confined to the margins of economic science, as the "new economic sociology" seems to be, it should shed light on the social foundations of the objects that populate the economic "milieu".

Several researchers quickly followed this proposal with enthusiasm, demonstrating its fruitfulness for analyzing the stock market (Tadjeddine, 2000) and interest rate formation (Brière, 2005). In a recent chapter of the *Handbook of Economics and Sociology of Conventions*, Yamina Tadjeddine (2023) reports on the variety of work to which Orléan's theory has given rise. These cover the entire financial sector, from the valuation of securities to banking

credits and the valuation of firms. The uses to which this conceptual framework has been put demonstrate its value. At the same time, as with any conceptual framework, especially one as ambitious as Orléan's, the model has been the subject of several criticisms. We propose here to discuss the main ones, in order to consider ways of moving beyond them and to solidify our theoretical position.

Firstly, a logical criticism is frequently raised: the financial market cannot be guided by a consensual rule, because an exchange implies that buyer and seller have opposite opinions on the value of the good (Godechot, 2008). Pascal Combemale's response to this problem is based on Keynes's *General Theory*:

> This contradiction can be resolved as follows: the convergence of certain expectations gives rise to convention-based judgments that serve as anchors for the formation of other, divergent expectations... The functioning of the economy is underpinned by numerous conventions whose degree of precariousness varies widely. [...] The system of conventions can be thought of as a network of dykes: if the weakest break down, the destructive effects can be contained by the strongest dykes, and it is possible to rebuild them; on the other hand, if the last ramparts are swept away, there is nothing to protect the economy from radical uncertainty and the mimetic processes that sweep it along in a downward whirlwind (Combemale, 2010: 85).

Rather than a single salience constituting the key to understanding financial markets, we need to identify a network of hierarchical conventions. Fair enough. But a second criticism remains to be resolved. The absoluteness of speculative logic can be challenged: other factors are involved in the decision-making process of market participants. In other words, Orléan's model has the flaw of retaining the neoclassical assumption of homogeneity of expectations, but reformulating it in terms of mimetic rationality. However, this hypothesis is notoriously unrealistic: the position of decision-makers (hedge fund traders or pension fund managers) and the nature of the product traded (stock or bond) are factors in the heterogeneity of expectations. Not all market participants think only in terms of maximizing expected capital gains (without budget constraints), and therefore not all try to imitate each other. We have put forward this criticism at recent conferences of the *Association française d'économie politique* (AFEP)[19], as well as in a recent review of EC works (Duterme, 2024). In our view, this criticism does not have a satisfactory answer, but that doesn't mean it's fatal. It "just" means lowering the ambitions of the theoretical model: it is not valid for all actors and all market segments. Other

[19] At the 11e congress in Amiens, we presented the paper "Les nouvelles saillances vertes des salles de marché"; at the 12e congress in Paris, we presented the paper "Standards as reforms. The role of conventions in sustainable finance".

explanatory factors need to be taken into account. For example, to account for the subprime crisis of 2007, Orléan (2009) should have invoked more factors outside his model.

Finally, a third criticism of Orléan's theoretical model comes from the Callonian sociology of markets. It concerns the situational anchoring, deemed insufficient. The "valuation supports" that enable market participants to anticipate the expectations of their peers are not (sufficiently) present. This is what Fabian Muniesa, one of the leading sociologists of the Callonian approach, regrets:

> Theories of mimetic alignment in financial markets, which emphasize the mirror effects of this confluence of gazes, often overlook the "interobjective" (and not purely "intersubjective") dimension of the situation, as if they were forgetting to take into account the very presence of the "mirror" in all its materiality (Muniesa, 2011a: 189).

We fully agree with Muniesa's position, which is in line with our pragmatist-inspired criticisms outlined in the previous section. To account for the emergence of a financial convention, it is essential to include in the analysis the material mediations that support any collective reference. The emergence of a "salience" capable of polarizing the attention of financial market participants depends on a semiotic configuration that makes certain components of the environment visible, while relegating others to invisibility. The perceptual dimension must also be coupled with a normative dimension, giving a visible sign the authority it needs to establish a collective interpretation. The "pragmatist" side of EC has the methodological and theoretical resources to shed light on these processes of convention emergence and stabilization. The work of one of its founders, Alain Desrosières, bears striking witness to this.

At first glance, the ambition of Desrosières' sociology of quantification is quite different from Orléan's financial modeling. It is to trace the controversies - always both cognitive and political - that have marked the history of modern statistical concepts (from mean to variance). This undertaking, summarized in *La politique des grands nombres* (Desrosières, 1993; English translation: Desrosières, 2002), reveals the debates and doubts that the stabilization of quantification conventions has managed to bury. It also brings to light the stabilization trajectories of objects that today populate numerous models and reports, particularly in the financial field. Nothing confines the fruitfulness of this constructivist approach to the field of statistical history: any concept, any category can be subjected to this genealogical inquiry,

which makes its object vulnerable[20]. As Thévenot sums up, the challenge is to "extend the investigation beyond cognitive operations in the strict sense, by taking an interest in the nature of the information and the form of the objects on which reasoning is based" (Thévenot, 1998: 115). Our most established patterns of thought, such as the division of trades into socio-professional categories (Desrosières & Thévenot, 1988), thus appear less natural (they don't "flow naturally"), but not arbitrary: they could certainly have been different, but could not have been anything. When they have been submitted to democratic debate, they have - at least partially - earned their stabilization, by withstanding the tests imposed on them by their critics (Lemieux, 2012).

On closer examination, Orléan's "cognitive" and Desrosières' "constructivist" approaches are less alien than they appear. The latter can usefully complement the former: it opens the way to an investigation into the emergence and institutionalization of the concepts and categories that now underpin the judgment of financial market professionals. The emergence of a consensus is no longer spontaneous, but the result of an institutionalization effort, an "investment in form" with uncertain returns (Thévenot, 1986). To become a convention among financial market professionals, an interpretive scheme must undergo a formatting process that ensures it is sufficiently widespread (it must be able to be applied to different situations) and sufficiently stable (it must not vary too much over time). Its insertion into a network of already stabilized objects feeds its institutionalization. In other words, in the terminology of Callonian sociology of markets, a device that is integrated into an infrastructure is more likely to succeed.

At the crossroads of the work of Orléan and Desrosières, our research project aims to shed light on the decision-making of financial market participants by studying shared cognitive cues. From Orléan, we inherit - in addition to the field of research - a conception of decision-making: in a context of high uncertainty and incomplete information, individuals buy and sell securities based on focal points that inform them about the future actions of their peers (because the latter are doing the same). From Desrosières, we inherit a problematization of these "focal points": not spontaneously emerging "saliences", but devices that have managed to impose themselves after a successful investment in form. The point of such an approach is to identify

[20] The debate-opening effect of this sociohistorical approach is discussed in the conclusion of *La politique des grands nombres*, and brilliantly summed up as follows: "reflection [...] on the relations between statistics and public space would like to contribute to the explicitation and analysis of these spaces of durably solidified forms, which must be both indisputable for life to follow its course, and nevertheless debatable so that life can change course" (Desrosières, 1993: 413).

the conditions of felicity and the contemporary consequences of the "collective cognitive devices" (Favereau, 1989) that influence the decision-making of financial market participants. In other words, global capital flows can be illuminated through an inquiry of individual decision-making. This research program can therefore be seen as both microsociological and macroeconomic.

The authors of the economics of convention, on whom this work is based, have thus helped to strengthen our problematization. They have also inspired certain methodological orientations: monitoring controversies, detecting signs of stabilization, identifying shared reasoning. Their insights into decision-making, however, display a "situationalism" that deserves to be enriched. This is, of course, true of the Orléan model, whose lack of pragmatist inspiration we have highlighted. But it is also the case with the constructivist approach, which Thévenot calls on to "sensitize", notably by integrating the bodily issue more fully into the analysis of cognition:

> What we usually refer to as action, even if solitary, is coordination. The change in vocabulary marks a shift in perspective, from the actor to the dynamic modality of adjustment with an environment. To relativize the relevance of the vocabulary of action and the actor, we need an analytical framework that departs from it and embraces [...] lower-level bodily commitments, designated as gestures, movements, emotions, which also give rise to adjustment and coordination (Thévenot, 1998: 120).

In order to take a step in the "sensitive" direction proposed by Thévenot, we propose to enrich our research program, inspired by Goffmanian-Callonian sociology of markets and the economics of convention, with contributions from a final theoretical approach: Peircian semiotics. The proposed enrichment is deployed in two stages. First, we outline certain aspects of Charles Sanders Peirce's semiotics that can refine our understanding of the inscription of conventions in situations. Then, in a forthcoming book chapter co-authored with Jean De Munck, we develop some of the openings made possible by this semiotic approach, particularly with regard to the type of signs that can be studied.

c. Peircian semiotics

The semiotic concepts proposed by the American philosopher Charles Sanders Peirce shed light on the processes by which a sign acquires meaning. In the context of this work, they are therefore mobilized to study in greater detail how market participants rely on signs to interpret the situation and make buying or selling decisions. Like the Goffmanian-Callonian sociology of markets and the economics of convention, Peircian semiotics is pragmatist: the relationship between a sign and an object is not fixed *a priori*, but is determined in the situation

of signification. Consequently, the enigma of meaning cannot be solved without inquiry, without "going to see" how individuals go about interpreting what happens to them. This empirical inclination has fostered the fruitful coupling between Peircian semiotics and sociology in which this work strives to be inscribed (Berger et al., 2017).

More than the other two theoretical perspectives presented, Peircian semiotics is also "sensitive": it is attentive to the plurality of dimensions assumed by signs, irreducible to the symbolic code of language (Berger, 2017). A sign can refer to its object by resembling it (through an iconic relation, e.g. a drawing) or by bearing its mark (through an indexical relation, e.g. a weather vane), that is in modes other than that of a general referencing such as language. This pluralization is particularly welcome for analyzing an environment as populated by graphs and colored indicators as it is by words.

Moreover, the Peircian conceptual framework's broadening of the range of analyzable signs makes it possible to account for confused situations. These situations, where no sign with the authority of convention can bring individuals into agreement, are characterized by a persistence of uncertainty: individuals doubt and adjust. Uncertainty is persistent, but not *radical*: the absence of conventions does not mean the absence of any sign enabling individuals to act, in spite of everything. Scenarios such as these, uncommon in certain routinized areas of social life, are the daily lot of financial market participants. Especially professional participants, that is individuals who cannot fail to make decisions. Like the judge observed by Bruno Latour (2004), the trader is compelled by the nature of his profession to "take a stand". But only in exceptional cases can he rely on signs that are sufficiently stable to ensure the success of his decision. In the overwhelming majority of cases, he maneuvers in a situation of uncertainty, relying on what he can, i.e. iconic and indexical signs. These passages "under the conventions" are just as frequent on the financial markets as in the social integration support studied by Breviglieri and Stavo-Debauge (2006). It is best to be conceptually equipped to account for this plurality.

It was this interest in the pluralization offered by Peirce's concepts that Jean De Munck and I emphasized at the last World Sociology Congress of the International Sociological Association (ISA)[21]. Our paper was then reworked into a short chapter for a forthcoming book in the monograph series of the ISA journal *Current Sociology*. The current version of this chapter, from which the argument on the following pages is drawn, has undergone a round of

[21] We presented the paper "The semiosis and the market" there last June.

reviewing. Similar to our treatment of the paper written with David Pinzur, only the theoretical part is reproduced in this section, the empirical illustration appearing later in this work. The general ambition of this brief second article is therefore to present the Peircian semiotic framework and insist on its analytical fruitfulness. More specifically, the aim is to demonstrate the interest of concepts such as “semiosis” for a particular audience: economic sociologists. To this end, we attempt to relate the contributions of Peircian semiotics to other schools in economic sociology, such as EC, which makes this chapter a useful extension of this section.

The semiosis and the market. Peirce's semiotics for economic sociology

At least since the work of Jean Baudrillard (1968), the social sciences have paid attention to the role of signs in the economic sphere[22]. Advertising techniques, strategies of distinction through luxury, and the role of the actor-consumer have thus given rise to fruitful investigations in economic sociology mobilizing semiotic tools (Goldman and Papson, 1996; Lash and Urry, 1993; Mortelmans, 2005). However, this work has focused almost exclusively on the consumption pole; the coordination process at the heart of market functioning has been much less explored. In contrast, contemporary sociology of markets has focused on "economization processes" by integrating the semiotic issue. In particular, the field of the economics of convention has focused on the conditions that must be met for sellers and buyers to agree on the value of a good, that is for the supply and demand curves to meet (Eymard-Duvernay, 2006). Its essential hypothesis is that market participants mobilize *conventions* that enable them to stabilize their interpretation of the value of the commodity. These conventions take different forms: indicators (quantification convention), definition of the product exchanged (qualification convention), criteria for a good commodity (quality convention), etc. As fruitful as it is, by focusing on conventions, this research perspective has neglected the role of other types of signs, less stabilized than the convention, in the process of market coordination.

The ambition of this paper is to demonstrate the interest of Charles Sanders Peirce's work to fill the mutual blind spots of these two approaches. Peirce's concepts, and in particular the concept of the contextualized evolution of a sign (*semiosis*), can enrich economic sociology by opening the way to a plural and circumstantial analysis of the role of signs in markets. Buyers and sellers rely not only on stabilized signs whose interpretation is "self-evident" - i.e. *conventions* - but also on more ambiguous signs that leave a great deal of room for indeterminacy. In the latter case, the concept of semiosis makes it possible to finely identify the techniques used by actors to buy or sell in situations of uncertainty. The fruitfulness of these Peircian categories has already led to original works highlighting the precariousness of the processes of signification and its dependence on the socio-material configuration of situations (for an overview of "Peircian sociology", see Berger et al., 2017). These issues are not ignored

[22] This article, co-authored with Jean De Munck, was submitted to *Current Sociology Monograph* on November 6, 2023.

by the contemporary sociology of markets, but could be better grasped by importing the concept of semiosis.

The rest of the paper is structured as follows. First, Peirce's conceptual architecture is exposed, in connection with the contributions and blind spots of the economics of convention. Then, the second part illustrates the interest of importing the concept of semiosis into the sociology of markets, based on a case study centered on the role of stock market indices in the functioning of contemporary financial markets[23]. By polarizing the attention of market participants, these indicators have acquired a semiotic power, that is a capacity to influence the interpretation of buyers and sellers, which has so far passed under the radar of economic sociologists.

Semiosis for a sociology of markets attentive to plurality

In recent years, the sociology of markets has intensely focused on "economization processes", that is on the operations that constitute the economic sphere by qualifying certain objects and equipping market participants (Çalışkan and Callon, 2010). These operations are usually studied through the devices that support them: for example, the emergence of an options market is analyzed through the prism of the success of the pricing model for these options (MacKenzie, 2006a). This leads to a particular focus on "successful", and even "completed", institutionalization attempts: the objects studied are generally those that have effectively entered the economic sphere thanks to stabilized mechanisms. The semiotic aspect of this epistemological posture is that only *instituted* signs are studied for their role in the functioning of markets. With rare exceptions (Muniesa, 2007; Pinzur, 2016; Lee, 2018), more fragile signs have been ignored. To discuss the merits and limitations of such an approach, this section draws on a field of research that is representative of it and has explicitly integrated the semiotic issue into its research program: the economics of convention (SEC).

Born in the 1980s, SEC aims to problematize the coordination of market participants. More precisely, its objective is to account for how these participants agree on the nature and value of the commodity (Eymard-Duvernay, 2006). Its hypothesis is that this problem of coordination is resolved, in practice, by conventions, i.e. rules of interpretation that are often implicit, relatively arbitrary and self-reinforcing (Batifoulier and de Larquier, 2001). In this framework, the process of electing a convention is therefore fundamentally intersubjective:

[23] These empirical illustrations have been decoupled from the rest of the article and appear in the chapter V.

each participant acts according to his or her anticipation of the actions and interpretations of the other participants who do the same. This is why the sociology of markets inspired by the SEC examines above all the salience, that is the signs that polarize the attention of market participants and thus influence their behavior (Orléan, 1999). These signs, often described as "performative" because of their impact on reality, constitute the institutional framework that enables market coordination. Without them, individuals would be unable to identify the qualities of the objects exchanged.

One of the main contributions of this approach is to overcome the "price monopoly". According to the neoclassical perspective on information, the only sign worth studying, both for the market participant and for the scientist, is the price - the latter integrating "all available information" in a situation of market efficiency (Fama, 1970). The SEC breaks with this "spontaneous" approach, not by contesting the semiotic role of price, but by introducing semiotic mediations that relativizes its monopoly. Signs other than the price are mobilized by market participants as a basis for their decision-making and therefore also deserve to be analyzed. However, this extension remains limited to signs that are sufficiently established to influence the entire community of market participants. Yet, as many empirical studies have shown (see the case study of stock market indices for an illustration), this type of sign is not sufficient to solve the problem of market coordination. Other sources of information are mobilized by market participants to reduce uncertainty. To grasp this semiotic plurality, the conceptual framework proposed by Charles Sanders Peirce is a fruitful avenue.

For Peirce, semiosis is a process of signification involving "the cooperation of three subjects" (Peirce, 1931-1935: 1874): a *sign* or *representamen* (e.g., a cry) that refers to an *object* (a person's fear or distress) for an *interpretant* (the effect produced: directing attention to the origin of the cry). Let us directly underline the pragmatic dimension of semiosis. On the one hand, the relationship between the sign and the object (which will determine the one between the sign and the interpretant) is attached to a situation; in other words, only practice informs to which object the sign refers (for a cry: surprise, joy, distress, madness...). On the other hand, the attribution of a semiotic status is also contextual: a public cry can become the *object* if a witness plans to mime the situation, while the orientation of the witnesses' attention can be a *sign* of an event "worthy of attention" for other passers-by. Each component of semiosis, as well as each relationship between these three components, Peirce tells us, can itself take three

forms[24]. In the framework of the sociology of markets, two triads are particularly relevant: that of the ways in which the sign refers to the object (to pluralize the types of signs studied) and that of the ways in which the sign produces an effect (to grasp the different forms of "performativity").

The referral of the sign to the object can be iconic, indexical or symbolic (Peirce, 1931-1935: 385). The icon *resembles* the object; it therefore owes its semiotic power only to its own quality (a unicorn drawing is a sign, even if its object does not exist). The index is *marked* by the object; it testifies to the object by a physical connection with it (a weather vane can only refer to its object if the wind actually blows). The symbol is associated by *convention* with the object; it refers to the object via a mediator who links them by virtue of a general rule (the semiotic quality of a word is based only on the convention regulating interpretation). On a market, as the authors inspired by the SEC have well noted, symbols are omnipresent, helping buyers and sellers to coordinate. However, these conventional signs do not have a monopoly on semiosis: rarely sufficient to enable market actors to make their decisions, they are accompanied by icons and indices. Take, for example, a Sunday village market. Of course, fruit will be assessed against standardized signs such as organic label or protected designation of origin. But that's not all. Consciously or not, buyers will also mobilize the logos of producers and the large photos of fruit lining the stalls - in other words, icons. Finally, they will rely on indices, such as the length of the queue, which is a *mark* of a merchant's success. All these types of signs deserve the attention of the economic sociologist, and Peircian tools help bring them to light.

That being said, it is advisable not to confine the sign a priori to one of the three types of reference; the latter rather form layers that the situation will hierarchize. Such an attitude will also make it possible to grasp the evolution of the dominant types of reference: Peirce notes, for example, that language tends to "symbolize" itself, moving from iconic writings such as hieroglyphics to "conventional sound signs" (Peirce 1931-1935: 378, cited *in* Viola, 2018). As we shall see with the example of stock market indices, the signs used by market participants are also evolving, with certain icons stabilizing to the point of becoming conventional, that is - in the Peircian lexicon - symbols. In this way, this first triad allows us to grasp economic signs in their plurality, but also in their dynamics.

[24] These triads are always structured around the three categories of Peirce's philosophy: Firstness (pure quality remaining at the state of potential; for example, the solidity), Secondness (actual causal relation; a stone hitting a wall), Thirdness (general mediation, ensuring predictability; the law announcing the reaction of the wall to the shock of the stone).

As for the relationship between the sign and the interpretant, it can be rhematic, dicent or argumentative. This second triad will enable us to distinguish different types of effect of a sign on economic reality (these effects often being confused under the all-encompassing label of "performativity"). A rheme loosely determines its interpretant, limiting itself to *suggesting* a potentiality; "not true nor false" (Peirce, 1931-1935: 2746), it is illustrated, in Peirce's work, by phrases with blanks, such as "-- buys-- from -- for the price –" (Peirce, 1931-1935: 987). A dicisign transmits information "without furnishing any rational persuasion of it" (Peirce, 1931-1935: 390); it relies on previous experience to *submit* an interpretation. Peirce takes the example of a photograph: "The mere print does not, in itself, convey any information. But the fact, that it is virtually a section of rays projected from an object **otherwise known**, renders it a Dicisign" (Peirce, 1931-1935: 394, emphasis by Peirce). The argument, finally, *involves* its interpretant, whom Peirce then calls its "conclusion" (Peirce, 1931-1935: 312); deductive reasoning, for example, brings into play arguments that constrain the interpretant to the point of making it necessary. Let's return to our example of the Sunday village market to understand the value of studying the different forms of performativity generated by more or less stabilized signs. The effect of an organic label or a protected designation of origin leaves little doubt: these signs *prove* the quality of products and encourage purchases. The consequences of a long queue in front of a stand are more uncertain: it *invites* people to join the queue to enjoy the prized fruit, but it doesn't demonstrate the quality of the fruit. Some buyers may "refuse" this invitation, believing the queue to be unjustified, inflated by the fashion effect. Finally, in a rhematic relationship with the interpretant, the merchant's logos and fruit images are only vague suggestions, and can give rise to numerous interpretations (and therefore to different purchasing behaviors): authentic, flashy, window-dressing... By their more uncertain effects, *dicisigns* and *rhemes* weigh on the functioning of markets. If the semiotic universe were populated only by solid conventions, how could we account for the instability of markets?

Let us insist one last time: these semiotic statuses are neither exclusive nor fixed - so we must read with caution the table often presented and repeated below, which summarizes the two triads we have just presented. One aspect in particular which does not appear in the table, but which is central to this paper, is the movement of these statuses. Just as the sign-object relation tends to evolve, in the case of language, towards the symbol, the sign-interpretant relation tends to evolve towards the argument. Indeed, in order to limit the volatility of their interpretation, humans tend, says Peirce, to stabilize the sign-interpretant relation by the effect of habit (De Munck, 2020). Repetition is an essential part of this dynamic: "repetitions of the actions that

produce the [habit-]changes increase the changes" (Peirce, 1931-1935: 1871). This stabilization then alters the semiotic status of the sign that produces its effects with more and more certainty. Let us think, for example, of the free tastings organized in certain markets, such as the wine market (Diaz-Bone, 2013). The interpretants are at first under-determined, almost random ("is it a scam?"; "it must be out of date"; "great, it's our lucky day!"...), then - by habit, that is to say by dynamics of collective learning (confirmation of peers, etc.) - converge towards the gift/counter-gift ritual that structures this market (free tasting against a "commitment" to buy a few bottles). With the exception of members on the bangs of the community (children, foreigners unfamiliar with the wine market...), these free tastings are now a sign that leaves no doubt as to their effects; they have become conventional. That being said, habit, however instituted, never ensures complete certainty of the future: "chance or uncertainty shall not be entirely obliterated by the principle of habit, but only somewhat affected" (Peirce, 1931-1935: 154). Crises of confidence, such as those that occur during market crashes, bear striking witness to this.

	Firstness	**Secondness**	**Thirdness**
Relation to the object	*Iconic* (looks like)	*Indexical* (marked by)	*Symbolic* (refers to by convention)
Relation to the interpretant	*Rhematic* (suggests)	*Dicent* (proposes)	*Argumentative* (implies)

Table 2 - Key concepts of Peircian semiotics

The Peircian framework of analysis is not frontally opposed to the SEC. We have discussed elsewhere the similarities between the two research programs (De Munck, 2020). Among these convergences is, of course, the pragmatist orientation that leads the sociologist to analyze the *uses* of signs in situation. Another common point is their analysis of market regulation processes: the SEC and Peircian sociology are opposed to both the "spontaneism" of neoclassical microeconomics - because instituted signs are indispensable for the emergence of a market - and the intentionalism of a certain institutionalism - because signs are rarely controlled and their effects are often unintended.

However, an essential difference distinguishes the two research programs: the SEC focuses on conventions, whereas Peircian sociology, thanks to the concept of semiosis, embraces the processes of signification in their plurality and their dynamism. The consequences for the analysis of markets may seem limited at first sight. If conventions, thanks to their degree of institutionalization, are the most influential signs, why then encumber the analysis with icons

and indices, these minor signs of limited scope? Two issues invite us to contest this position. On the one hand, non-conventional signs weigh heavily on the functioning of many markets. On the other hand, conventions do not emerge spontaneously; the plurality and dynamism of the Peircian framework allows us to shed light on their emergence[25].

Conclusion

Economic sociology does not need to discover the fruitfulness of semiotic tools: it has been using them for decades to analyze the sphere of consumption. By contrast, it has everything to gain by extending the scope of its analysis to the market. It is true that contemporary market sociology, like the SEC, is lively and does not ignore the role of signs in the operations of economization of social reality. But its focus is restricted to the most visible and most instituted type of sign: the convention. The ambition of this section is to demonstrate the interest of a pluralization of this field of research and the role that the Peircian concept of semiosis can play in this endeavor. We do not argue that the concepts already popular in the sociology of markets - device, framing, infrastructure, etc. - are incompatible with that of semiosis. On the contrary, if we can get past the strangeness of Peircian terminology, the concept of semiosis can enrich the conceptual equipment of sociologists of markets.

[25] The empirical section that follows in the submitted version of this article is integrated in the chapter V of this work (cf. p. 311).

3. An inquiry into the semiotic infrastructure of financial markets

To make the decision to buy or sell a financial security, market participants form expectations, particularly about price trends. These valuation practices are not self-evident. They are not "homogeneous" because they would conform to neoclassical assumptions of rationality. Nor are they erroneous, because they would be hijacked by cognitive biases. Nor are they validated by the correspondence between subjective and objective structures. They pose problems, every day, for the actors in question. To shed light on them, we need to study the process by which they are formed. This process is socio-material because it involves decision-making tools formatted by, but external to, humans, such as pricing software or order-matching algorithms. It is based on conventions, that is on objects, concepts and rules of interpretation that have stabilized within the financial community and guide its members in their decision-making. It even relies on a broader semiotic environment, frequently mobilizing less stable signs such as icons and indices.

a. A semiotic institutionalism

What is the research agenda arising from this theoretical discussion? A resolutely pragmatist one, guided by what is worth investigating. The issue of expectations in financial markets is not one of those "paper doubts" decried by Peirce. It poses problems for actors. It is our starting point. To grasp how this problem of anticipation formation is resolved on a daily basis by financial market participants, we then need to closely follow the valuation practices. Observation, though methodologically perilous (see next section), must therefore enrich an analysis that cannot only be based on interviews.

To give concrete form to our proposal to combine microsociology and macroeconomics, we will be focusing on the most stabilized valuation tools mobilized by the financial community: guiding millions of individuals, they weigh on the overall allocation of capital. They correspond to the infrastructural level we conceptualized with David Pinzur: instituted to the point of being generally unnoticed, they help define the market situation. They are no longer so much used strategically by individuals (as are devices), but are imposed as access routes to the stock market (indices), the money market (inflation targets), the commodities market (oil benchmarks), or even to all markets at once (the Bloomberg Terminal). This infrastructural dimension should not lead us to believe that these signs are only used as *arguments* on the financial markets. Indeed, semiotic analysis reveals that Thirdness is just one modality of

signification among others. For example, certain situations favor the indexical dimension of stock market indices (cf. chapter V). To underline this plurality, we call our object "semiotic infrastructure".

These components of the current semiotic infrastructure of financial markets will be examined from different angles. Firstly, socio-historical: the emergence and stabilization of these collective reference points will be traced, in order to reveal the alternative valuation supports that have been discarded. Then, socio-material: their contemporary constitution is studied, through the decisions it implies and the power it confers. Finally, semiotic: the insertion of these markers into the processes of financial signification will be analyzed in the plurality of their modalities (even the most stabilized sign "for its own sake", the *legisign*, gives rise to iconic and indexical mobilizations, and not just symbolic ones).

As with any research project, our doctoral work did not follow this "plan" to the letter. Firstly, because the plan didn't exist: in fact, it is as much the result as the starting point of our inquiry. Theoretical benchmarks, inherited from the members of my support committee, did of course mark out the path, but were combined and enriched along the way. Secondly, because deviations were quickly taken, both through constraints and opportunities. As the next section develops, many of the results of this research are the result of these deviations. That said, throughout this work, we have remained guided by these theoretical principles derived from Goffmanian-Callonian sociology of markets, economics of convention and Peircian semiotics. We believe and hope that this orientation lends a certain theoretical coherence to the work as a whole.

A pragmatist systemic approach?

As we have suggested, our research path has led us to approach other sources of theoretical inspiration. On the advice of a committee member or as part of collaborative projects, we mobilized authors other than the Goffman, Callon, Desrosières, Orléan and Peirce presented in this introduction. This process was guided by a certain experimentalism (Berger & Carlier, 2022): we mobilized less expected authors in order to avoid "intellectual deadlock" and to generate a new perspective on the situations studied – a new perspective whose heuristic potential we assessed in turn on the basis of the "empirical resistances" experienced. It falls to this section to relate these experiences, and to justify them by linking them to the general theoretical line of this work.

The first part of this thesis analyzes the "milieu" in which contemporary financial market participants find themselves, based on a historical approach. More specifically, it traces the major institutional transformations in financial markets since the 1980s. To grasp these legal, technological and political developments, which have affected most Western countries, a systemic approach seems appropriate. This does not necessarily imply denying the pragmatist orientation announced in the preceding pages: the whole ambition of the "Signs, Actions, Systems" research group at our research center (CriDIS), in which we took part alongside Jean De Munck and Mathieu Berger, is precisely to consider the relationship between systemic and pragmatist approaches.

A researcher often mentioned in the discussions of this research group is Margaret Archer. This sociologist has developed a theoretical approach, known as "morphogenetic realism", which aims to do justice both to the importance of systemic factors and to the indeterminacy of individual action (Archer, 1995; see chapter I.1c for a presentation of her stratified modeling.). What's more, in her latest work, Archer has adopted an explicitly pragmatist turn, without denying her systemic theory. This is particularly the case in her book *Being Human: the Problem of Agency*, where she mobilizes Peirce to think of practice beyond linguistic expressions:

> The internal conversation, as analysed by the American pragmatists, and particularly by Charles Peirce, can be employed unslavishly to gain purchase on those inner deliberations whose outcome is emotional emergence (Archer, 2000: 228).

For these reasons, we wanted to "test" Archer's theory by mobilizing it to study the liberalization of the Belgian stock market. The conclusion of this experiment, developed in chapter I.1c, is mixed. While recognizing the clarification provided by the categories of the morphogenetic model, which allows us to "put things in order", we felt that certain empirical issues "resisted" Archer's theory: technological materiality, the role of situations and semiotic mediations (such as the Bloomberg Terminal) deserve to be more finely studied. This is why, in the remainder of this first chapter, we have mobilized concepts from the Callonian sociology of markets (e.g. de-infrastructuralization) to remedy these shortcomings (cf. chapter I.3). These dissatisfactions with Margaret Archer's theoretical approach overlap with some of the criticisms expressed at the release of *Being Human*. Archer's desire to combine her morphogenetic realism with Peircian (and Deweyian) pragmatism did not convince some sociologists:

> We join Archer in emphasising the pivotal role of practice as problem-solving. Scientific research (as well as any other kind of human inquiry) always starts out with a situation seen as problematic and

calling for solution. But Archer's realist inclination towards theorising about the intrinsic ontological nature of social reality does not lend itself to solving these problems, because metaphysical settings can hardly be operationalised as solvable research problems and consistent series of actions. We recommend moving from philosophising sociology towards sociologising philosophy; it is time to 'see how metaphysical mysteries might be converted into decidable problems'. Moreover, as Archer […] accepts only a secondary cognitive role for linguistic descriptions, holding on to the realist subject–object dualism where the knowing subject is in direct, non-linguistic interrelationship with the known object. She thus fails to appreciate the social nature of practice (Kivinen & Piiroinen, 2016: 239).

The result of this experiment is that the development of a pragmatist systemic approach is an exciting but perilous undertaking. This also seems to me to be the provisional conclusion of the CriDIS "Signs, Actions, Systems" group. But no doubt it is futile, and hardly pragmatist, to hope to achieve a successful theoretical marriage, and no doubt the theoretical breakthrough lies in experimentation itself. That, at least, is the merciful verdict I hope readers of the first chapter and conclusion of this thesis will come to.

A semiotics without intentions?

In the second and main part of this thesis, we mobilize the "general theoretical line" developed earlier in this introduction to examine various issues in the semiotic infrastructure of financial markets. One dimension studied is the plurality of modalities of signification: when a sign intervenes on the financial markets, in what ways is it grasped by traders and asset managers? In this way, we bring to light the role of the Bloomberg Terminal and stock market indices in the valuation practices of market professionals (cf. chapters III and IV). Another dimension concerns the financial community's conditions of receptiveness: what does a sign have to meet in order to become a benchmark for the financial markets? In particular, we analyze how inflation target announcements by central bankers can influence market professionals in the desired direction (see chapters VI and VII). On these two dimensions, our theoretical framework has generated results that have been recognized for their originality by several journals. On the second dimension, however, the analysis of felicity conditions using the Peircian framework is not without tension. We propose here to clarify this tension by explaining the conception of language and intentionality in Peirce's theoretical framework, and the possible deviations we have been led to follow.

The status of intention in Peirce's work can be a source of unease for sociologists. Indeed, several passages in his work, particularly those that gave rise to "biosemiotics", suggest that semiosis is not dependent on human intention (Bergman, 2009). Not only does meaning extend beyond deliberately communicated content (this first point may frighten "signaling

theory" economists[26], but not Goffmanian sociologists), but it can be the work of animals and plants as well as humans (this second, naturalistic point being more delicate in the eyes of many sociologists). The concept of habit, central to Peirce's semiotics, illustrates this issue: distinct from mechanical repetition, habit is the fruit of an adjustment to the situation that enables us to anticipate future events. It can thus be a source of creativity. However, Peirce does not make it a human or even an animal specificity:

> Peirce attributes habit not only to humans and animals, but also to plants (like Darwin) and to matter in general (like James). Plants form habits, as the case of heliotropic plants proves; rivers also form habits in that they dig their beds and stay there. There are also habits of neurons, habits of connections and "nervous associations" (Quéré, 2024: 167-168; own translation).

This dimension of Peirce's semiotics has repelled many authors attached to the human specificity of semiosis in general and of communication in particular, including Jurgen Habermas[27] (1995). It has also prompted several of Peirce's heirs to attempt a clarification. At the twentieth congress of the International Association for Semiotic Studies, André Delobelle posed the problem as follows:

> Strictly speaking, of course, signs can only exist in the eyes of an observer-subject, i.e. a psychic subject, capable of perceiving or using them, or even creating them. Today, however, the term is used in an increasingly broad sense, extending far beyond the realm of psychically gifted subjects. [...] Such an extension of the notion of sign is perfectly legitimate. [...] It does, however, oblige us to specify all the more precisely what can distinguish the sign used by such a psychic subject from any other type of sign operating outside such a domain. In short, it comes down to trying to distinguish between the psychological or "intentional" sign (whether conscious or not), and that which is in no way so (Delobelle, 1992: 65 ; own translation).

In studying the conditions that central bankers must meet to make their communication a tool of monetary policy, we thus restrict the perimeter of signs "analyzable" by the Peircian framework to "psychological or 'intentional' signs" alone. This restriction enables us to use Peircian concepts to uncover the semiotic challenges – not only symbolic, but also iconic and indexical – facing central bankers in their relations with financial market players. That being said, we still adopt a broader semiotic conception than that of "signaling theory" (cf. footnote 26). On the one hand, we follow the material mediations that extend semiosis beyond face-to-

[26] The "Signaling Theory", initiated by the so-called Nobel Prize for Economics holder Michael Spence, focuses on situations of information asymmetry in which "one party, the sender, must choose whether and how to communicate (or signal) that information, and the other party, the receiver, must choose how to interpret the signal" (Connelly et al., 2011: 39). Constrained by the framework of neoclassical economics, the scope of investigation is therefore much narrower than that of Peircian semiotics (exclusively signals from humans to humans, consciously emitted and consciously perceived, implying a cost and a "return", within the framework of information asymmetry).

[27] For a development of the links and mutual contributions of Peirce's and Habermas's theories, see Berger (2017).

face interaction. In the case of financial markets, these mediations are crucial in enabling (or not) central bankers to reach traders located in trading rooms around the world. On the other hand, we include in the analysis the "unintended effects" of an intentionally issued sign (as when a target inflation announcement is deemed "not credible") or of an accidental sign that blurs the intentional message (as when a central banker' nervous tone contracts with his invitation to calm); otherwise, we would be at pains to examine the conditions under which a felicity condition is met.

This concept of "felicity condition" requires us to address Peirce's conception of language, the second issue at the root of the tension addressed in this sub-section. We have already emphasized that language does not have a monopoly in Peirce's framework, but constitutes one semiotic modality among others. Yet the concept of "felicity condition" is in fact associated with the philosopher of language John Austin, who, in *How to Do Things With Words* (Austin, 1962), discusses certain conditions to be met for a "speech act" to avoid Inflecity, to be performative, to engender its truth by its mere utterance. Can this concept, conceived on the basis of language, be usefully mobilized more broadly, in a Peircian conception in which language is only one sign among others? We think so, and hope that the results of the chapter VI demonstrate this. Moreover, Austin's concept seems to open the door to such a mobilization. Indeed, this concept is part of pragmatic linguistics: the felicity conditions are situational (existence of procedural conventions, respect for these conventions, but also being heard by the audience, etc.), rather than linked to the syntactic properties of language. From then on, nothing seems to confine Austin's thinking to linguistic phenomena, as Austin himself points out:

> Well, it seems clear in the first place that, although it has excited us (or failed to excite us) in connexion with certain acts which are or are in part acts of *uttering words*, infelicity is an ill to which *all* acts are heir which have the general character of ritual or ceremonial, all *conventional* acts: not indeed that *every* ritual is liable to every form of infelicity (but then nor is every performative utterance). This is clear if only from the mere fact that many conventional acts, such as betting or conveyance of property, can be performed in non-verbal ways (Austin, 1962: 18-19).

The adoption of a new monetary policy, a highly conventional phenomenon, therefore deserves to be studied in terms of its felicity conditions. And our inquiry in chapter VI aims to demonstrate that mobilizing the theoretical framework of Peircean semiotics for this purpose is fruitful. While our mobilization of Peirce is original, the ambition to study the felicity conditions of non-verbal acts on financial markets is less so: many works inspired by the Callonian sociology of markets, already discussed in a previous section, follow precisely this

approach. Donald MacKenzie's pioneering work, for example, aims precisely to trace the conditions under which a theoretical model – the Black-Scholes equations – became performative.

In this respect, it is worth noting an important conceptual shift: whereas Austin referred to "performativity" as the impact of utterance itself, "sociologists of performativity" analyze the impact of non-verbal devices as they are used. In other words, the concept no longer refers (solely) to the role of utterance, but to the causal chain that enables a device to be verified. This conceptual shift has been under-problematized, leading some authors to roundly condemn these "sociologists of performativity" (Mäki, 2013). That said, although under-theorized, this shift has made it possible to study very diverse objects from an undeniably fertile perspective. More specifically, it has extended the analysis to "mediated performativities", which is indispensable for studying financial markets: few acts, verbal or otherwise, are capable of impacting the real immediately, through their utterance/realization alone. Most of the signs that make up the infrastructure of the financial markets only come into play through the intermediary of humans and objects. Such is the case with monetary policy decisions. We therefore analyze them by following the mediations that enable them to have an impact on the evolution of financial markets in line with the intentions of central bankers.

b. An empirical exploration of financial conventions

The development of the preceding pages anchors this work in a clear theoretical position, both pragmatist and institutionalist. It should not, however, detract from the main intention of this thesis, namely the empirical exploration of financial conventions. Our ambition has been to sociologically feed André Orléan's theory. To this end, we conducted a sociological inquiry into financial markets, adopting the "methodological standpoint" of the economics of convention (Diaz-Bone, 2011). This approach enabled us to "encounter" various objects mobilized on the financial markets, such as the Bloomberg Terminal and stock market indices. This doctoral thesis is therefore structured around these empirical objects. This is also why it is an article-based thesis: at its heart, it explores the conventions that populate contemporary financial markets. The main contributions of this work, recognized by the reviewers of the journals in which these chapters have been published, are based above all on the originality of the empirical material explored.

For this reason, the rest of this general introduction is more embodied than the theoretical developments of the preceding pages. It aims to clarify the contours of our methodological approach, by identifying the factors that led us to these little-documented empirical objects.

II. Methodological journey

Financial market participants are wondering how they can buy a stock whose price is about to rise. The problem has the particularity of being known far beyond the financial sector, thanks in particular to media broadcasts of graphs illustrating the jerky evolution of stock prices (cf. Figure 2): many individuals wonder how market participants can know which stocks are going to rise in price. These many individuals, observing market observers, are then in the position of a researcher, very similar to my own. Two answers are often invoked. They have the advantage of being very economical (not all of these individuals have a grant to answer this question), but the disadvantage of not being very instructive. The first assimilates participation in the financial markets to a lottery like any other: often critical of this "pure speculation", it concludes that chance governs these erratic price movements. Immediately undermined by the stability of corporate profits in the financial sector, it then generally falls back on the second answer, which still sees the financial market as a game, but a rigged game: the main financial players pull the strings of these movements, erratic only in appearance, so as to win every time.

Figure 2 - Typical illustration of stock market trends (Apple share price, Boursier.com)

The challenge for a researcher asking the same question is to come up with a more instructive answer. To do this, we start from a hopefully fruitful hypothesis, inspired by the economics of convention: to make decisions, market participants take advantage of the fact that they know they are collectively placed in the same situation. Based on their knowledge of what

influences their peers, they can anticipate certain probable effects of certain information on prices. In this conception of the market (which has the advantage of being more realistic, but the disadvantage of being more complex), everyone is subject to uncertainty (nobody is pulling the strings), but - because this game is long-term (unlike most lotteries) - conventional benchmarks limit this uncertainty and stabilize the profits of financial companies. This first, rather deductive step needs to be supplemented by an inductive approach. Orléan's formalism would suffer from the shortcomings of neoclassical hypothetico-deductivism if it were not "filled in" by empirical investigations into the valuation supports that, in trading rooms, are imposed as conventions.

Our first ambition was therefore to find out how market participants make their decisions. This initial imprecise driving force led us down a road punctuated by constraints and deviations, but which appears, in retrospect, to be quite productive (Section II.1). This methodological journey involved the mobilization of various methods, to which we then return in greater detail (Section II.2). In the end, the initial hypothesis is confirmed in its fruitfulness, but at the price of a major adjustment: the uncertainty faced by market participants is reduced thanks to financial conventions, but also because of institutional constraints (regulation of bank trading, robotization of trading...). This adjustment, which became essential during our fieldwork, required us to examine these institutional constraints, both in their genesis and in their contemporary effects.

1. In search of "financiers"

My first contact with the field was on February 12, 2019. In hindsight, it seems rather distressing. I am in my first year of a master's degree in sociology and already determined to study the decision-making process of financial market participants. Without a very advanced financial culture, I rely on the few stock market stereotypes at my disposal to carry out "exploratory interviews": the images of panicked men who populate the press during every financial tumult (see Figure 3 below) convince me to contact the Belgian Stock Exchange. There, perhaps, would reside the individuals whose job it is to buy and sell financial securities. So much so, that when I went on February 12, 2019 to my appointment with the employees of *Euronext Brussels* (the contemporary equivalent of the "Stock Exchange"), I thought I would have the opportunity to meet the worried financiers photographed in the newspapers.

Bad luck, I was 23 years too late. Since April 19, 1996, transactions on the Brussels Stock Exchange are no longer carried out "*à la criée*", but by computer. Of course, I should have prepared better for those first interviews and not been so surprised. That said, this expectation was not so absurd: many stock exchanges, including the world's largest, the *New York Stock Exchange* (from which most newspaper photos are taken), "still" operate with human intermediaries, gathered in the stock exchange building. What's more, this first setback re-launched the inquiry into the issue of location: if they are no longer gathered at the Palais de la Bourse in Brussels, where have the financiers gone? This naive initial question, long since "solved", led me to investigate two less obvious issues: the institutional mutation that has

reconfigured the spatiality of financial markets (Section II.1a) and the identity of the new central players in contemporary financial markets (Section II.1b).

Figure 3 - Typical stock market illustration (L'Express)

a. Understanding financial relocation

To grasp the decision-making process of market participants, it was therefore essential to adopt a more realistic conception of the decision-making space. Exploratory interviews with *Euronext Brussels* employees made me realize that this space is now largely computerized. But this still doesn't tell us much about the configuration of the decision-making situation: what are the routes by which individuals access the market? What new decision-making media have replaced the co-presence of traditional stock exchanges? To shed light on these issues, I have mobilized the historical literature on recent developments in the institutional framework of financial markets. However, I realized that this literature was sparse – both too technical and recent for historians, and too empirical and "human" for economists – and lacking in detail; the Belgian case, for example, was poorly informed.

At first, these dissatisfactions were not enough to motivate further work in this direction. Right at the start of my doctoral thesis, in October 2020, however, I was presented with an opportunity that invited me to delve deeper in this direction: Damien Piron, a young professor of public finance at UCLouvain, proposed that I take part in an interdisciplinary project aimed at shedding light on neoliberalization trajectories in Belgium. I agreed to contribute by examining the institutional transformation of Belgian financial markets. This collective project

brought me into contact with a number of researchers interested in socio-economic dynamics. This research network gradually took shape. In April 2021, we met via a panel at the 8th congress of the Belgian political science association (ABSP)[28]. We were then able to bring our contributions together in a recently published collective work, *Le(s) néolibéralisme(s) en Belgique. Cadre macroéconomique, applications sectorielles et formes de résistance* (Piron & Evrard, 2023). My chapter in this book constitutes a part of the chapter I of this work. Finally, in August 2023, we set up an "ABSP Political Economy Working Group" to facilitate exchanges between our now larger membership[29]. The exchanges I have been able to have within the framework of these collaborations have been very stimulating and have nourished the whole of this thesis.

This opportunity was all the more fortunate in that it was methodologically compatible with a major constraint: the coronavirus pandemic. The first year and a half of my thesis (October 2020-February 2022) took place in a context of lockdown that severely limited the possibilities for empirical exploration. The qualitative analysis of quantitative archives involved in this socio-historical research therefore constituted one of the few "Covid-compatible" methodologies. In this process, I was fortunate to be able to exploit the personal archives of Bernard Snoy, the former chief of staff to Philippe Maystadt (Minister of Finance who computerized the Brussels Stock Exchange). We then cross-referenced our findings with interviews conducted (virtually) with the main architects of this reform of the stock exchange, and with archives consulted at the Kingdom's General Archives. The concrete details of this first methodological step are developed in the following section (Section II.2a).

This research has enabled us to refine our understanding of the decision-making space of contemporary market participants. As we shall see, this space has become pluralized: market participants are no longer obliged to go through an intermediary, as in the old regime of stockbrokers (*agents de change*) meeting at the Palais de la Bourse, but are free to choose from several trading platforms. This research has also produced some interesting results, favorably received by the reviewers of the institutional economics journal *Review of Evolutionary Political Economy*. In January 2022, a paper was published in this journal, which constitutes a part of chapter I of this thesis (Duterme, 2022d).

[28] I presented the paper "La réforme de la Bourse de Bruxelles : 'une impérieuse nécessité'?".
[29] This working group was the source of various panels at the last ABSP congress, in February 2024. I presented the paper "Quelle(s) régulation(s) pour une finance durable ? L'Union européenne face aux maîtres à penser des marches".

The power to decide which securities to buy and sell therefore lies not with the employees of *Euronext Brussels*[30], but with their customers, i.e. the individuals who log on to the *Euronext* trading platform to place their buy and sell orders. In Belgium, only three types of company are authorized to "execute" these orders on such platforms: credit institutions (i.e. banks), brokerage firms and portfolio management companies[31]. These are the actors we turned to next.

b. Investigating the finance industry

As the lockdown measures were relaxed, we conducted interviews with various actors linked to the financial world: a risk manager (Belfius), an independent asset manager, a financial statistics officer at the National Bank of Belgium (NBB), two employees of the Belgian regulatory authority (FSMA), three employees of investment fund management companies (BlackRock, Belfius Investment Partners and Orcadia Asset Management) and two traders (Belfius, BNP Paribas). Generally contacted via LinkedIn, these ten interlocutors enabled me to refine my understanding of my research theme on two levels. Firstly, I was able to map out more clearly the players in Belgium's "finance industry". Often reduced to the image of the stock market linking the demand for capital emanating from companies and the supply of capital provided by savers, finance is more realistically captured on the basis of its "players" and the services they offer, as argued by several economists in a recent review (Auvray et al., 2022). This line of inquiry has recently been taken further, resulting in an inventory of the Belgian financial sector. This inventory was published as a CRISP's *Courrier hebdomadaire* (Duterme, 2023b) and forms chapter II of this thesis.

On the other hand, these initial interviews provided me with a number of insights into my more strictly defined research object: the supports of market participants' decision-making. In the course of discussions with fund managers and traders in particular, I learned more about the information and media channels mobilized. In the second half of 2021, this empirical material enabled me to analyze two decision-making tools that came up frequently in interviews: stock market indices and the Bloomberg Terminal. I had begun studying stock market indices as part of my master's thesis in sociology: my investigation had then focused on

[30] At least not directly. As we shall see in the remainder of this work, the traditional stock exchanges still have a major influence on capital flows, thanks to their power to create stock market indices.
[31] See the pedagogical chart of the Belgian Financial Markets Authority, FSMA, accessible via the following link: https://www.fsma.be/sites/default/files/legacy/sitecore/media%20library/Images/fr/consumers/tabel.pdf (page consulted on November 20, 2023).

the Brussels Stock Exchange index, the BEL 20 (Duterme, 2020). We traced the stabilization of this cognitive object, using a socio-historical approach inspired by the sociology of Alain Desrosières. This study was subsequently published in the *Revue française de Socio-Économie* (Duterme, 2021b). Most of those interviewed confirmed the importance of stock market indices in their work, but especially indices attached to larger stock exchanges, such as the CAC 40 (French market) and the S&P 500 (US market).

I therefore sought to deepen my analysis of stock market indices on two levels. On the one hand, I looked at the main stock market indices (such as the S&P 500 or the Dow Jones) in order to compare their "mode of production" with that of the BEL 20: methodology, producing company, target audience... To this end, I carried out an analysis of the documents published, under the constraints of transparency legislation, by the "index providers". This comparison enabled me to flesh out some of the results of my BEL 20 survey. This enlargement gave rise to a paper that was sent in May 2021 to the economic sociology journal, *Journal of Cultural Economy*, and published in October 2022 (Duterme, 2023a). This paper constitutes the chapter IV of this thesis. On the other hand, I wanted to examine the intervention of stock market indices in the semiotic configuration of financial markets. The aim was to identify in greater detail how market participants in general, and traders in particular, mobilize indices in their day-to-day activity. Although this project began in January 2021 with an exploration of Peircian semiotic concepts, it was only able to get off the ground in 2023 with the participant observation described below.

As for the Bloomberg Terminal, it quickly emerged from my interviews that this was the main information platform for financial actors, both traders and asset managers. I therefore tried to familiarize myself with it, during several days of practice on the Terminal accessible via the university library[32]. The aim was to gain an insight into how the Terminal shapes the data. To highlight this shaping (now so widespread on the markets as to be invisible), I mobilized a stock market event that acted as a "breaching experiment": the GameStop saga. The confrontation of these two framings was developed in a paper, sent in November 2021 to the journal *Economy and Society*, and published in May 2023[33] (Duterme, 2023c). This paper

[32] The Terminal costs around $20,000 a year, and is generally reserved for professionals.
[33] This article was extended by a "Goffmanian" analysis of the GameStop affair, which led to a communication "Tous les traders voient-ils le même marché ? Enquête sur le conflit de cadres au cœur de 'l'affaire GameStop'". The main lines of this extension are presented in the second part of the chapter III.

constitutes the main part of the chapter III of this work. We develop certain methodological points relating to this Terminal analysis in a subsequent section (Section II.2b).

There was something frustrating about these initial findings. While instructive, the interviews with financial actors pointed to something they couldn't say, and had to be observed. They revealed the importance of stock market indices and the Bloomberg Terminal, without being able to account for the concrete mobilizations of these two devices. Often unconscious, in any case too varied to be clearly recounted, these mobilizations had to be seen. Or, better still, experienced. But the possibilities for observation were limited. While I had no trouble getting interviews with professionals in the financial sector (around 10% positive responses to my LinkedIn solicitations), all my contacts refused my requests for observation. One of them even predicted failure on this path: "You will find it very difficult to go and observe at Degroof [Petercam, an asset management company], for example, because they wouldn't want you to bump into Madame Boël [member of one of Belgium's wealthiest families] in the corridors...". The intimacy of the financial issues at stake, the sensitivity of the information for the competitiveness and credibility of companies in the sector, and the absence of incentives to respond positively to my request complicated the process.

By dint of asking, I ended up with a stroke of luck. One of my "internship applications" was well received, and was followed by a "job interview" with a trading room manager. Clearly interested in my research topic and the contribution of the human sciences, he agreed to sign an internship agreement with UCLouvain, with the subject "Psycho-sociological study of trader behavior". From January 3 2022 to April 1st 2022, I spent between 3 and 5 days a week in a trading room at one of Europe's biggest banks. Once inside the organization, I was able to explore other departments within the bank, such as investment fund management and risk management. However, the majority of my observations concerned 18 "sell-side" traders, i.e. those whose primary function is to sell a service to customers (for example, a company wanting to exchange 500,000 euros for Swedish kronor). The concrete details of this methodological experiment are developed in the following section (Section II.2b).

This field experience has greatly enriched my understanding of the workings of contemporary financial markets. More specifically, it enabled me to develop two aspects of my research. Firstly, I was able to embody my analysis of the role of stock market indices within trading rooms. I observed the mediums through which traders intercepted indices and the plurality of uses they made of them. This empirical material thus densified my article mobilizing

Peirce's semiotic concepts to grasp stock market indices. This strengthened paper was submitted to the journal *Valuation Studies* as part of the thematic call "Valuation as a semiotic, narrative, and dramaturgical problem: re-opening the toolbox of valuation studies" and published in December 2023 (Duterme, 2023d). It constitutes the chapter V of this doctoral work.

Secondly, this field experience led me to examine other valuation supports, active in other market segments. Up until then, I had focused mainly on the equity market (although the Bloomberg Terminal's grip embraces all market segments). Meeting traders who were mainly concerned with the key interest rates of the European and US central banks, I turned my attention to a more "monetary" side of the financial markets (understood in a broad sense, including the foreign exchange (forex)). I was therefore interested in the origins of central bank authority, in order to understand the sources of the effectiveness of their "semiotic interventions". This brought me to the archives of the Belgian central bank, where the minutes of the Executive Committee meetings shed new light on this "semiotic turn" in monetary policy (for methodological details, see Section II.2a on the following pages).

Two contributions have emerged from this research on central banks. The first one documents the mainsprings of this semiotic turn in the case of the Belgian central bank, identifying its "felicity conditions". It was presented at the 34th annual conference of the Society for the Advancement of Socio-Economics (SASE) in Amsterdam in July 2022[34], as well as at the annual conference of the Finance and Society network in London in September 2022[35]. It was then submitted to the *Revue française de Socio-Économie* as part of a thematic call "Les politiques monétaires face aux crises. Métamorphoses et résilience des objectifs et instruments des banques centrales" (and has been accepted in December 2023). This first contribution constitutes the chapter VI of this work. As for the second contribution, it targets a seemingly anecdotal aspect of most central banks' communications: the imprecision of their inflation targets. Based on a review of the literature and an empirical contribution from Belgian archives, we account for this seeming violation of felicity conditions. This second work was presented online in September 2022 at the 38th conference of the *European Group for Organizational Studies* (EGOS)[36]. It was then submitted to the *Scandinavian Journal of Management* as part

[34] The communication was entitled "The central banker and the trader: which one needs the other?".
[35] The communication was entitled "The three felicity conditions for 'Open Mouth Operations'".
[36] The communication was entitled "'Below, but close to': the pragmatic origins of incomplete Central Banks' targets".

of its special issue on "the Economic Organizations, Uncertainty, and Risk: Sociological Analyses of Economic Organizations in Times of Crises" (the reviewers' first feedback, requesting minor revisions, was received in November 2023). This article constitutes the chapter VII of this work.

This socio-historical aspect of my research on central banks needs to be supplemented by a contemporary, situational analysis. The challenge would then no longer be to understand how central bank announcements emerged as sources of authority on financial markets, but how today's traders receive the signals issued by central banks. There is no doubt that the Bloomberg Terminal must be integrated into the analysis. As we shall argue, this is one of the possible extensions of this thesis. But it is not the path I have taken at the end of this stage of our doctoral journey. Instead, I seized the opportunity to deepen a collaboration with a sociologist of financial markets mobilizing Peircian semiotics, David Pinzur, thanks to a three-month research stay at the London School of Economics (LSE), from mid-September to mid-December 2022. This stay gave my research a dual focus.

On a theoretical level, I had the opportunity to deepen my positioning in relation to the Social Studies of Finance literature, via a discussion of the contributions and limits of Callonian sociology of markets. This issue was the subject of an article written with David Pinzur and recently submitted to the *Journal of Cultural Economy* (cf. Section I.2a). On the empirical level, I was able to further extend the market segments studied by launching a research project with David Pinzur on the (financial) crude oil market. This part of the "commodity market" involves other valuation supports. More specifically, one sign plays a central role: benchmarks. Benchmarks enable traders to reduce complexity by defining a reference price for a particular type of crude oil. London being the financial center where the world's most influential benchmark (Dated Brent) is determined, we were in the right place to start this second collaborative project[37]. This resulted in a draft that we presented at the Finance and Society network conference in Brussels in September 2023. Its current version, not yet submitted for review, constitutes the chapter VIII of this PhD work.

During our stay at the LSE, we were also able to exchange ideas with a number of economic sociologists, particularly during the Sociology Department seminars. These discussions enabled me to deepen my knowledge of the work of the International Political

[37] We also took advantage of our stay in the City to conduct additional interviews with equity traders, to feed our paper on the Bloomberg Terminal.

Economy (IPE) movement. Although their methodological approaches were generally different and more "macroscopic", many of their publications dealt with themes very close to my own, such as those by Johannes Petry on the importance of stock market indices in contemporary financial markets (Petry, 2021; Petry et al., 2021; Fichtner et al., 2023). This somewhat belated "encounter" with these works has motivated me to further situate our microsociological research within the contemporary macroeconomic panorama[38]. For example, we need to better articulate "local" analyses of the role of stock market indices on the trading floor with more "global" studies of the role of asset management (often index-based, i.e. modeled on the selection and weighting of the main indices) in contemporary capitalism.

On my return from London, I tried my hand at mining economic data in order to nourish this articulation. The aim was also to study another "public": not traders, whose tasks are increasingly restricted by corporate algorithms[39], but asset managers, whose macroeconomic importance has been growing since the 1970s. Using a more directly "quantitative" methodology, briefly outlined in the following pages (Section II.2c), I have mapped the importance of this financial sector in Belgium, from 1947 to the present day. This overview was submitted to CRISP in June 2023 and published as a CRISP's *Courrier hebdomadaire* in December of the same year (Duterme, 2023b); it constitutes the chapter II of this thesis. As will be discussed below, its extension would consist in carrying out a participant observation similar to that carried out in a trading room, but in an investment fund management company. This would enable us to grasp in greater detail what has been quantified in broad strokes, i.e. the role of the various valuation supports - Bloomberg terminals, stock market indices, central bank announcements, oil benchmarks, etc. - in the work of fund managers.

Such is the path that links the beginning of this doctoral work to the present day. It is certainly not entirely coherent, nor without regrets. Its unity lies in the question it has sought to answer, drawing on different theories and adopting different methodologies. To shed light on the decision-making process of individuals who buy and sell financial securities, we have mobilized a theoretical assemblage outlined in the previous section and a methodological mix clarified in the following section. In particular, this has enabled us to make our research theme

[38] It was this same ambition to "reinstitutionalize" our research that motivated the occasional mobilization of Margaret Archer's theoretical framework. Her model enabled me to situate the reform of the Belgian Stock Exchange from a systemic approach. This attempt gave rise to a recently published Working Paper (Duterme, 2023e) and was partially integrated into chapter I.

[39] The traders we interviewed often regretted the fact that their involvement was restricted to "button-pressing", i.e. simply executing orders decided on elsewhere (notably by fund investment committees). We develop this topic later in this general introduction.

both more realistic and richer: it now focuses on better-defined actors (retail investors, sell-side traders, investment fund managers) and a plurality of financial market segments (equities, currencies, commodities). As the last section of this introduction will attempt to demonstrate (Section III), this journey has finally enabled us to build - rather than to "keep" - an overall coherence, a common thread that "holds together" the various chapters of this thesis.

2. Decoding valuation pratices

Financial market participants' valuation practices are notoriously opaque. The main reasons for this are that they involve relatively specialized mathematical concepts, highly specific jargon and a global network of financial players. In order to shed light on these valuation practices, we have attempted to remove, one by one, these sources of opacity. Through a qualitative analysis of the quantitative tools used by market participants, our aim is to take a sociological look at mathematical concepts. Not to "reveal" a social logic, but to account for the plurality of factors - both cognitive and political - that preside over their establishment in the financial world. This sociological work does not dispense with an exploration of mathematical techniques, but grasps these techniques by another route, which is intended to clarify how they operate on the markets. In this thesis, we have studied the methodology of stock market indices, transaction costs on the Brussels Stock Exchange, analyst rankings published on the Bloomberg Terminal, and central bank inflation targets (Section II.2a).

In order to demystify the indigenous jargon of the financial markets, which the anthropologist Jean-François Baré (1991) enjoyed comparing to the "Savage Mind", we carried out a three-month participant observation in a trading room, supplemented by numerous interviews spread over several years. The aim was to familiarize ourselves with this hybrid language, so as to be better able to put ourselves in the shoes of a trader or asset manager (Section II.2b). Finally, in order to identify the actors who populate the valuation practices of market participants, we have sketched out a cartography of them. Every market professional knows the part of this cartography that concerns them: they are able to recognize the actors they come across on their patch of territory. Using macroeconomic data, we propose to collect these different pieces to build the whole map (or almost the whole map) (Section II.2c). At the end of the process, the opacity of financial decisions should have dissipated or, at the very least, been attenuated.

a. A qualitative analysis of the quantitative

In this thesis, the qualitative analysis of quantitative objects is deeply inspired by the EC, and in particular by the approach of Alain Desrosières. The theoretical aspect of this perspective has already been discussed (cf. Section I.2b). Its methodological aspect, notably set out in *L'argument statistique. Pour une sociologie historique de la quantification* (Desrosières, 2008), is intimately linked to it: to account for the cognitive and political factors that

(de)favored the stabilization of quantification, we need to retrace the road. To account for the controversies that punctuate and shape the history of quantification. To go back to the source, that is to the moment when the proposal of quantification had nothing obvious about it, and when its arbitrary aspects were fully apparent. Both "externalist" and "internalist", this approach is concerned with technical formalisms, as they do indeed constrain the development of quantifications, but also with the socio-political issues that also weigh on the stabilization of conventions (Diaz-bone & Didier, 2016).

We mobilized this methodological option at four points in our thesis: the study of the institutional mutation of stock markets, the analysis of the production mode of stock market indices, the exploration of the Bloomberg Terminal and the analysis of the semiotic turn of central banks. This research forms the main body of the thesis and is therefore not developed further in this section. Rather, the aim here is to present the methodological stance that informed their results. First, let's take the example of the stock market index. Formally, it is an average of the price of a sample of stocks. Today, the way in which they are formatted only exceptionally raises questions, making them difficult to problematize. On the contrary, during their stabilization on the financial scene, several "debates" reveal thorny methodological issues: numbers of stocks included, selection criteria, weighting, frequency of revisions... Some archives explicitly address these issues. The brochure published by the Brussels Stock Exchange at the launch of the BEL 20, for example, *The Indices of the Brussels Stock Exchange* (10/1995), explains the inner workings of the index with a crudeness that is no longer tolerated today, particularly with regard to the adjustment of its value when the stocks included are reviewed. When the sample of stocks included changed, most stock market indices of the 20th century reverted to a standard value (i.e. 100) to signal the break. Now linked to other financial products, indices can no longer suffer such jumps, but still need to modify their sample from time to time. The solution? Sacrifice historical consistency by adjusting the denominator at each revision. The 1995 brochure is more explicit than its successors: "the divisor is adapted in such a way that the value of the index remains the same after the adjustment" (The Brussels Stock Exchange, 1995: 41). Today naturalized, this technique - which implies moving away from an average price - was unthinkable for the first Dow Jones managers: the latter were determined to keep an *average* of 20, then 30 stocks: "while the editors had to acknowledge [the change], they desired to maintain the divisor at 20" (Stillman 1986: 58).

A seemingly technical detail, this methodological option weighs heavily on the shaping of indices and, consequently, on the trillions of dollars currently allocated according to a

"passive management" logic (that is by replicating the composition of the stock market index). The same applies to the other quantifications analyzed in this work. Each time, we try to go back to the source in order to identify the factors that enabled this form to become established. This sometimes leads to surprises, as in the case of the "transaction costs" that justified the liberalization of the Belgian Stock Exchange, albeit based on very fine foundations (see chapter I for an unfolding of the argumentation). This method can also lead to the (partial) solving of riddles, as with the authorized "fluctuation margin" of the Belgian franc/deutsche mark exchange rate, which allows us to understand the interest of a vague quantification on the part of the central banks (cf. chapter VII). It often leads us into the archives of universities or public institutions[40]. But it can also simply lead us to open little-consulted methodological tabs on the Internet, or on the Bloomberg Terminal (see Figure 4 below).

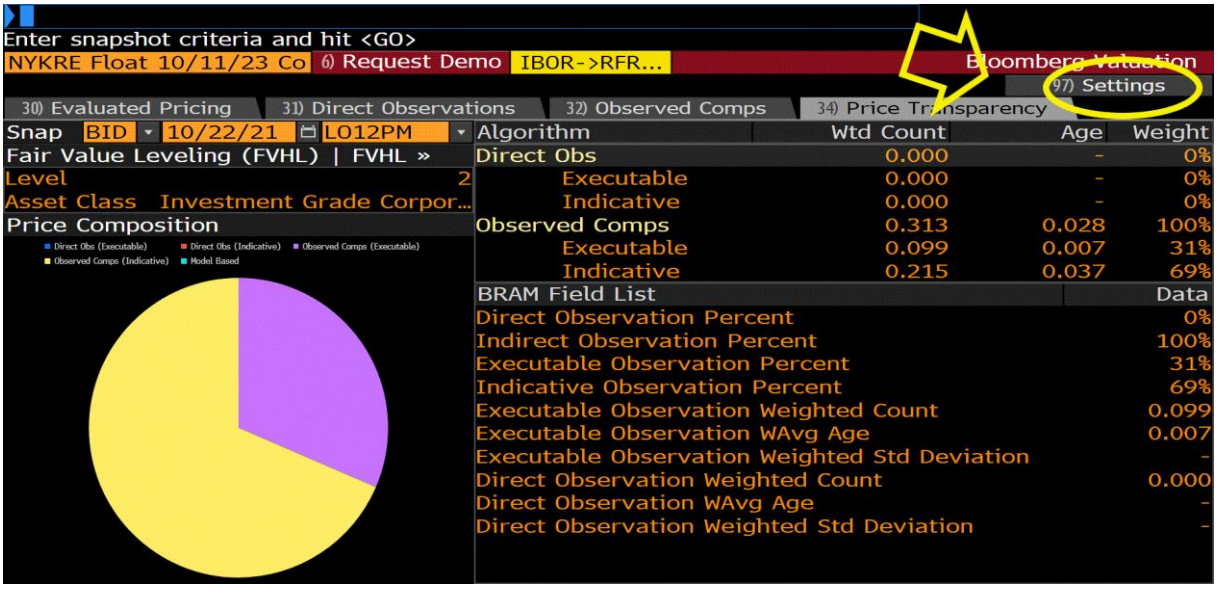

Figure 4 - Access to the methodology document via the Bloomberg Terminal

In all cases, qualitative analysis of the quantitative seemed to me to be a fruitful approach to "taming" certain apparently highly sophisticated financial techniques. It allows us to tackle these techniques head-on, without attempting to drown them in external determinants that would reveal their true logic. Critical without being cynical, it leads to a detailed and informed appreciation of these quantified tools. It offers an understanding of them from the inside and the outside, likely to interest even those market professionals who frequently admit to using these tools with little distance. In any case, it has made it easier for us to understand

[40] *The Indices of the Brussels Stock Exchange* brochure is no longer held at the offices of Euronext Brussels, but at the University of Antwerp. When we found it and consulted mainly the formatting of the figures, rather than the figures themselves, our guide for the day, an "internalist" historian of the stock exchange, asked us, with sincere, if suspicious, doubt: "why do we care?".

these professionals, and in particular their decision-making processes. As the following chapters illustrate, its results have fed into several of the articles at the heart of this work.

b. Ethnography of a reception "milieu"

However fruitful it may be, qualitative analysis of quantitative data does not shed any light on the contemporary uses of valuation tools in financial markets. To grasp these uses, I had to get close to the actual participants in the financial market: interview them and observe them. My first interviews with ten players in the financial sector therefore focused on the theme of their decision-making process and the ways in which they receive the signs that enable them to stabilize this process. This is how I came to realize the centrality of the Bloomberg Terminal: all the signs that reach market professionals are either issued by Bloomberg, or translated by it. For example, a trader active in the stock options market explained his morning routine to me: "It starts with news that you read on the Bloomberg Terminal [...], the first thing is reading". Whatever the nature of the information processed by these actors - indices for equity traders, central bank announcements for forex traders... - it was received through the Bloomberg Terminal.

This initial empirical material, drawn from a first wave of interviews, was not sufficient, however, to gain a detailed grasp of the ways in which decision-makers use their decision-making tools, i.e. the ways in which they receive the main signals (indices, central bank announcements, etc.). Not that the actors interviewed were prisoners of a Bourdieusian *illusio* (several spontaneously raised the limits of their information processing), or insufficiently representative of the "financial community" (idiosyncrasies are crushed by the constraints of global financial conventions), but their comments could not account for the plurality of modes of signification. The role of mobilized graphs and sound alerts could only reach me mediated by language. In other words, adopting the terminology of Peircian semiotics presented earlier (cf. Section I.2c), the indices and icons present on the financial markets were symbolized during the interviews, in such a way as to lose their fundamental sensitive dimension. To deepen our examination of the conditions under which signs are received on financial markets, it was therefore necessary to broaden our empirical experience. To get a better grasp of valuation practices, we had to test the situational supports on which these practices were based, and which constitute the "semiotic milieu" of the financial markets (Berger, 2018). As we have already emphasized, it is in this pragmatist sense of "milieu" that we will refer to the "environment" of the financial markets: the concept thus does not designate what is external to the system (as in

Luhmann's theory), but the sociomaterial configuration in which "all communication finds itself immersed" (*Ibid*: 11). We attempted to advance along this path of "sensitive ethnography" (Pink, 2009; Berger, 2023) on two levels.

On the one hand, since financial communication today is largely "computer-mediated", we need to immerse ourselves in this mediation. An ethnography of financial decisions, and more generally of computer-mediated communications, implies the acquisition of "skills in the analysis of textual and visual data, and in the interactional organization of text-based CMC [Computer-Mediated Communication]" (Garcia et al., 2009: 53). As a provider and translator of financial information, but also a messaging tool and a system for placing buy and sell orders, the Bloomberg Terminal is the main platform for financial communication. Thanks to UCLouvain's subscriptions, I learned how to tame it, first by taking the "Bloomberg Concepts" course, then by freely navigating its thousands of windows. However, it doesn't take long to get lost in the shuffle, and it is hard to pinpoint the particularities of the Terminal's formatting. In order to highlight these particularities, I compared the Terminal with an alternative framing that shook up the financial world at the end of January 2021: the "WallStreetBets" forum gathering retail investors.

These retail investors succeeded in creating an event that the professional market community, cognitively fed via the Bloomberg Terminal, struggled to understand: they massively backed the price of a share (in the GameStop company) that several major investors had predicted would fall. As this event is analyzed in chapter III of this work, we focus here on its methodological aspect. Rather than a regrettable irrationality, we propose to understand the "GameStop affair" as a confrontation between two valuation supports: the "WallStreetBets" forum, with its victorious invasion of the financial space, shook the register supported by the Bloomberg Terminal, causing indignant incomprehension among most Terminal users. It was as if the retail investors gathered on the forum had followed sociologist Harnold Garfinkel's methodological advice to create a "breach" in the situation in order to reveal what underpins the normal course of action:

> Common sense knowledge of the facts of social life for the members of the society is institutionalized knowledge of the real world. Not only does common sense knowledge portray a real society for members, but in the manner of a self-fulfilling prophecy the features of the real society are produced by persons' motivated compliance with these background expectancies. [...] To test this suggestion a procedure would need to modify the objective structure of the familiar, known-in-common environment by rendering the background expectancies inoperative. [...] The member should be unable to recognize

an event's status as typical. Judgments of likelihood should fail him. He should be unable to assign present occurrences to similar orders of events he has known in the past (Garfinkel, 1967: 53-54).

To make the most of this "breaching experiment", we set out to identify the driving forces behind these antagonistic framings: what is it about the Bloomberg Terminal and the WallStreetBets forum that frames market reality in such a way as to be (in)capable of accounting for the explosion in GameStop's share price? This question guided our exploration of the Bloomberg Terminal. In particular, it was a question of seeing what market professionals saw throughout the GameStop affair, such as the analysts' recommendations relayed on the Terminal (see Figure 5 below). And, in parallel, it was now necessary to put this framing into perspective with that of the WallStreetBets forum. We therefore spent several hours on this forum over a period of two months and retraced the GameStop affair via its "archives". Here too, recommendations were posted for GameStop shares, but they were more in favor of buying than the Terminal's analysts (see Figure 6 below).

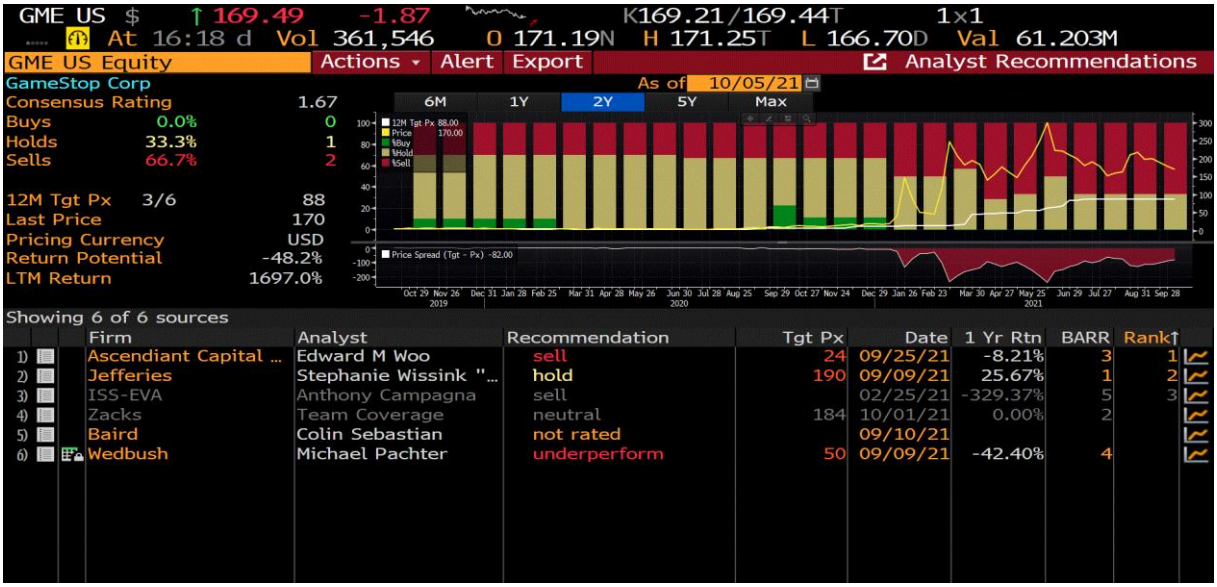

Figure 5 - Trend in analysts' recommendations for GameStop shares (Bloomberg Terminal)

Figure 6 - Buy recommendation posted on the WallStreetBets forum

Through this case study, I was able to qualify the framing of the Bloomberg Terminal and gain a better understanding of the ways in which signs – symbolic, but also iconic and indexical – are used in financial markets. That said, I still didn't have access to the uses of these signs by market professionals. I was able to analyze the qualities of signs "on the doorstep of the market", but not their insertion within the financial community. To borrow from the lexicon of the "hospitality perspective" (Berger, 2018), having studied the conditions under which signs are "ready to integrate" into the financial community (their *admissibility*), it was now a matter of analyzing how they were received (the *receptivity* of the financial community). A full ethnographic approach, involving situational observations, was therefore necessary. We had the opportunity to undertake this for three months in Brussels, in a trading room of one of Europe's largest banks.

Our status as internal trainees - and all that went with it: bank e-mail address, desk in the *open space*, introduction by the head of personnel (who was my training supervisor), etc. - enabled us to talk to all the members of the trading room (see Figure 7 below). Some were more annoyed and expeditious, of course, but all gave me at least thirty minutes when I visited them on their "desk" (see Figure 8 below). So, for the first three weeks, I made the rounds of the 37 desks, sitting next to each trader and sale, to learn about the different aspects of their function: customers served (retail or institutional, Belgian or foreign), products covered (government bonds, SEK-denominated bonds, interest-rate swaps, foreign swaps, etc.) and hierarchical position (trainee, junior, senior). My contacts couldn't stop "covering their market", so they answered my questions while they worked, sometimes explaining their buy and sell orders directly to me.

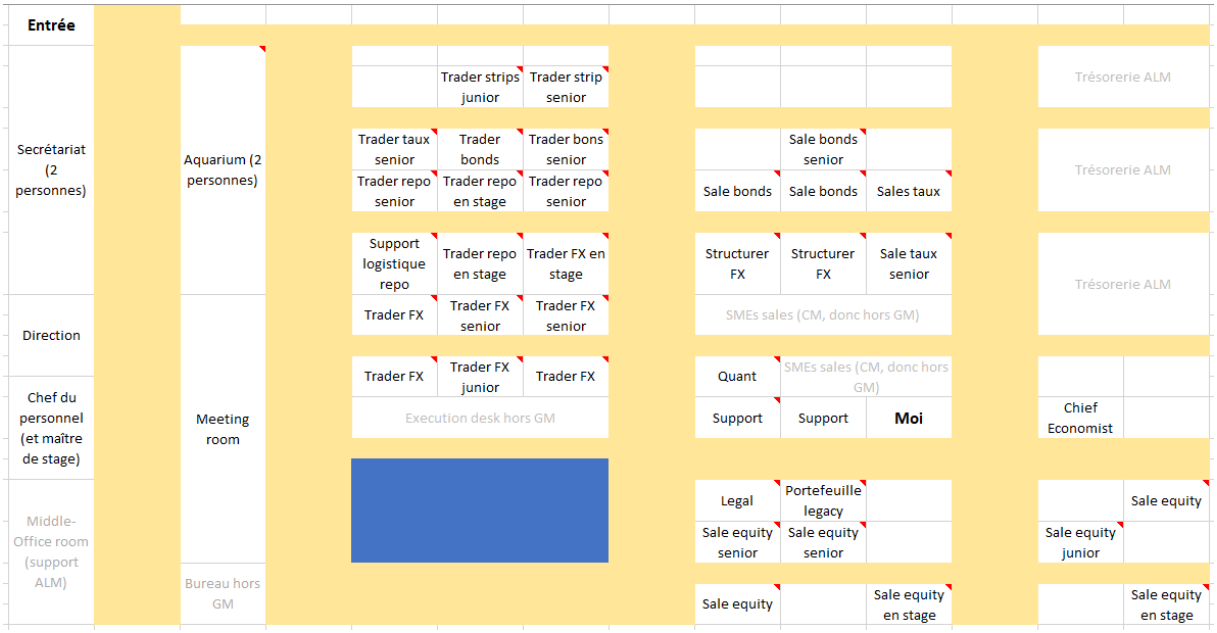

Figure 7 - Anonymized trading floor plan

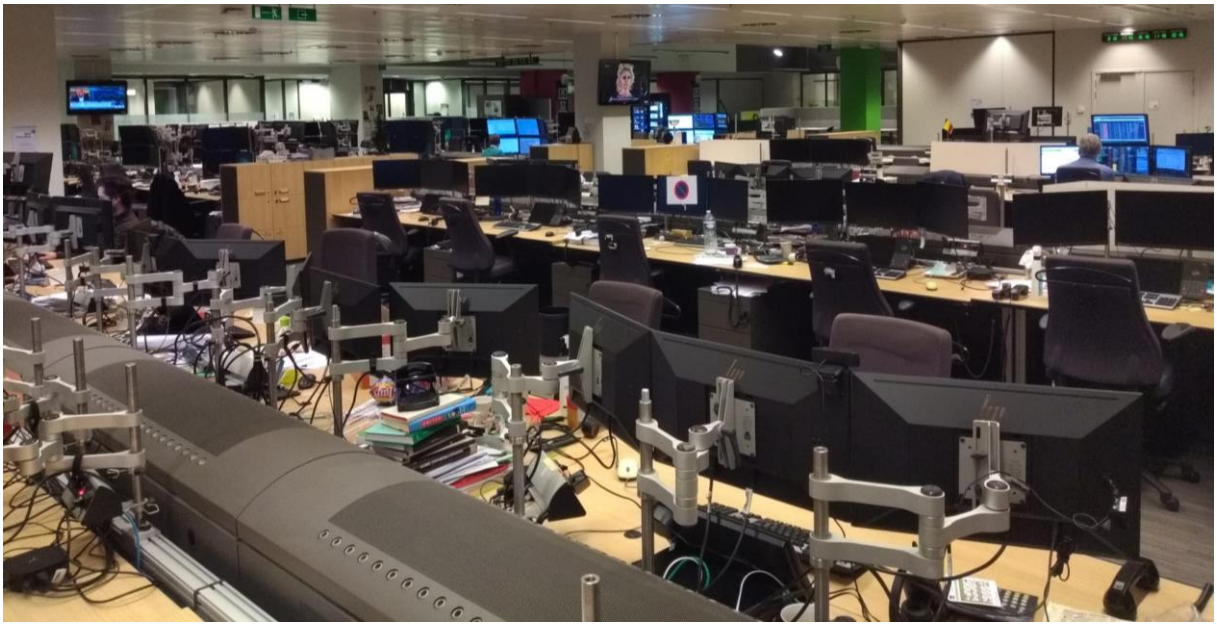

Figure 8 - Photograph of the trading room (end of day)

In the weeks that followed, I undertook more targeted experiments: I went back to certain traders (often the most affable) without specific questions, but asking them to explain what they were doing (and why). Although no clients ever entered the trading room (they went through salespeople who called the traders), the sensitivity of the information to which I had access was very much at stake: I had to sign an anonymization document, the bank's computer could not send me any files by e-mail (so I had to print out a lot), and certain documents (e.g. the internal market risk assessment model) were inaccessible. This is why, in these interviews as in the previous ones, I didn't record the discussion, but tried to take notes on the fly. It is also why, with one exception at the end of the day (see Figure 8), I didn't take any photographs of

the field. Such material would have been invaluable to mobilize, but risked inhibiting the relationship with the traders. In any case, this was my opinion, as well as that of traders questioned afterwards about this issue.

Watching a trader follow the market on his six screens (at least four of which were filled by the Bloomberg Terminal) and manage his "book" (i.e. all the positions he had taken), sometimes for over an hour, was undoubtedly the most instructive empirical experience of my doctoral journey. As my understanding of its functions became more refined (risks incurred, preferred intermediaries, profitability objectives, etc.), I was able to direct my questions towards my areas of interest. In this way, I was able to gain a better understanding of how different signs, including stock market indices, are received by this audience of market professionals. These lessons helped me to flesh out my semiotic analysis of indices, which is the subject of chapter V of this work, albeit probably still too little. They have also opened the way to a number of possible extensions, particularly with regard to the reception of central bank announcements in trading rooms.

That said, the experience was also instructive in ways it could *not be*. The decision-making power at the heart of my research question now largely eludes traders at the big banks. In the wake of the 2007-2008 financial crisis, bank activity on the financial markets has been more tightly regulated, often via the adoption of the "Volcker Rule", which prohibits - or curtails – banks' "proprietary" trading. A relatively strict version of this rule was adopted in April 2014 in Belgium[41]. In practical terms, this means that bank traders must only execute buy and sell orders transmitted by their clients (companies or asset management services); they can no longer decide to buy or sell a security because they think its price will rise. Their main job is now to respond to salespeople who pass on a request from a customer who wants to know the price offered by the bank for a particular security: traders respond to "RFQs" (requests for quotation). "How much do you quote for 2 million euros in Swedish kronor?". The trader is thus distinguished by his ability to give a "competitive but profitable" price, i.e. higher than the price to which he has access, but lower than the price offered by his competitors at other banks. Except that the price to which he has access is constantly changing (particularly between his response to the RFQ and the customer's actual order), so he has to *cover* himself by buying at

[41] Service public fédéral finances, *Loi relative au statut et au contrôle des établissements de crédit*, published in the *Moniteur* on April 25, 2014. Its article 119 reads as follows: "As of January 1, 2015, all credit institutions are prohibited from engaging in proprietary trading activities, whether directly or through Belgian or foreign subsidiaries".

the right time on the market before selling to the customer, or selling at the right time on the market before buying from the customer. In practice, the trader has several simultaneous RFQs and therefore builds up a "book" (with euros and kroner, for example) which enables him to satisfy future orders. One trader put it this way:

> Today, what counts is securing added customer value. So there are hardly any opinions left. You can just under-hedge to take advantage of a price movement, or over-hedge to take advantage of the opposite movement.

While some traders claim that they are still able to speculate around the proprietary trading ban ("when the National Bank [of Belgium] asks you to justify your positions, you can always say that you're 'anticipating a client order'"), most of the traders we met admit, often in disappointment, that their room for maneuver has been restricted. And they look back nostalgically to the 1990s and early 2000s: "That's when you should have come! It was crazy, we could do whatever we wanted. Now it's all over..." (transcribed interview extract). All the more so as post-crisis regulation is not the only restriction inhibiting or even threatening them. More and more of their "book" escapes them because it is automatically processed by the bank's trading algorithms. Since their task increasingly resembles the mere execution of orders (to be offset by a symmetrical order to hedge), a robot can take care of it. With the exception of those handling "exotic products" that are difficult to formalize, such as options (but those are usually in London or New York, not Brussels), bank traders feel threatened by automation. One former trader, who has taken refuge in the risk management department, justifies his career choice, which has cost him both salary and prestige, as follows:

> Traders are in a golden cage [*smile*]. That's what we say here. Because, okay, they earn very well, but they're mega-specialized in a very small market segment. So, if their job disappears, they don't know how to retrain (transcribed interview extract).

The uncertainty surrounding the decision-making of bank traders, which is the source of their power, is therefore limited and unlikely to increase before the next deregulation. It is not non-existent, however, and is managed in a certain way, which relies heavily on the Bloomberg Terminal and is relatively homogeneous among the actors we met. This homogeneity of uncertainty management techniques potentially extends the relevance of our observations beyond Brussels and beyond the sell-side trader sector. Financial market professionals seem to form a community through this sharing of cognitive frames. Generally learned in globalized business schools (Kaltenecker, 2022) and recalled on a daily basis by

convention-based market dynamics, these valuation supports have become a constituent element of unity in this transnational community. A famous financial analyst interviewed in the recent Netflix series devoted to the GameStop saga declared: “I don’t think you can be a member of the financial community without it [Bloomberg Terminal]”. In these circumstances, the scope of the field I studied during this three-month internship is tricky to define: to restrict it to the fifty or so professionals I met would be to deny the dynamics of globalization at the source of a “financial community”, and to include all financial market professionals would be to overestimate the coherence of this community, which is never fully homogeneous. Let’s just say, then, that I studied signs emitted on the screens of all the world’s financial market professionals, and received in a widely shared way.

As we will discuss later in chapter conclusions, these ways of receiving signs could be further explored using our ethnographic materials. The surveys that make up the body of this thesis have undoubtedly not made sufficient use of the semiotic analyses of situations mentioned in this section[42]. In other words, the “ethnography of a reception milieu” is almost as much a research project as an accomplishment; there is still “juice” to be extracted, using Peircian analytical tools, from the situations experienced during these three months of internship. The fact remains that this fieldwork informs most of the articles written since January 2022, if only through the technical nuances and realism it lends them. This is particularly true of the paper on the semiotic role of stock market indices (see chapter V), but it is also true of the chapters that follow it.

In the wake of the 2007-2008 crisis, traders at the big banks lost a large part of their decision-making power. To whose benefit? If the distribution of income within the financial industry is to be believed, to the benefit of the “buy-side”, i.e. financial companies whose function is to buy securities, such as investment funds (McKinsey, 2023). Indeed, it is fund managers - the clientele of bank traders who must “execute” their decisions - who seem to be establishing themselves as the dominant players on today’s financial markets. To reinforce this observation and identify more precisely the location of the financial players who have the power to decide to buy and sell financial securities, we leave behind the nostalgic complaints of traders to establish, using other methods, a map of the (country’s) financial industry.

[42] There are many reasons for this inadequacy (or even regret). Among them was the (momentary) “resolution” of the tension between my attraction to the semiotic analysis of situations and my ambition to reconnect with the institutionalist perspectives of political economy, in favor of the second term, on my return from the LSE.

c. Mapping capital flows

What if decision-making power remained within banking groups, but simply in a different department? No longer in the trading room where the bank traded on its own account before the 2007-2008 crisis, but in the "investment committee" meetings that define the strategy of the same banking group's asset management company. During our three-month internship, we were able to conduct interviews outside the trading room, in other Brussels offices, with other professions in the finance industry (risk managers, private bankers, asset managers, etc.). On this occasion, we met the head of the Belgian branch of the banking group's asset management company. Although he worked less than twenty minutes away by bus, he was unaware of most of the activities carried out in the trading room; and the reverse was also true: with the exception of one "finance enthusiast", the traders we met were incapable of explaining to me precisely what asset managers do. A "golden cage" effect, boosted by the specialization of tasks, particularly advanced in the major banking groups. From a methodological point of view, this meant that I couldn't rely on interviews with traders to shed light on asset managers' activities. I needed new interviews.

Actors who might appear to be "neighbors" - traders and asset managers - thus live in relatively distinct niches. To what extent are our analyses of traders' valuation supports (Bloomberg Terminal, stock market indices, central bank announcements) also relevant to this other "reception milieu", which has become dominant in contemporary financial markets? Starting in December 2022, we undertook a new "wave" of interviews with asset management company employees to put forward elements of an answer. While their information base undeniably differs from that of traders (study of company financial statements, interviews with CEOs and CFOs of companies in the target sector...), the asset managers interviewed also have access to it via the Bloomberg Terminal. A junior manager from one of the leading asset management companies on the Belgian market was explicit in this respect:

> Of course, we all use Bloomberg, it's the main data aggregator. And it's not just an aggregator, it's also a chat tool through which I communicate with analysts, with my team... You can't work without Bloomberg. It's quite expensive, but... They've made quite a coup: the competitors (Reuters, FactSet) are marginal, because it's a "winner takes all" business (interview extract).

The use of the Bloomberg Terminal thus distinguishes not so much between the different professions in the finance industry as between the status - professional or retail - of market participants, as we shall see later in this work (see chapter III). The asset managers we

interviewed also declared themselves to be very attentive to movements in the main stock market indices, which they see as benchmarks to be reached or surpassed. This is nothing new, and confirms the findings of the literature on the power of index providers (see chapter IV). Finally, when it comes to central bank announcements, asset managers do follow them, but from a much greater distance than the traders we met: since their time horizon is much longer than that of traders (revision of weekly or even monthly positions, rather than intra-day), they don't try to anticipate monetary policy decisions and therefore don't consult the same Bloomberg windows. A more participatory dimension would have been necessary to refine this distinction[43]. Instead, we have opted for a different methodological approach, aimed at providing a clearer picture of the financial industry landscape.

How can we assess the evolution of asset managers' decision-making power, and the way they use this power? The ethnographic path is as perilous as it was for the trading room, but also potentially disappointing: the activity of asset managers, however fascinating, does not consist in answering this question. Therein lies perhaps a limit to our project of linking microsociology and macroeconomics. Professionals in the industry are generally unable to shed any light on these broader issues. This is because the problem the asset manager is trying to solve is quite different: it consists in selecting successful financial securities to put into investment funds or to offer to clients. The worry, from the researcher's point of view, is that the way in which she will solve this problem - in particular, the freedom she will enjoy and the resulting financial impact - is partly determined elsewhere: the volume managed is not decided by her manager, but is the result of institutional developments beyond her reach. This is the classic institutionalist argument I often heard at the LSE when explaining my research orientation[44].

I was not insensitive to this argument and, on my return from London, decided to take this route, which was more complementary than a rival to the semiotic approach. The challenge was to identify the factors - probably macroeconomic in nature - that had amplified the decision-making power of asset managers (and, correlatively) diminished that of bank traders. Constructing an answer to this problem involved "leaving the situation" and mobilizing other types of empirical material. The figures collected by financial sector regulatory bodies proved

[43] In March 2023, I interviewed for an internship with one of the leading asset management companies on the Belgian market. The interview turned out to be quite conclusive, but in the end did not lead to a three-month internship, as the superior of my potential internship supervisor deemed the team insufficient to supervise an intern.
[44] This argument sometimes took a livelier form, particularly when it came from our Marxist friend David Kampmann, who was annoyed, to say the least, by the "STS" tendency of the sociology department.

particularly valuable: they provide information on the share of (Belgian) savings inherited by the various players in the financial industry. Of course, we must not abandon the critical gaze of the sociology of quantification on these numbers. But, as we have seen, Desrosières' theoretical perspective does not lead to the disqualification of any quantification approach. It recognizes the interest – and the necessity - of quantification, and therefore the need, in certain situations such as ours, to exploit figures "for their own sake", rather than as objects.

In our case, this methodological attitude - both in search of aggregations that shed light on institutionalization processes and critical of the quantification effort - translated into a careful selection of the data used: public statistics, which today make up national and international financial accounts, and whose methodology is often remarkable for both its continuity and its transparency (e.g. OECD, 2017), were preferred to promotional figures put forward by associations representing the interests of the sector. The hierarchy is obvious, but rarely applied, given the dense, austere formatting of the former and the light, attractive presentation of the latter (see Figure 9 and Figure 10 below). On the basis of this data, digitized since 1998 and easily accessible in archives for earlier periods, it is possible to see the evolution of amounts allocated to a financial sector (investment fund management), and therefore to certain players (fund managers). These findings are set out in an article in CRISP's *Courrier hebdomadaire* (Duterme, 2023b), which forms the chapter II of this thesis.

Figure 9 - Quantification of the regulatory authority (NBB, 27/11/23)

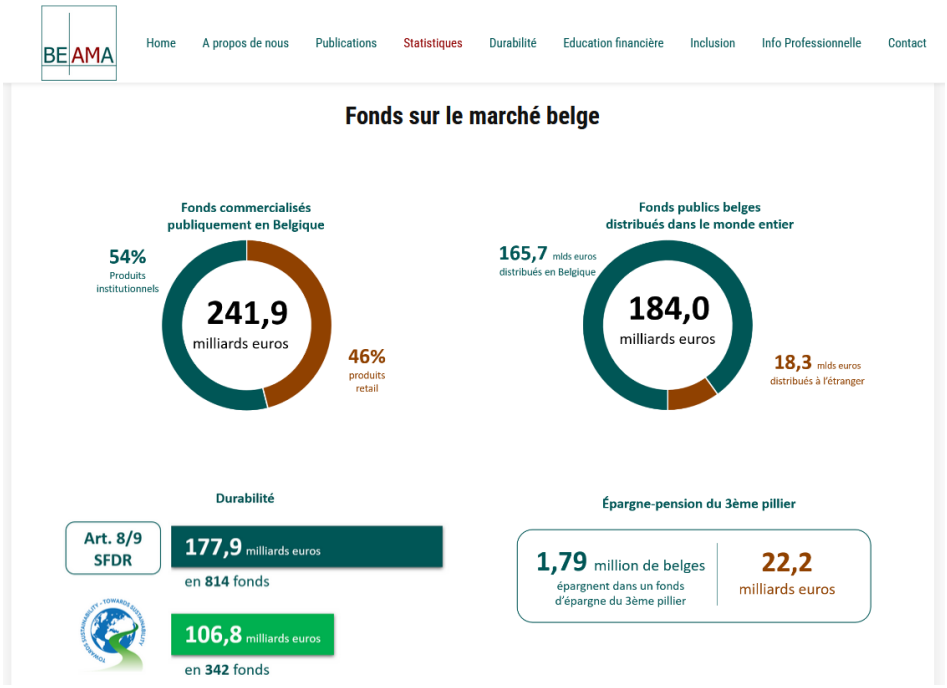

Figure 10 - Quantification of the association representing the sector's interests (BEAMA, 27/11/23)

Other figures were mobilized to refine our mapping of capital flows, but always with the same objective in mind. In all cases, the use of "data" was not independent of its production process. Another example is the investment policies of fund management companies. These funds are generally set up as limited companies, which means they are obliged to publish annual accounts. These accounts, available on the *Banque-Carrefour des Entreprises* website, are audited and must comply with the legal framework. They are therefore probably more instructive on fund managers' decisions than the "sustainable investment" figures promoted on management company websites, but not based on any clear quantification convention. Once again, prioritization seems straightforward, but requires penetrating the opacity of voluminous annual accounts.

The trends that are then drawn up on the basis of this data processing run the risk, especially when they are "graphicalized", of being "hardened" to the point of evading debate. To prevent this reifying drift, and allow these forms "to be both undisputed, so that life can take its course, and nonetheless debatable, so that life can change its course" (Desrosières, 1993: 413), the aggregation method is detailed at the end of our article, so as to leave readers the possibility of reopening the "black box" (cf. methodological note in Appendix II). Furthermore, we have taken care to maintain the embodiment of these quantified evolutions: the graphs are not presented as the expression of "economic forces", but connected to the social realities that

underlie them - which implied associating with this quantitative cartography an analysis of the political debates that have punctuated this financial history.

The results of this methodological undertaking are presented in the chapter II of this thesis. They relate primarily to the Belgian market, but also provide information on the dynamics at work in contemporary, largely globalized financial markets: Belgian capitalism is no exception to the advent of "asset manager capitalism" identified by several institutionalist socio-economists (Braun, 2016; Archer, 2023). In our view, they therefore fulfill their function of shedding light on the institutional conditions of market participants' decision-making. Similarly, our study of the spatial reconfiguration of markets, based on the case of the reform of the Belgian Stock Exchange, shed light on the contemporary decision-making situation: no robotization of trading, for example, without the computerization of financial markets. Thus, our microsociological inquiry opens and closes with an institutionalist component. Institutionalization must therefore be understood not only as the *result* of market participants' efforts to reduce uncertainty (stabilization of valuation supports), but also as a *condition* of this effort. When these conditions tighten, as they did in the wake of the 2007-2008 crisis, some market participants, such as bank traders, feel that they no longer have *enough* uncertainty to manage. It therefore seems essential to examine these institutional conditions, whose stabilizing effects on the situation come to be deplored by actors whose position and remuneration depend on their ability to manage uncertainty.

At the end of this journey, the question arises of the overall coherence between these various methodological approaches and theoretical perspectives. If, from a pragmatist perspective, this coherence should not - and cannot - result from the accomplishment of a coherently defined plan *a priori*, it nevertheless remains a desirable property of the elements of response brought to the initial problem. To (attempt to) tackle this thorny issue, the last part of this introduction outlines the main theme of this thesis.

III. A sociology of valuation practices

This thesis sheds light on the valuation practices of financial market participants in three stages. First, a socio-historical approach (Section III.1) explains the conditions in which market participants find themselves today. The scope of buying and selling decisions is unprecedented, thanks to the computerization of markets. They are also increasingly taken on by a particular type of actor, enshrined in the "asset management revolution". Secondly, the valuation practices of market participants are clarified through an analysis of the main valuation supports used: the Bloomberg Terminal, stock market indices, central bank announcements and oil benchmarks (Section III.2). The influence of these supports is sometimes recognized, but the context of their emergence and the modalities of this influence remain poorly identified. The scope of these conventions often spans several market segments: participants in the equity, bond, currency and commodities markets, however different, all mobilize the Bloomberg Terminal, for example. Thirdly, we draw out some of the implications of the power of these valuation tools for the functioning of financial markets (Section III.3). Produced by a handful of financial information companies, the conventions studied give these companies a quasi-regulatory role in the markets. This other facet of financial regulation, more invisible than legislation, cannot be ignored in reform proposals aimed at making markets more efficient, stable or sustainable.

1. The new rules of the game

Like the people Goffman evoked, the individuals we met "don't invent [...] the stock market when they buy some shares"[45] (Goffman, 1981: 63). Financial market participants, whether professional or retail, conform their decision-making to the rules of the game. These rules, which were remarkably stable between the birth of the stock exchanges (1801 for Brussels) and the Second World War, have been overturned. To understand the valuation practices of market participants, we need to look at these institutional changes. In the scientific literature, these evolutions are often presented as quasi-automatic adjustments to exogenous shocks. Explanations for the upheavals in the financial world can thus be distinguished primarily by the nature of these shocks. Technological: computerization is fueling a globalization that is outstripping national regulations and forcing convergence towards a single model (e.g. Cerny, 1994). Economic: stock exchanges now act like firms, adopting the most efficient model in the face of competition (e.g. Di Noia, 2001). Political: the revenge of the capitalist class enables them to institute financial liberalization in line with their interests (e.g. Volscho, 2017). To avoid this mechanical interpretation of social change, we propose to shed light on these shifts in the rules of the game from two apparently more local angles, but whose conclusions inform market developments on a global scale: the liberalization of the Brussels Stock Exchange (Section III.1a) and the advent of investment funds (Section III.1b).

a. Globalized, computerized, competitive: modernized markets

Until 1990, anyone wishing to buy or sell a stock listed on the Brussels Stock Exchange had to transmit their order to a stockbroker (*agent de change*), that is an intermediary approved by the corporation "*la Commission de la Bourse*". Since then, market participants have simply logged on to one of the trading platforms where the stock they are interested in is listed, and placed their order. A legal monopoly, located at the Palais de la Bourse, was replaced by competition between intermediaries and trading platforms, no longer defined by territorial anchorage. The chapter I traces this polymorphous transformation of financial market participants' decision-making space, based on a socio-political investigation of the Belgian case. First, we identify various factors that have fostered this institutional mutation, such as the composition of the commissions preparing the reform and the authority of economic expertise invoked in discussions. Next, we analyze the latter factor in more detail, building - from the

[45] See section I.2a for a discussion of this quotation and its implications for the theoretical positioning of this work.

perspective of the sociology of quantification - a methodological critique of the expert report. Finally, the lessons of the Belgian case are related to the global transformation of stock markets.

While this "modernization" has indeed overturned the "rules of the game" of the stock market (and of other market segments, albeit in different ways), it is irreducible to any single explanatory factor. The technological dimension should be neither overestimated nor underestimated: by transforming the possibilities and constraints experienced by financial markets, it has tested the resilience of the established order. Alone, it did not cause its downfall: before the 1990 reform, stockbrokers on the Brussels Stock Exchange had initiated computerized trading, as had brokers on the floor of the New York Stock Exchange (NYSE), who survived. As Saskia Sassen (1999) was quick to point out, financial transformation is less a matter of "dematerialization" than of spatial reconfiguration, as illustrated by the persistent concentration of financial activity in a handful of cities. So as not to succumb to this mystifying narrative of the dematerialization of financial flows, our conclusion to this first chapter identifies precisely how these technological transformations are reflected in the markets.

b. The new recipients of decision-making power

Market participants therefore have a very different access route: no longer a personalized relationship with an authorized expert (the stockbroker), but a connection to a plurality of exchange platforms. But who are these participants? Has the abolition of the stockbrokers' monopoly democratized the stock market, giving everyone direct access to it? This is what a hasty interpretation of the third "D" in Henri Bourguinat's classic work (1992), "disintermediation" (following "decompartmentalization" and "deregulation") might conclude: now free to participate directly in financial markets, individuals would increasingly be buying and selling shares, tending to dilute control of listed companies among a host of "small shareholders". This is also what industry professionals welcome, and what several academics have been relaying until recently, as Benjamin Braun notes:

> The [...] shift in the US stock ownership structure from dispersed to concentrated was not anticipated and caught most corporate governance scholars by surprise. In 2009, the very first sentence of an article published by leading finance scholars in a leading finance journal still described dispersed ownership in the United States as "one of the best established stylized facts about corporate ownership" [Franks et al., 2009: 4009]. At that point, however, BlackRock's *average* equity stake in S&P 500 companies had already surpassed 5% (Braun, 2022: 639).

The point made at the end of this quotation raises a major limit to disintermediation[46]: the emergence of structures that collect other people's money and place it on financial markets. This emergence does not date from the rise of BlackRock: it is seen by the economist Perry Mehrling as "the most significant development in financial markets in the two decades after World War II" (Mehrling, 2005: 59). The abolition of the stockbrokers' monopoly did not put an end to the delegation of decision-making power; it redefined who benefited from it. The new privileged intermediaries, de facto in an even more concentrated position than the stockbrokers were, are the "asset managers". The chapter II of this work traces their arrival on the Belgian financial scene.

We will see how an increasing proportion of the savings of Belgian residents - not only households, but also occupational pension institutions, insurance companies and small and medium-sized enterprises (SMEs) - is entrusted to asset managers, and more specifically to investment fund managers[47]. It is they, far more than the traders in the trading room, who are now in a position to decide which securities to buy and sell. That said, we shall also see that they in turn delegate a large part of their decision-making power to index providers, whose composition they simply replicate. What's more, in the Belgian case (unlike that of the USA), this loss of traders' power has not put the banks at a disadvantage: the Belgian investment fund sector is highly concentrated around the country's main banking groups (BNP, Belfius, KBC...).

These first two chapters provide information on the rules of the "game" facing today's financial market participants. They reveal the "new" institutional conditions of the financial valuation practices. Market participants do not operate in an "institutional vacuum": while they often complain about the resulting framing effect, which stifles their creativity, they also rely heavily on it to manage uncertainty... or to justify unfortunate decisions. The following chapters, which form the main body of this work, take a closer look at these valuation practices, and at the role played by certain valuation supports that have become conventions.

[46] Another limitation, already suggested, is the legal restriction of order execution to certain firms approved by the regulatory authority (see footnote 31). An individual cannot directly buy and sell a security on the financial markets.

[47] The "asset management" sector takes three forms: investment fund management, discretionary management (mandate to manage a client's account) and investment advice (making investment proposals to a client). In 2021, 60% of assets under management in Belgium is managed via investment funds.

2. The players and their tools

The institutional conditions for decision-making in financial markets remain very loose, compared to other market environments. In particular, the guarantee of revocability they offer both buyers and sellers, i.e. "liquidity", is a rare property: the ability to resell what one has just bought (and vice versa) is, in most contemporary markets, very limited. Conversely, it is central to the institutional framework of financial markets. This ease of disengagement (and therefore of commitment) generates uncertainty about the number and identity of buyers and sellers, that is ultimately about the evolution of the price. In his *General Theory*, Keynes identifies this as a major factor of instability, and goes so far as to propose its abolition:

> The spectacle of modern investment markets has sometimes moved me towards the conclusion that to make the purchase of an investment permanent and indissoluble, like marriage, except by reason of death or other grave cause, might be a useful remedy for our contemporary evils. For this would force the investor to direct his mind to the long-term prospects and to those only (Keynes, 1936: 143).

Under current institutional conditions, where Keynes' wish has not been fulfilled, the market participant is not forced to "direct his mind to the long-term prospects and to those only"; he has the "freedom" to appreciate many more factors that will impact the success of his choice. But which ones? On what information should he base his decision to ensure success? Since institutional determination is largely incomplete, market participants need to supplement it with "self-instituted" benchmarks. Or rather, "non-legally instituted" benchmarks. The lexicon of "self-institution", like that of "self-regulation", is in fact misleading, as it suggests a process of election, if not spontaneous, at least relatively horizontal: participants, left free by the public authority to fill the "gaps" left by legislation, would orient themselves towards "saliencies" perceived by all, or at least collectively define common references. The emergence of valuation supports mobilized by financial actors is less democratic: it is marked by the struggle between pretenders to this role of "quasi-regulators". At the heart of this work, we retrace this emergence and identify the influence of some of the winners in this struggle.

Our approach is therefore similar to that of researchers who have studied the most famous "private regulation" of financial markets: credit ratings. These ratings, produced and sold by the famous "rating agencies" (Standard & Poor's, Moody's and Fitch), assess a borrower's ability to meet her commitments, and are now an essential reference for all players in the bond market, whether they like it or not (Sinclair, 2005). Several researchers have uncovered the precarious path that led these ratings to their contemporary status, from their first

inclusion in a court judgment (Flandreau & Sławatyniec, 2013) to their commercial success (Olegario, 2006). The stabilization of the form taken by these grades - the famous letter scale from AAA to D (or C for Moody's) - has also been traced by sociologists of quantification (Carruthers & Cohen, 2010). Less has been said, however, about the mobilization of these ratings by market participants. Even for the best-known of financial conventions, there is still work to be done by pragmatist sociologists.

Rating agencies can only assess debt securities, and therefore cannot stabilize the expectations of participants in other segments of the financial markets[48]. Equity traders and asset managers *need* something else. The same applies to money market and forex players, as well as those in the commodities market. Our research program is thus clear. To investigate the valuation supports used by participants in different financial markets, and then to explore the emergence and influence of the main contemporary supports. Table 3 summarizes this program, and at the same time offers a reading plan for the body of this work. It lists the main segments of the financial markets[49] and identifies the key decision-making tools used by two types of participants: traders and asset managers. The figures in brackets correspond to the chapter in which these conventions are analyzed.

	Bond market	Stock market	Money market	Forex	Commodity market
Traders	Bloomberg Terminal (3)				
	- Credit rating - Yield curve	- Indices (4-5)	- Central bank interventions (6-7)	- CB interventions (6-7)	- Benchmarks (8)
Asset managers	Bloomberg Terminal (3)				
	- Credit rating - Yield curve	- Indices (4-5)	- CB interventions (6-7)	- CB interventions (6-7)	- Benchmarks (8)

Table 3 - Valuation supports studied in this work (numbers refer to chapters)

Its incompleteness needs to be emphasized right away. This table is intended as a working tool, rather than an inventory of market information. Other signs are certainly central to the work of traders and asset managers. Other types of actors are also legitimate to appear in this table, such as venture capitalists who covet unlisted shares on the markets. That said, the

[48] Of course, credit ratings are not the only benchmarks used in the bond market. Another central device is the yield curve (for a sociological analysis, see Christophers, 2017 and Cassar, 2022).

[49] Any partitioning of financial markets is questionable, but also welcome to clarify the point. The derivatives market, i.e. products whose value depends on other financial securities, is not an autonomous category in our table, but a "layer" of each market. The cryptocurrency market has not been included, but could be added if it continues to develop.

two professions selected seem to us to be the two main players in charge of deciding which securities to buy and sell. Traders are those who execute buy and sell orders from clients (sell-side traders) or from themselves (buy-side traders). This characterization makes it possible to identify a public whose unity is ensured by this order execution function, but whose members are not always identified as "traders". Indeed, in the finance industry, this category is undoubtedly too generic to distinguish between pure execution traders ("flow manager") and traders dealing with more complex financial products ("structured products manager"). The term "trader" is also sometimes avoided for its connotations, as evoked by a trader from a Belgian bank rescued by the State (which became its sole shareholder) during the 2007-2008 crisis:

> What I'm doing now is I'm on the trading desk... which we don't actually call trading at Belfius. We call it "flow management", but... it's a trading desk. We just changed the name, because there was a political will when Belfius was created [in March 2012] to stop talking about "trading". This kind of thing had bad press. But the business... is more or less similar (interview extract).

Moreover, as we have already mentioned, contemporary institutional conditions are not favorable to traders: the post-crisis regulation of 2007-2008 often reduces their room for maneuver to a "press-button" role, which is also threatened by the robotization of trading made possible by the computerization of markets. Perhaps the only traders spared are those working in highly speculative investment funds, such as hedge funds. Despite this heterogeneity, traders share a very short time horizon, which leads them to mobilize the same signs, and in the same way. Asset managers, on the other hand, have to think in longer-term horizons: investment fund positions are only exceptionally reviewed on a daily basis (e.g. in hedge funds), and more often on a weekly or even monthly basis. This difference implies the mobilization of other signs or, more frequently, another mobilization of the same signs.

Furthermore, this table tells us nothing about the ways in which the various valuation tools are mobilized. As we shall see, traders and asset managers do not make the same use of stock market indices, the latter being much more "forced" to refer to them than the former. Also, while the Bloomberg Terminal's influence appears to be transversal, it probably loses in intensity what it gains in extension. In order to refine the discussion, we will briefly review the four valuation supports analyzed in this work: the Bloomberg Terminal (Section III.2a), stock market indices (Section III.2b), central bank announcements (Section III.2c) and oil benchmarks (Section III.2d).

a. The Bloomberg Terminal, a meta-sign

The chapter III focuses on the Bloomberg Terminal. Little work has been done on this valuation support, probably because its framing effect is little recognized. It is generally regarded as a mere "data aggregator". The chapter shows that the Terminal's designers are not content with this passive relay role: they shape the information and even produce indicators independently. The singularity of this shaping, and therefore its power over the decision-making process of market participants, becomes clear when an alternative shaping emerges, such as that of the WallStreetBets forum on which retail traders met during the "GameStop saga" recounted in this chapter. Based on this "breaching experiment", and adopting the perspective of the sociology of quantification, we highlight the framing effect that the Terminal produces through its operations of *selecting* the signs to which it confers visibility, of *weighting* in the production of synthetic indicators, and of *ranking* in the highlighting of certain signs.

Acknowledging the semiotic centrality of the Bloomberg Terminal is all the more important given that this decision-making tool concerns traders and asset managers alike, and is not confined to one market segment. As its main menu suggests (see Figure 11 below), the Terminal aims to become - and has largely succeeded in becoming - a key gateway to all financial markets. It thus conditions not only the perception and interpretation of market participants, but also the success of other valuation supports, such as stock market indices or central bank announcements. We shall see that central bankers are not unaware of the Terminal's role as a "meta-sign", and "invest (in forms)" to ensure that their interventions are formatted in a way that is compatible with the Terminal's requirements.

Figure 11 - Bloomberg Terminal main menu

b. Stock market indices, gatekeepers of the equity market

The chapters IV and V focus on stock market indices. The importance of these signs for the equity market is increasingly recognized in the literature, both in international political economy (Petry, 2021; Petry et al., 2021; Fichtner et al., 2023) and in financial economics (An et al., 2023). This is because the amounts managed by investment funds that base their allocation on the composition of stock market indices ("passive management") have grown impressively since the financial crisis, to such an extent that since June 2022, more US equities have been acquired by "passive funds" than by "traditional (actively managed) funds" (Johnson, 2022). Our analysis of stock market indices sheds light on this phenomenon using two unexplored approaches.

In chapter IV, we discuss the conditions under which indices are produced, based on a survey of an index-producing company. It emerges that the design of an index, in addition to conferring real power on its owner, involves arbitrating between contradictory objectives, driven by actors with antagonistic interests. For example, listed companies lobby to relax the criteria for inclusion in the index in order to benefit from its visibility, while traders push on the contrary to reduce the number of different stocks they have to buy and sell (each transaction implying a cost). Inspired by the sociology of quantification, our inquiry uncovers five dilemmas that structure the contemporary conception of stock market indices, and which are still visible in the methodology of these central signs.

In chapter V, we analyze the ways in which stock indices intervene in markets, using Peircian semiotics. The aim is to refine our understanding of the roles of these valuation supports in financial markets. More precisely, we grasp the plurality and dynamism of the semiotic roles assumed by stock market indices when they are seized by traders: depending on the situation in which they intervene, these signs do not refer to the same object and do not steer the trader's action in the same direction. This chapter thus aims to illustrate the fruitfulness of the extension offered by Peircian concepts, which Jean De Munck and I called for (cf. Section I.2c).

c. The central bank at the top of the currency

The chapters VI and VII then focus on central bank interventions in financial markets. Unlike the Bloomberg Terminal, and even more so than stock market indices, this third valuation support has become one of the "trending" themes in several fields of research. Sometimes identified - since the 2007 financial crisis - as the "only game in town" (El-Erian, 2017), that is as the only (public) regulator still able to stabilize markets, the central bank has attracted a great deal of attention from economists, political scientists and even sociologists. However, our theoretical and methodological positioning has enabled us to make an original contribution to this crowded field of research. Indeed, while the impact of communications by the main central banks on various market segments has been attested by numerous econometric publications, the modalities of this relationship of sending and receiving signals between central bankers and traders have been little problematized. We propose to move forward in this direction, on two fronts.

In chapter VI, we trace the "semiotic turn" of monetary policy, based on a socio-historical study of the Belgian case. Central bank decisions only complied with the demands of financial markets when the "good reception" of these decisions by traders became a "felicity condition" for monetary policy. By tracing the origins of this semiotic shift, we bring to light the challenges posed by this new communicative constraint, as well as the "investments in form" required to overcome them. Rather than an opportunity for neoliberal central bankers to get closer to the markets, the semiotic turn of monetary policy appears to have been a period of great uncertainty, managed as best they could by the men at the helm.

The chapter VII, on the other hand, looks at a seemingly minor aspect of the communication strategy of most contemporary central banks: the imprecision of the inflation

targets they announce to the public and, above all, to the financial markets. Contrary to the theoretical prescriptions of neoclassical economics - and therefore frequently condemned as an "irrationality" - this convention of quantification can be clarified by four explanatory paths put forward by various social scientists. This chapter outlines these four paths and proposes a fifth one, based on the empirical study of the Belgian case, according to which the persistence of vagueness in the quantification of inflation targets represents a device for reaching compromises within central banks and with other organizations. It concludes with a few prospects for future research, based in particular on our ethnography in the trading room, to refine and extend these findings.

d. Benchmarks, the kings of oil

The chapter VIII finally opens the way to an exploration of a little-explored valuation support: crude oil market benchmarks. These benchmarks, of which "Dated Brent" is the main representative, enable crude oil market participants to anchor their valuation practices on a "standard" type of crude oil (reducing the complexity resulting from the variety of oil qualities), and on a "standard" price (reducing the complexity resulting from oil pricing parameters). They thus play a key role in determining the price of crude oil traded worldwide. Co-written with David Pinzur (Professor at the LSE), this chapter discusses some of the issues raised by the construction of these oil benchmarks, such as the players behind them (London traders or producers in the Arab emirates) and the various forms of resistance to the "commensurabilisation" of oil.

3. The other masters of the game

The resulting landscape may seem fragmented: each segment of the financial markets, and even each type of participant in each segment, is governed by specific financial conventions. In contrast to public regulation, which is issued by a centralized authority that is identical for all, these valuation supports would therefore be more flexible, or even more democratic. This impression is mistaken. On the one hand, we have seen that traders and asset managers differ less in the type of signs they use than in the way they receive them (see Table 1). When a valuation support dominates a market, it dominates all its participants, albeit in different ways. On the other hand, within each market segment, a handful of companies provide the bulk of the references used. This is notoriously the case in the bond market, where three rating agencies - Standard & Poor's, Moody's and Fitch - distribute over 90% of ratings (ESMA, 2022a). But this is also the case in the equities market, where three index providers - FTSE Russell, S&P Dow Jones Indices, and MSCI - reap more than two thirds of the industry's revenues (Burton-Taylor, 2022). The same market share is concentrated among the two owners of oil benchmarks, Platts (S&P) and Argus (see Table 4).

Bond market	Stock market	Money market/ FOREX	Commodity market
Bloomberg Terminal (Bloomberg)			
- Credit rating (S&P, Moody's, Fitch) - Yield curve (Major central banks (MCB))	- Indices (S&P, MSCI, FTSE, Bloomberg, Euronext)	- Central bank interventions (MCB)	- Benchmarks (for crude oil: S&P, Argus)

Table 4 - Owners of the main valuation supports

The transversal role of the Bloomberg Terminal and the interventions of the four major central banks - the Fed, the ECB, the Bank of England and the Bank of Japan - only accentuate the concentration of the "private regulation" of financial markets. The case of Standard & Poor's is particularly telling. Historically active in the credit ratings market (which it has been selling since the early 20th century), the company became part of the McGraw-Hill group in 1962, and was renamed S&P Global. Today, S&P Global distributes 50.13% of the credit ratings distributed in Europe via the incumbent Standard & Poor's (ESMA, 2022a), defines the investment scope of around $5,000 billion passively managed via its S&P 500 and Dow Jones indices (Petry et al., 2021), and holds over 50% market share in oil benchmarks via its acquisition of the Platts information company in 1953. Alongside Bloomberg and the major

central banks, S&P Global is probably the most important “private regulator” of today’s financial markets.

The conclusion of this thesis discusses this regulatory issue. More precisely, it identifies how the suppliers of the main valuation supports mobilized by market participants – these “other” masters of the game – contribute or could contribute to the objectives pursued by public regulators, such as the efficiency, stability and sustainability of the financial system. In particular, we will see that public regulators are not unaware of the importance of this “private side” of financial regulation, and adjust their actions to influence, compete with or circumvent the influence of private regulators. As part of the “Dessine ta thèse” contest, we worked with a graphic artist to popularize the initial results of this work and, in particular, this issue of regulation (see the comic strip reproduced in Appendix I).

Part I. Reconfiguration of the financial “milieu”

As we argued in the introduction (cf. Section I.1c), this thesis aims to distinguish itself from the structuralist-inspired sociological literature by doing justice to the situational adjustments of market participants, irreducible to a macrosocial factor. However, it also aims to avoid the symmetrical pitfall of the “institutional vacuum”. The traders and asset managers we met are part of an environment they inherit from the institutional trajectory of the financial markets. Their insertion is more inventive and complex than Marxists imagine, but cannot be fully understood without accounting for their environment. This “milieu” has been profoundly altered in the post-war period.

This first part looks at two facets of this reconfiguration, in our view the most central to understanding the institutional framework faced by today’s financial market actors: the transformation of the “financial community” resulting from the computerization and liberalization of financial markets (chapter I), and the seizure of power, within the new community, by asset managers (chapter II).

Chapter I: The new frontiers of the financial community

By the end of the 1980s, financial markets had undergone a radical transformation. Their economic function - to organize the meeting of savings and investment - remained, but the ways in which it was carried out were reorganized. The institutional framework of the markets that was overturned on this occasion had proved remarkably stable throughout the 19th and 20th centuries. So much so, in fact, that many commentators believe that a financier from the first half of the 19th century would have been able to find his way around the post-war stock exchanges:

> For ages, despite economic, industrial and political revolutions, the French stock exchanges have operated according to the same principles, with methods and regulations that have remained largely unchanged, despite a few adaptations here and there. As it stands, this is the stock exchange model that the 19th century and most of the 20th century embraced. As a result, a stock-market investor, whether a friend of Honoré de Balzac or not, could have returned to the stock market in 1975 without much disorientation. [...] He would undoubtedly have noticed changes in dress. He would also have come across women on the first floor, whereas in his day they were supposed to be in a gallery on the second floor. But the same "human comedy" was played out, with the same emotions and the same methods, the same happy or painful liquidations... and always the same rule for making money: sell for more than you buy (Ruimy, 2003: 153-154).

The upheaval of the 1980s is often referred to as the "Big Bang". As we shall see, its flagship measure was the liberalization of intermediation: henceforth, the industry professionals who guide savers through the world of financial securities are no longer appointed members of a state-controlled corporation, but employees of the most competitive financial firms. In the same movement, the space where these intermediaries meet to place their customers' orders is also transformed: a historic building, usually public and in the center of town, is supplanted by a plurality of computerized trading platforms, also competing to "attract orders". This institutional mutation has profound repercussions on several aspects of our research object: modalities of access to and production of information (widespread use of computer screens), importance of the sector's professions (replaceability of order execution tasks, irreplaceability of the personal relationship with the saver), regulatory capacity of the sector (loss of state control over financial transactions)… It is therefore necessary, as a prelude to our investigation into the valuation practices of market participants, to address this turning point of the late 1980s.

This chapter sheds light on this reform of the financial markets in three stages. Firstly, we trace this process of transformation in the Belgian case (Section I.1). This socio-political account of events avoids succumbing to the mechanistic explanations criticized in the

theoretical introduction. It also opens the way to an analysis of the various factors involved in social change, as we shall demonstrate via Margaret Archer's model. Secondly, still based on this case study, we discuss more broadly the role of a particular factor - competition between stock exchanges - in the institutional mutations of financial markets (Section I.2). Often presented as an unproblematic backdrop, this factor merits investigation, which can sometimes reveal the weakness of its foundations. Thirdly, some of the consequences of this transformation on the contemporary functioning of financial markets are identified (Section I.3). The new rules of the game are reconfiguring the financial decision-making environment, as well as the power relationships it harbors.

This chapter is the most composite. The first section is based on two pieces: a collective book chapter on Belgian neoliberalization trajectories, and a working paper mobilizing a theoretical model to analyze the reform of the Belgian Stock Exchange[50]. The second section is a paper, published in January 2022 in the *Review of Evolutionary Political Economy*[51] (whose introduction discusses the links between the perspective of the evolutionary political economy and the sociological position of this work). Finally, the third section is an empirical illustration from the theoretical paper co-authored with David Pinzur, the first part of which appeared in the theoretical introduction to this work[52].

[50] See, respectively, "« Il faut sauver la Bourse belge ! »: le cabinet Maystadt à la barre de la libéralisation financière (1988-1991)", in Piron, D. & Evrard, Z., *Le(s) néolibéralisme(s) en Belgique. Cadre macroéconomique, applications sectorielles et formes de résistance* (Duterme, 2023f); and Pourquoi ici et maintenant? La transformation des marchés financiers belges à l'aune du réalisme critique de Margaret Archer, *Louvain Papers on Democracy & Society*, 86 (Duterme, 2023e).

[51] Do modern stock exchanges emerge from competition? Evidence from the "Belgian Big Bang", *Review of Evolutionary Political Economy*, 3(2), 351-372 (Duterme, 2022d).

[52] Pinzur, D. & Duterme, T., Market devices and infrastructures: How they differ and why it matters, submitted to the *Journal of Cultural Economy*. For the beginning of the article, see p. 31.

1. The reform of Belgian financial markets: an "imperative necessity"?

> The country's antiquated financial markets have long needed reform. It has taken Maystadt, a politician from the moderate left, to force the issue (Lewis, 1990: 263)

The above comments are taken from *Euromoney* magazine. In its September 1990 issue, this monthly magazine founded by and for players in the eurocurrency market awarded the prize for "Finance Minister of the Year" to Philippe Maystadt (PSC), whose "reformist zeal" it praised. In doing so, London's financiers rewarded the wide-ranging macroeconomic measures adopted by Maystadt since he took office in May 1988. The package covers four key areas of Belgian political economy: taxation (lowering taxes on the wealthiest and on bond income), public finance ("active management" and marketing of public debt), monetary policy (financialization of the National Bank of Belgium's interventions and lifting of the last "barrier" on capital movements) and, finally, the stock market (liberalization of intermediation). This chapter focuses on the latter. Less well documented than the other three[53], it is nonetheless key to the country's neoliberal trajectory: in order to preserve the "competitiveness" of the Belgian financial center, it extends the principle of free competition to the field of investment. Henceforth, the fate of Belgium's economic pillars, such as the amount of supplementary pensions (in full expansion from 1986 onwards) or the cost of public debt, depended on an "anonymous" community of financial players, rather than a corporation of stockbrokers.

Our ambition is to highlight the factors that led to the redesign of the Belgian Stock Exchange. To this end, we begin by presenting the principles underlying this reform and the factors generally put forward in the literature to explain its emergence (I.1a). Based on six interviews with the main living architects of the stock exchange reform and a qualitative analysis of unexploited archives (press cuttings, expert reports, parliamentary debates, minutes of meetings, private correspondence, etc.)[54], we then trace its gradual consolidation through

[53] For an analysis of tax measures in the 1980s, see Farber (1983) and Massin (1997). The marketing of public debt has recently been studied by Lemoine and Piron (2023). As for the monetary aspect, a Governor of the National Bank offered an "insider's" summary (Quaden, 1990), while Cassiers et al. (1998) retraced its genesis.

[54] Apart from parliamentary annals, reports from the National Bank of Belgium (NBB) and the *Commission Bancaire*, and certain newspapers, these archives come from the collection of Bernard Snoy (Philippe Maystadt's chief of staff from 1988 to 1991) and the "Aloïs Van de Voorde" archive holding (Marc Eyskens's chief of staff from 1985 to 1988), which has been available for consultation at the Kingdom's General Archives since 2020. Often confidential at the time of their production, they offer a unique insight into the motivations and strategies of the players behind the scenes.

three crucial stages: the drafting of an expert report, negotiations in committee and debates in Parliament (I.1b). On this basis, we identify various factors that favored financial liberalization in the Belgian case, such as economic expertise and the institutional configuration (the elitist composition of the commissions preparing the reform and the docility of Parliament). To bring order to this plurality of factors, we finally mobilize Margaret Archer's model (I.1c).

In short, this chapter invites us to explore the local conditions of possibility for structural changes - such as stock market liberalization. As we shall see, it thus contrasts with certain systemic analyses which base the neoliberal shift on some macrosocial forces (class interests, competition between financial centers, new rationality, technological revolution, etc.) whose conditions of emergence are little problematized and whose local "manifestations" are rarely explored. In the constructivist spirit of the cognitive approach to neoliberalism[55], our examination of the Belgian case intends, on the contrary, to do justice to other, apparently more modest factors, such as the importation into the public debate of concepts and figures that have succeeded in attracting attention. At the end of this chapter, it appears that this approach does not deny the explanatory power of the institutional level, but prefers to grasp it through its circumstantial incarnations, i.e. through its "translations" (rather than its manifestations).

a. Stock market liberalization in Belgium: a "mammoth" law

The stock market reform was adopted on December 4, 1990, when the so-called "mammoth" law was passed, in reference to the number of articles (249) and books (7) it contained. This law abolished the monopoly of the stockbrokers' corporation (*corporation des agents de change*) and introduced international competition in the field of stock market intermediation. Until then, when an investor wished to buy or sell a financial security, she had to go through a stockbroker approved by the stock exchange commission[56]. Similarly, banks were obliged to transmit their buy and sell orders to a stockbroker and to pay him a commission, a large part of which, set by law and the corporation's rules, was non-negotiable. Since the adoption of the "mammoth law", any public limited company - Belgian or foreign - has been able to apply for a special status and offer stock market intermediation services[57]. This opening up to competition led to a concentration of the sector in favor of a few internationally active,

[55] See the contribution by Damien Piron and Zoé Evrard, "La Belgique à l'épreuve du néolibéralisme : controverses, approches théoriques et dimensions d'analyse" (introduction to the collective book *Néolibéralisme(s) en Belgique*).
[56] The nature and extent of this monopoly varied between 1867 (birth of the commission) and 1990 (Vanthemsche 1992a, 1992b).
[57] Today, there are three types of company which are allowed to execute stock market orders (see footnote 31).

computerized companies (see Figure 12). As a result, banking groups gradually came to dominate the Belgian savings allocation circuit, paving the way for today's oligopolistic situation[58]. Coupled with incentives for stock market saving, this institutional transformation is reshaping the logic of Belgian capital allocation: investment, previously governed by a close relationship between the saver and the expert, and mainly oriented towards Belgian companies, is now dictated by impersonal diversification strategies, less focused on Belgian stocks.

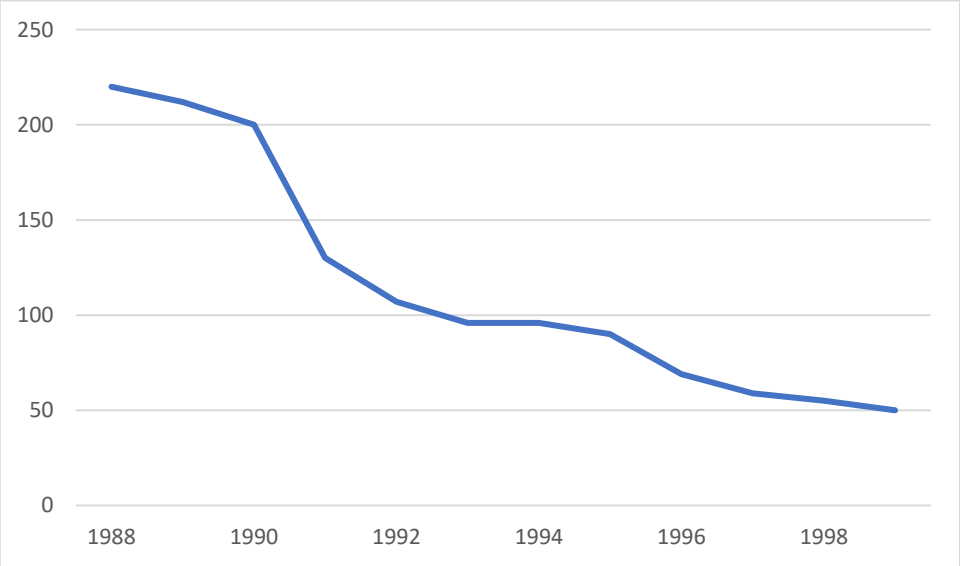

Figure 12 - Number of stockbrokers in Brussels (Commission Bancaire annual reports)

The factors generally put forward to explain the emergence of this institutional framework are the technological revolution (in particular, the advent of the computer) and the liberalization of capital movements, in the wake of the collapse of the Bretton Woods system: these two "forces" are said to have put stock exchanges in competition, forced to converge on the most profitable and efficient model (Slimane, 2015). However, this issue deserves to be problematized, as other historical studies have demonstrated the plurality of forms of competition between stock exchanges (White, 2013) and their ambivalent relationship with institutional homogenization (Schenk, 2020). What's more, empirical studies, particularly econometric ones, tend to put the intensity of competition and the resulting danger of capital flight into perspective: when the same company is listed on two exchanges, for example, trading volume tends to increase on both exchanges (Anderson & Tychon, 1993; Steil, 1996; Jacquillat *et al.*, 1998; Degryse, 1999)[59]. It therefore appears that the classic explanation of financial liberalization needs to be nuanced and completed. This is the ambition of works that have traced

[58] On the Belgian savings market, see the overview of the investment fund sector (chapter II).
[59] In the next section, we put forward elements to rationalize this conclusion in the Belgian case.

the influence of ideas from economics, and in particular the Chicago School, on neoliberal reforms (see, among others, Blyth, 2002; Chwieroth, 2010; Ban, 2016). In the wake of this "cognitive" approach, this chapter intends to show the role played by certain ideas in the liberalization of the Belgian stock market. In particular, the competitiveness argument, supported by the concept of "transaction costs", plays a central role in the various stages of reform described in the following section.

b. Antecedents and local conditions of possibility of the reform

Prior to Philippe Maystadt's arrival at the Ministry of Finance in May 1988, a number of measures had already been taken to "reinvigorate" the Belgian stock market (De Clercq & Van Hulle, 1992). In addition to the introduction of the pension savings scheme[60], the Cooreman-De Clercq Act offered major tax incentives between 1982 and 1985 for the purchase and issue of Belgian shares. However, the regulatory framework for the stock market remained that of 1935: stockbrokers enjoyed a monopoly on intermediation for the majority of transactions, and their representative body, the stock exchange commission (*commission de la Bourse*), set most of the rules of the game (amount of brokerage fees, conditions of access to listing and to the profession, etc.).

Philippe Maystadt's predecessor, the Flemish Social-Christian Mark Eyskens (Minister of Finance from October 1985 to May 1988), did set up a commission to reach agreement between bankers, who wanted more direct access to the stock market, and stockbrokers, who wanted to maintain their position - but without success. This failure was due to a number of factors, including the absence of established foreign examples and of an unequivocal European directive. Several informants also stressed the difference in style between Mark Eyskens, who delegated supervision of the commission, and Philippe Maystadt, who was personally involved. The change in the representation of stockbrokers also needs to be highlighted (see later, I.1c).

It was thus during Maystadt's term of office that the new institutional framework of the stock exchange took shape. The measures welcomed by *Euromoney*, similar to those of the 1986 London Big Bang, correspond to the neoliberal orientation of the Christian Social Party in the early 1980s[61] (Maissin, 1997). Nevertheless, it may seem surprising that they were

[60] Since 1986, Belgians have been able to deduct investments in pension savings funds of up to 20,000 francs a year (with at least 30% of the portfolio invested in Belgian shares) from their taxable income.
[61] See Zoé Evrard's contribution, "La « crise » du « modèle belge » (1979 - 1981) : révolution silencieuse au pays du syndicaliste, du capitaliste et du banquier" (first chapter of the collective book *Néolibéralisme(s) en Belgique*).

introduced by Philippe Maystadt: situated on the left wing of the party, he was not, *a priori,* the man transnational financiers dreamed of, and they expressed their concern when he took office. Léo Goldschmidt, then president of the Belgian Bankers' Association, recalls the following warning: "They told me: 'Be careful, he's a prisoner of his electoral fiefdom in Charleroi and he's very close to trade union circles'"[62]. Four years earlier, Philippe Maystadt, then Minister for the Budget, Scientific Policy and Planning, wondered in an interview with *La Libre Belgique* how "citizens could accept that a large part of the results of the austerity effort should be used to pay additional interest to the banks", and even more so "when we see that their profits are increasing without a corresponding increase in their taxes" (quoted in M. A & VdW, 1984: 3). This stance provoked indignant reactions in financial circles (De Clercq & Vanderlinden, 1992).

To understand how Maystadt, the left-wing Social-Christian, comes to be praised by *Euromoney*'s editors and their peers, the dynamics of Belgium's political institutions matter. First and foremost, Maystadt is a member of a party and government that have resolutely opted for financial "modernization". Its Prime Minister, Wilfried Martens, announced in front of the Parliament that "new measures [were] essential to effectively protect small savers and make the stock market transparent"[63]. While the form of these new measures has not yet been defined, Philippe Maystadt's mission is to succeed where Marc Eyskens failed, by bringing stock market reform to a successful conclusion. His proactive, diplomatic and strategic attitude - emphasized by our informants - leads him to act quickly and to surround himself. Given his reputation in financial circles, he opted for a chief of staff capable of "reassuring certain people... that he was not going to... pursue a policy perceived as aggressive, hostile to banking and financial circles"[64].

Baron Bernard Snoy was to fill this role. Like his father, former Finance Minister Jean-Charles Snoy, Bernard Snoy studied law, philosophy and economics at the Catholic University of Louvain, before completing a doctorate in economics at Harvard University. In 1974, he joined the World Bank. He left this institution twelve years later, in 1986, to join the European Commission, where he assisted Jean-Yves Haberer in drafting a report on the decoupling of finance and the economy. While criticizing the financial excesses highlighted by the crash of 1987, this report nevertheless put forward the privatization of public companies (to "better balance" the equity market), the reduction of budget deficits and the abandonment of the idea

[62] Interview with Léo Goldschmidt, February 2, 2021.
[63] Government statement of May 10, 1988.
[64] Interview with Bernard Snoy, January 25, 2021.

of a special tax on financial transactions (described as "unrealistic") as ways of reconnecting finance and the economy.

Above and beyond these proposals, Bernard Snoy and Jean-Yves Haberer shared a reformist enthusiasm: the "modernization" of economic institutions perceived as archaic, particularly in relation to their American equivalents which they had both integrated and admired, is at the heart of the project carried by these senior civil servants[65]. In retrospect, it was this appeal that Bernard Snoy put forward to justify his candidacy for the Maystadt cabinet:

> I immediately saw: Maystadt, that's someone! [...] And now we're not just going to reform the stock exchange, we're really going to clean house! Because what I could see... In Belgium, everything had to be redone: you had a huge number of established interests [...] which led to "situation rents", which are bad for the economy. A lot of people getting rich without deserving it [...]. And above all, when I worked at the World Bank, I worked for the *Treasury* department, and so I saw how necessary it was to modernize[66].

Charles Goldfinger, a "guru" at work

The Maystadt's plan to reform the Brussels Stock Exchange was inspired by a second French intellectual: Charles Goldfinger. With a degree in architecture from Paris and a doctorate from the University of California, Berkeley, Charles Goldfinger built up his economic background during his stint at the World Bank (1975-1980). He then worked for the interbank communications company SWIFT (which led him to live in Belgium), before launching *Global Electronic Finance Management* in Brussels in May 1987. This company advises financial institutions on the challenges of information technology[67]. His first book, published a year earlier and entitled *La Géofinance - Pour comprendre la mutation financière,* gave him a certain visibility on the Belgian media scene. In his book, as in his columns, Charles Goldfinger invents concepts – "geofinance", "informational money", etc. - to describe a reality that he considers to be at once unprecedented, worrying and fascinating. These terminological innovations did not have outlived him, and may seem absurd today, but they did not fail to impress some of his contemporaries, including Bernard Snoy, who described him as "quite a genius"[68].

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[65] For example, Haberer says of the financing of public spending in France: "My stay in the United States had shown me our archaisms from the War and the Postwar period, which should have disappeared a long time ago" (quoted in Lemoine, 2016: 111); while Bernard Snoy believes that, faced with "the technological revolution that allowed transactions to be computerized, the *modus operandi* of stockbrokers appeared very old-fashioned" (interview extract).

[66] Interview with Bernard Snoy, January 25, 2021.

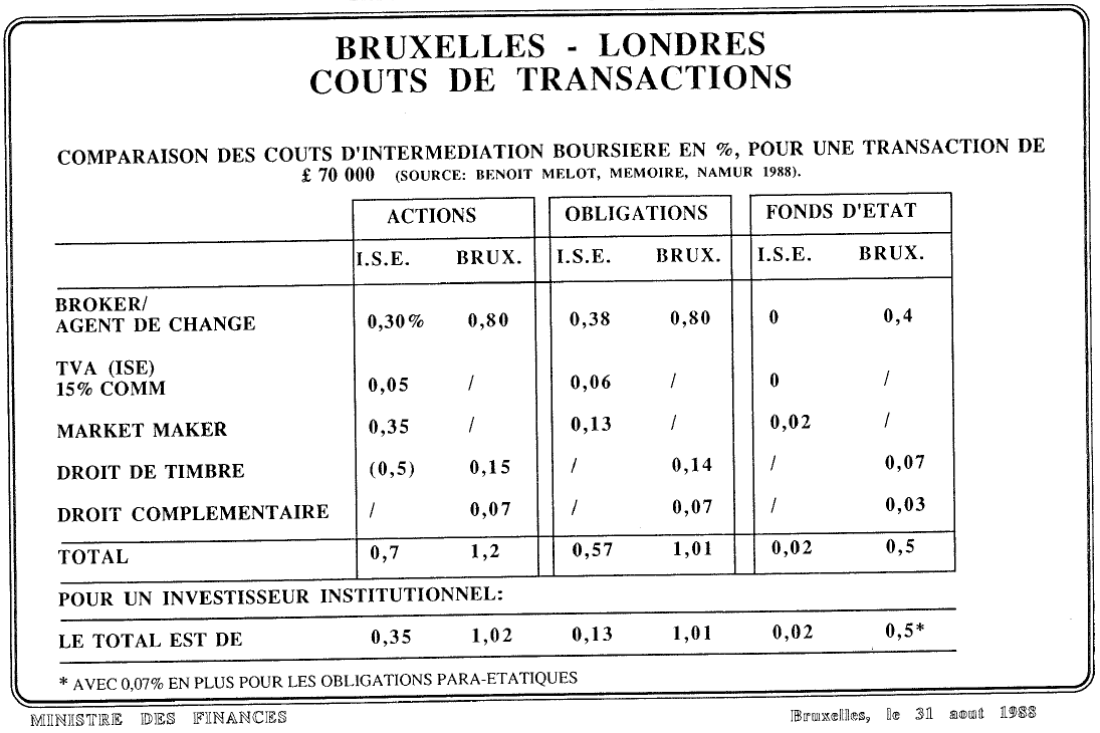
[67] The company was declared "bankrupt with inexcusability" in 2005, following a lawsuit lost against the European Commission, from which Goldfinger had allegedly demanded unjustified amounts. Three years later, the bankruptcy was closed due to insufficient assets; Charles Goldfinger died the same year, aged 62.

[68] Interview with Bernard Snoy, February 12, 2021.

Having both worked for the World Bank, Bernard Snoy and Charles Goldfinger renewed contact at a meeting of the "financial center" commission of the *Centre d'études politiques, économiques et sociales*, which was updating the Social-Christian Party's doctrine for the December 1987 legislative elections. Snoy invited Golfinger to draw up a list of the strengths and weaknesses of Brussels as a financial center. The French consultant pointed the finger at a tax system considered too heavy and the absence of financial innovations[69]. His prescriptions are clear: within the new financial system, propelled by three forces presented as unstoppable (technology, globalization and deregulation) and now driven by its own laws, "the most effective role that the authorities of a host country can play in the promotion and development of an international financial center is that of a benevolent but relatively passive catalyst, contenting itself with creating favorable administrative, fiscal and regulatory conditions, without trying too hard to influence the behavior of operators" (Goldfinger, 1986: 233).

Shortly after Philippe Maystadt took office as Minister of Finance, Bernard Snoy invited Charles Goldfinger to consider a possible collaboration[70], and then proposed that the minister "rely on the totally independent advice of a high-level consultant [...] to help him make the right choices"[71]. The latter agreed to use the services of *Global Electronic Finance Management*. Less than a month later, he received a first version of the "Goldfinger Report" (1988). The report described the "modernization" of the Brussels Stock Exchange as an "imperative necessity", due to the "considerable backwardness" accumulated "in comparison with other European markets"[72]. The final version of the Goldfinger report attempted to objectify this observation by comparing the "transaction costs" of financial centers: for every type of product, the Belgian Stock Exchange appeared to be clearly more expensive than its foreign competitors (see Figure 13). In this light, the recommendations designed to "prevent the emigration of the business to other financial centers" (Goldfinger report, slide 168) become vital to national interests: concentration and solidification of intermediaries through the abolition of the stockbrokers' monopoly, lower transaction costs through the liberalization of brokerage, computerization and diversification of markets through the integration of financial innovations.

[69] Minutes of the "financial center" commission meeting of October 14, 1987.
[70] The very next day, the latter sent him a letter ending with the following words: "Hoping to be able to contribute to a reform that is both necessary and exciting [...]" (letter of June 1, 1988).
[71] Note for the Minister, June 20, 1988.
[72] Note of July 29, 1988: 1.



BRUXELLES - LONDRES
COUTS DE TRANSACTIONS

COMPARAISON DES COUTS D'INTERMEDIATION BOURSIERE EN %, POUR UNE TRANSACTION DE £ 70 000 (SOURCE: BENOIT MELOT, MEMOIRE, NAMUR 1988).

	ACTIONS		OBLIGATIONS		FONDS D'ETAT	
	I.S.E.	BRUX.	I.S.E.	BRUX.	I.S.E.	BRUX.
BROKER/ AGENT DE CHANGE	0,30%	0,80	0,38	0,80	0	0,4
TVA (ISE) 15% COMM	0,05	/	0,06	/	0	/
MARKET MAKER	0,35	/	0,13	/	0,02	/
DROIT DE TIMBRE	(0,5)	0,15	/	0,14	/	0,07
DROIT COMPLEMENTAIRE	/	0,07	/	0,07	/	0,03
TOTAL	0,7	1,2	0,57	1,01	0,02	0,5
POUR UN INVESTISSEUR INSTITUTIONNEL:						
LE TOTAL EST DE	0,35	1,02	0,13	1,01	0,02	0,5*

* AVEC 0,07% EN PLUS POUR LES OBLIGATIONS PARA-ETATIQUES

MINISTRE DES FINANCES Bruxelles, le 31 aout 1988

Figure 13 - Slide 160 from the Goldfinger report

Despite its questionable methodological options[73] , the inventory of transaction costs is taken up unchanged by players such as Maystadt and Snoy, who wish to use the "competitiveness imperative" to support rapid and radical reform of the stock market. With good reason: the report's prescriptions are in line with the "modernization" project they support. Moreover, neither of them seeks to challenge the more "technical", but nonetheless highly political, aspects of the report, such as the degree of disintermediation or computerization. Bernard Snoy, for example, admits that he had full confidence in Charles Goldfinger when it came to "technological" issues: "I'm not an engineer at all, I'm almost technophobic, in the sense that I don't understand much about computers; he [Goldfinger] knew all about these computer systems that made the financial revolution possible"[74].

Philippe Maystadt leads "the big boys" in commission

Shortly after receiving the Goldfinger report, the "Maystadt Commission" was set up on September 5, 1988 to take over the mission of the group launched by Marc Eyskens: to arbitrate the conflict between bankers and stockbrokers. Its final report, delivered on December

[73] The documents used are a master's thesis and a *Euromoney* publication, both of which use very different methodologies from the scientific articles that followed. Furthermore, the total cost in the "actions" column is 1.02, rather than 1.2 (see Figure 12). In addition to this typing error, certain omissions magnify the "delay" of the Brussels Stock Exchange (for a detailed critique, see next section).
[74] Interview with Bernard Snoy, February 12, 2021.

5, 1988, only marginally modified Goldfinger's prescriptions. This "success" was due to two factors: the framing of the negotiations and the interests of the participants. Firstly, the Maystadt cabinet saw stock market reform as a central part of the macroeconomic package, and made it a political priority. Unlike his predecessor, Philippe Maystadt himself chaired the commission, guiding the debate with the help of the Goldfinger report. In his introductory speech, he adopts the strengths and weaknesses of Brussels identified and quantified by Charles Goldfinger, as well as his main proposals - intended to transcend the usual divisions and promote the "Brussels financial center":

> As the tables on pages 159 and 160 of Mr. Goldfinger's report [see Figure 13] show, the Brussels Stock Exchange is not competitive [...]. We are not here to discuss a new division of fixed added value between stockbrokers and financial institutions. We want the financial markets to develop in a way that benefits the entire Belgian economy [...]. [To meet] the need for competitiveness, conceived as emulation towards excellence in all internationally-traded activities [...], [we need to review] the excessively rigid regulatory structure, dating back to 1935 and ill-suited to the realities of the new financial landscape[75].

What's more, not all stockbrokers fear this prospect: while small, family-run businesses would not resist opening up to competition, the biggest structures have an interest in liberalizing the profession, which would concentrate transactions in the hands of a few intermediaries (see Figure 12, *supra*). However, and this is the second factor in the Maystadt Commission's "success", the five members of the stock exchange commission (*commission de la Bourse de Bruxelles*) who sit alongside the bankers' representatives belong to this second group of "big stockbrokers". As a result, the two most active members in the discussions, Léo Goldschmidt (president of the Belgian Bankers' Association) and Jean Peterbroeck (president of the stock exchange commission), share a common conception of the "modern financial landscape", and only disagree on certain transitional measures. According to Bernard Snoy, this situation facilitated the work of the reformers: "It was a great stroke of luck that the stockbrokers elected Jean Peterbroeck as their leader... Peterbroeck was practically a bank; he was the biggest of the stockbrokers [...]. But of course, behind him, there were many small stockbrokers, who clung to their position and their privileges"[76]. In October 1988, the latter founded the *Syndicat de défense de la profession d'agent de change* to put forward the point of view of the small brokers. This swan song was heard, but not listened to by the Finance Minister's office: "They said: 'The stock exchange commission is the big guys, and the big guys are ready to make sacrifices, and sacrifice us'"[77].

[75] Minister's speech, September 5, 1988: 6-23.
[76] Interview with Bernard Snoy, February 12, 2021.
[77] *Ibid*.

A “Maystadt II Commission” was then set up to “define a common strategy for the authorities and the financial sector to ensure the future of the Belgian financial center”[78]. It incorporated into the stock market reform a reduction in withholding tax on bonds and an advantageous tax status for investment funds. In the end, the guideline imposed by Maystadt, and made both vital and operational by the quantified argument of competitiveness, was accepted by the two working groups, which were too homogeneous to be confrontational. This last point was already noted at the time: “the composition [of these two commissions] was characterized by the exclusive presence of representatives from the financial world, unlike other commissions that had functioned in the past [which included representatives from the trade union world]” (Arcq, 1989: 48).

A “necessary, urgent and constructive” bill

The bill resulting from the work of the two commissions was then debated in Parliament. The competitiveness argument was used on numerous occasions to contain any opposition: “the danger of financial activities relocating to other, more attractive financial centers made this modernization of the Belgian Stock Exchange and financial markets imperative”[79]. A second factor, related to the political situation, favored adoption of the project. The majority Socialists supported the macroeconomic package, and were able to negotiate other parts of it - such as the allocation of savings on borrowing costs to social policies. With regard to stock market reform more specifically, they also put forward the “defense of the small saver”, protected by the greater transparency resulting from the abolition of the corporation and computerization. As for the Liberals, although in opposition, they were in favor of financial liberalization, on principle and in the interests of their electoral base: Senator and Count Pol Boël, a representative of employers and himself an industrialist, considered that “this bill is necessary, urgent, constructive and worthwhile”[80]. As a result, debates in Parliament were serene, with representatives from all sides showering praise on an approach deemed both “urgent” and “reasonable”.

Only a few MPs are critical of the bill. Apart from the ecologist Wilfried De Vlieghere, who warned of “speculative excesses”, and the socialist Marc Moens, who expressed his “skepticism”, the young Flemish liberal Guy Verhofstadt, on the contrary, repeatedly condemned “excessive regulation”. Liberals Serge Kubla and Éric van Weddingen tabled

[78] Presentation of the January 16, 1989 working group: 1.
[79] Remarks by socialist Léon Defosset at the plenary session of November 29, 1990: 879.
[80] Senate plenary session of November 7, 1990: 189.

numerous amendments - all of which were rejected - aimed at securing better exit conditions for stockbrokers, who form a large part of their electorate. In the final vote, the bill was adopted by a large majority: only nine MPs opposed it, against one hundred and eight in favor.

Finally, the competitiveness argument was also used to convince the unions and public opinion via the press. The Governor of the National Bank of Belgium, Fons Verplaetse, was also involved:

> There were elements in this *package* that seemed... to good Christian trade unionists, as going too much in the direction of the capitalists, let's say [...] and it was he [Verplaetse] who managed to make [them] swallow [...]. He had a very important position and could make statements to the press. And if he covered up, and said it was good for the Belgian financial center, it was good for Belgium, "good for Belgium!", good for the workers as well as good for the bosses... He had weight[81].

The argument was also widely publicized in the media, as illustrated by the following excerpt from the popular newspaper *La Nouvelle Gazette*: "It's a question of survival. According to Minister Maystadt, whose opinion has been confirmed by all the studies conducted on the subject, this modernization of the stock exchange must bring the markets currently handled [...] abroad" (L.F. 1988). In this way, Goldfinger's hastily cobbled-together inventory of transaction costs ended up stabilizing and embodying the scientific consensus. This power to "cool" controversy through the aplomb of expertise and the danger of foreign competition is not ignored by reformers - it is even claimed:

> As always, if you're a politician and you want to get something across, there are several rules: one, you get a consultant to say what you want to say yourself, an expert, an expert! [...] and two, you show what others have done, and you show that what you're proposing isn't unreasonable, because it's been done elsewhere. So that's two techniques... Then, you insist on the common good. You say: "But this isn't just a matter for stockbrokers and bankers. It's a matter for the Belgian economy, it's a matter for the... prosperity of our citizens"[82].

Despite the tone of this passage, the competitiveness argument is not a pure instrument employed with lucidity and cynicism by the men at the helm. It also enables them to convince themselves: "We said to ourselves: 'If the French reform the place of Paris when they are a supposedly left-wing government, then what are we doing to ourselves?'"[83].

[81] Interview with Bernard Snoy, February 12, 2021.
[82] *Ibid*.
[83] Interview with Bernard Snoy, January 25, 2021.

c. Tidying up with Margaret Archer

At the end of this analysis of the reform of the Belgian stock market, it is clear that a number of factors helped to impose financial liberalization as a necessity for safeguarding Belgian competitiveness. On the one hand, economic expertise: the theories of the Chicago School, learned by Bernard Snoy at Harvard and Charles Goldfinger at Berkeley, enjoyed great authority, underpinned by the quantification of transaction cost differentials. On the other hand, the institutional set-up: elitist, compartmentalized commissions, as well as Chambers that were reluctant to problematize the competitiveness argument, limited the scope for debate, and even more so for discussion. But that's not all: other, apparently more anecdotal factors - such as the concomitance between the submission of Jean-Yves Haberer's report and the appointment of Philippe Maystadt, or the election of Jean Peterbroeck as head of the stockbrokers - were not directly under the control of the reformers, but facilitated their undertaking. To "sort out" this plurality and understand why reform occurred at this time and in this place, we propose in this last part to mobilize Margaret Archer's theorization of social change.

The Archer model: social reality in interactive strata

When captured by Margaret Archer's model, social reality is dual. Two entities have - at least potential - causal power: social actors (individuals and groups) and systems (cultural and structural). The former impact reality through the choices they make (*agency*), the latter through the distribution of resources (cultural and economic) they generate - this distribution making it more or less possible and costly (in terms of opportunity costs) for a given actor to pursue certain projects. The actor thus inherits *vested* interests stemming from the distribution of wealth, power and knowledge characterizing the society of his birth, and will then decide which projects he will carry out: "nothing determines that agents act to promote their vested interests, but costs are involved in not doing so" (Archer, 1995: 205). And this is as true in the (structural) economic field as it is in the cultural one: it will be very costly for a boss to campaign for an increase in the minimum wage, but also to develop knowledge of *gender studies*. This structuring, well known in sociology, constitutes the causal power of systems.

At the other pole, individuals exercise causal power over social reality as agents, actors and persons. Agents are the communities of interest that reshape systems (*corporate agents*) or suffer their consequences (*primary agents)*. Actors are *role incumbents*; the creation and distribution of these roles are systemic properties, but the actor remains "a subject who can

reflect upon the stringency of role-governed constraints" (*Ibid*: 280) - in other words, Archer recognizes his ability to express a "role distance". Persons, finally, are non-socialized beings whose identity results from non-social experiences (e.g. confrontation with the materiality of the world), but impacts future social experiences: "cumulative experiences of our environment will foster propensities, capacities and aversions which sift the social practices we later seek or shun [...]. After all, claustrophobics do not apply to become lift attendants" (*Ibid*: 291). Of course, in practice, individuals are always agents, actors and persons.

An original feature of the Archer model is its dynamic nature. Movement results from the *relationships* between strata. In certain circumstances, the coexistence of different strata generates a phenomenon of emergence, rarely anticipated by its creators. All the "bricks" of the model we have outlined can be part of a combination that produces social change: the struggle between two agents (capitalists and proletarians), a person's resistance to his role (hyperemotional prison guard), the invention of ideas contrary to the interests of *corporate agents* (feminism federating women)... Archer further refines these elementary bricks by distinguishing between institutions (first emergence born of interactions between individuals, like the nomadism of a tribe) and systems (second emergence born of interactions between institutions, like Fordist capitalism). Once again, the (in)compatibilities between these strata will generate stabilities (*morphostatis*) or ruptures (*morphogenesis*)[84]. Let's make it clear that the British sociologist intends to distinguish herself firmly from the reading of Anthony Giddens: she does not conceive of structure and agency as two co-constitutive dimensions of action, but as two causal powers likely to interact. Together, they shape the situation. True, a situation is made up of many strata, but they are nonetheless distinguishable and endowed with an autonomous causal power.

The transformations of the financial landscape have generally been analyzed by two rival models, quite distinct from the one we have briefly presented. The first is the Marxist model. Here, financialization is seen as both an economic condition (the need for new outlets to ensure the viability of the capitalist system) and a collective decision (the revenge of capitalists after the concessions of the *Trente Glorieuses*) - the adequacy of the two resting on the subordination of *agency* to structure ("downwards conflation" in Archer's terms). The actor is merely the reflection of a structural state, so that "action leads nowhere except where structure

[84] Archer further distinguishes between *necessary* and *contingent* (in)compatibilities, revealing the transformative "potential" of these different relationships.

guides it" (*Ibid*: 82). Thus, for example, when studying the drivers of economic globalization, Robinson and Harris (2000) characterize the "transnational capitalist class" at work as follows:

> The politics and policies of this ruling bloc are conditioned by the new global structure of accumulation and production. This historic bloc is composed of the transnational corporations and financial institutions, the elites that manage the supranational economic planning agencies, major forces in the dominant political parties, media conglomerates, and technocratic elites and state managers in both North and South (*Ibid*: 12).

This plurality of actors acts as one, according to the new structure of accumulation and production. All the strata of social reality are but tracings of a fundamental core.

The second model traditionally used is the neoclassical model. Here, the nature of the heterogeneity between individuals at the source of financial markets is no longer their position in the production system, but their preferences. Some have a preference for security (*risk averse*) and will save (buy securities), while others have a preference for risk (*risk seeker*) and will take on debt (issue securities). In this framework, social change is equivalent to a modification of the equilibrium between preferences. The result of decisions by agents seeking to maximize their well-being (i.e., the satisfaction of their preferences), financialization can then be read as an increase in the proportion of *risk averse* individuals[85]. It can also be understood, by other theorists of the same approach, as a modification of the preferences of voters who chose a representative more in favor of deregulation (Hart, 2017). In all cases, the state of a society is merely a reflection of individual decisions - structure is subordinate to *agency* ("upwards conflation").

Several aspects of the transformation of Belgian financial markets will enable us to justify our choice of model. But one cross-cutting feature of the event is particularly better captured by the Archer model than by its Marxist and neoclassical competitors: the incoherence of the reform. Both the Marxist model and its neoclassical counterpart suffer from an excess of coherence and predictability. In the former, this coherence is ensured by the match between position in the production process and readiness to act. In the latter, it is ensured by the qualities of reasoning attributed to the individual - the hypothesis of rational expectation, in particular, ensures that future states of the world are, on average, known. In Archer's case, by contrast, the product of interaction between the strata of social reality is largely indeterminate, or - at the very least - unforeseen. Indeed, it is these "unintended consequences" that explain the

[85] This increase in demand for financial products will raise prices and stimulate the development of new products, leading to an expansion of markets.

perpetuality of social change, which Archer's anti-teleological perspective captures more faithfully than neoclassical equilibrium and the Marxist horizon.

From Archer to Maystadt: what is behind the Belgian Big Bang?

Archer's model informs us that certain combinations of factors work against social change (*morphostatis*), while others stimulate it (*morphogenesis*). To gain a clearer understanding of the key factors behind the Belgian reform, it is therefore fruitful to understand why the transformation of the financial markets did not occur *earlier*, before Philippe Maystadt's arrival at the Ministry of Finance. Indeed, in retrospect, several factors suggest that this reform could have taken place two - or even four - years earlier. As necessary as it may seem, the December 1990 law was not an urgent reaction to an immediate shock (as would be a decision following a natural disaster, for example); it could have taken place earlier, like the first liberalizations of stock market intermediation in the US (1975) and the UK (1986). All the more so as Maystadt's predecessor at the Ministry of Finance, Mark Eyskens, was also a member of the Christian Social Party, no less "liberal" than Maystadt (on the contrary), and worked in a center-right government (Martens VII) - unlike Maystadt, who was in coalition with the Socialists. Why, then, did Eyskens' term of office, from November 1985 to May 1988, fail to bring about any changes in Belgium's stock market institutions? Agential, cultural and economic factors provide some answers.

In the process of negotiating a reform abolishing a corporate monopoly, the identity of the corporation's representative matters. When Eyskens arrived at the Ministry of Finance in November 1985, the president of the stock exchange commission was a 66-year-old man named Jean Reyers. Reyers had become a stockbroker at a very young age, and had chaired the commission since 1969. His "charge" (the name of a stockbroker's company) was medium-sized, and was only able to survive the liberalization of 1990 through successive mergers, before being absorbed by the HSBC bank in 2001. He embodied the traditional style of the stockbroker and, according to his former colleagues, ardently defended the interests of the profession (Lambrechts, 2015). For example, in February 1986, at a delicate juncture, Reyers summoned Léo Goldschmidt, president of the Belgian Bankers' Association, to renegotiate the compromise stabilizing the relationship between banks and stockbrokers (see below) - a move that seemed anachronistic to the bankers' representative: "this request seemed to me totally irrelevant and outdated" (interview with L. Goldschmidt). Battling, the stockbrokers' man was not ready to give up the monopoly.

To arbitrate their dispute, Reyers and Goldschmidt turned to the competent minister, Mark Eyskens. The latter's personality also favored *morphostatis*: "he was an absolutely brilliant man, charming and extremely intelligent, but rather reluctant to make difficult decisions" (*Ibidem*). Maystadt's future chief of staff, Bernard Snoy, seems to share this opinion: "He's someone less... less proactive [than Maystadt]. He was a bit of a dilettante, a bit literary; he always had a way with words: he would quote Plato and Aristotle, which is nice, but... he wasn't ready to get his shirt wet. [...] He didn't have a real project; he just managed" (interview with B. Snoy). Following Reyers and Goldschmidt's request, Eyskens nevertheless set up a commission chaired by his chief of staff Aloïs Van de voorde. According to Snoy, "it was the old approach: you've got two squabbling professions, you put them in a commission with a senior civil servant and we'll turn it into law if they agree; but they don't agree!" (*Ibidem*). Here again, Eyskens' personality is blamed: "he had inherited from his father what I would call 'skepticism': in other words, pff... in the end, Mr. A says a, Mr. B says b, who's right? I don't know..." (*Ibidem*). What is certain is that this commission, held between March 1986 and August 1988, did not actually result in any reform. The temperaments of the actors involved (*agency*) may help to explain this inertia, but - despite the displeasure of the reformers we met - there are other factors to consider.

Systemic properties also had an impact on the outcome of this first part. However proactive and dynamic they may have been, the reformers of the Belgian Stock Exchange would not have opened the same site ten years earlier, when Fordist capitalism was still vigorous. Fordist capitalism can be seen as the system that presided over the *morphostatis* period of the *Trente Glorieuses*, both economically and culturally. Economically speaking, it is characterized by an institutional combination that guarantees stable growth, as clearly identified by the economists of "regulation theory": returns to scale in the organization of production, codification of the sharing of productivity gains, and administered regulation made possible by the low level of international openness (Boyer, 2015). In the Belgian banking sector, this translated into explosive growth between 1961 and 1973 (rate of return on capital in excess of 10%) and strong resilience to the first shocks of the 1970s thanks to low exposure to competition (Cassiers *et al.*, 1998); it was not until the late 1980s that Belgian banks had to restructure in an uncertain macroeconomic environment (modification of traditional banking functions, end of the oligopolistic structure of the Belgian market...). As for stockbrokers, while it is true that Keynesian policies that relied mainly on bank credit did not encourage stock market development, their doubly privileged position (absence of international *and* national

competition) guaranteed a stable income: commissions from a clientele that was either acquired (family, friends...) or captive (constrained banks).

At the interactional level, this economic dimension of Fordist capitalism is embodied in a compromise that stabilized relations between bankers and stockbrokers. As we have seen, these relations were inherently conflictual: bankers resented having to go through a stockbroker to invest the savings they had collected through their branch network. From the corporation's point of view, bankers represented the historical danger: on several occasions, they managed to circumvent the order execution monopoly by vassalizing a member of the corporation, or through the technique of "off-exchange clearing"[86]. The two professions finally stabilized the situation through the "ceiling" agreement: they agreed on an amount above which transactions no longer had to go through the stock exchange, and could be settled "over the counter". This compromise depended on several features of Fordist capitalism: organization into trades, dialogue with public authorities and, above all, the national character of the economy. As soon as the economy began to open up, bankers were quick to call this compromise into question by lowering the ceiling as much as possible, arguing that "introducing higher ceilings could lead to a significant relocation of transactions to foreign markets" (report to the Chamber, 1990: 75). But until then, this agreement held and solidified the institutional framework preceding the reform.

Fordist capitalism also has a cultural component that contributed to the inertia of this first period. In Archer's model, the cultural system is made up of ideas that constrain each other and structure social action through *logical* - rather than causal - links. In other words, the stock of ideas characterizing a cultural system is subject to a coherence requirement that is independent of the context in which these ideas are enunciated. If this requirement is not always and everywhere respected, its violation constitutes a catch that can be seized upon by the actors of social change: the existence of two contradictory propositions in the cultural system makes the social order vulnerable, at least in potential. The cultural component of Fordist capitalism is Keynesianism, understood in the broadest sense of the term: the valorization of stable growth, household demand (and therefore consumption!), a certain technocracy (supervision

[86] If two of a bank's customers send symmetrical orders (one wants to buy the stock the other wants to sell), the temptation is great for the bank to act as an intermediary without going through the stock exchange. By the 1920s, this practice was so widespread (85% of transactions were handled off-exchange) that it threatened the representativeness of the price produced by the stock exchange. As one legislator worried: "the widespread practice of off-exchange clearing is causing anemia in the financial market, arbitrarily rarefying transactions, distorting prices and, consequently, the official quotation" (quoted *in* Vanthemsche, 1992: 302).

of the economy by enlightened civil servants), methodological statism (a unit of analysis whose power must be guaranteed, notably by limiting the mobility of capital) and social dialogue. The whole is relatively coherent and, at the interactional level, translates into the ability of stockbrokers to justify their doubly privileged position. Firstly, the corporation is a representative body and therefore a privileged partner for the public authorities; its disappearance would mean the break-up of the managers of financial savings, which the authorities would lose sight of. Secondly, stockbrokers have unrivaled expertise in Belgian securities; investment advice - and therefore stock market management - would suffer if the profession were opened up. It was for this reason that Minister Maystadt stated that his bill "does not mean that the qualification of stockbroker will disappear, since it will remain subject to conditions of access to the profession (scientific qualification, professional examination and internship)" (report to the Senate, 1990: 6).

Thirdly, in addition to essential expertise, the status of stockbroker offers the guarantee of integrity enshrined in the profession's code of ethics. Again, this aspect was raised by the Minister: "the majority of the members of the management committee of brokerage firms must be stockbrokers, i.e. people who [...] are subject to a code of ethics specific to the profession" (*Ibid*: 32). Fourthly, limiting competition appears as a condition of financial stability: "total deregulation forces intermediaries, faced with suicidal competition, to compensate for the loss of brokerage fees by price differentials, and to do so to take positional risks by very often placing themselves in conflicts of interest with their clients" (president of the stock exchange commission*, in* report to the Chamber, 1990: 24). These were the arguments that convinced the players of the first period to preserve the intermediation monopoly. But they were also the ones that were to come into dissonance with a new stock of ideas that charmed the reformers of the second period even more. The diagram below summarizes the main inertia factors identified in this section.

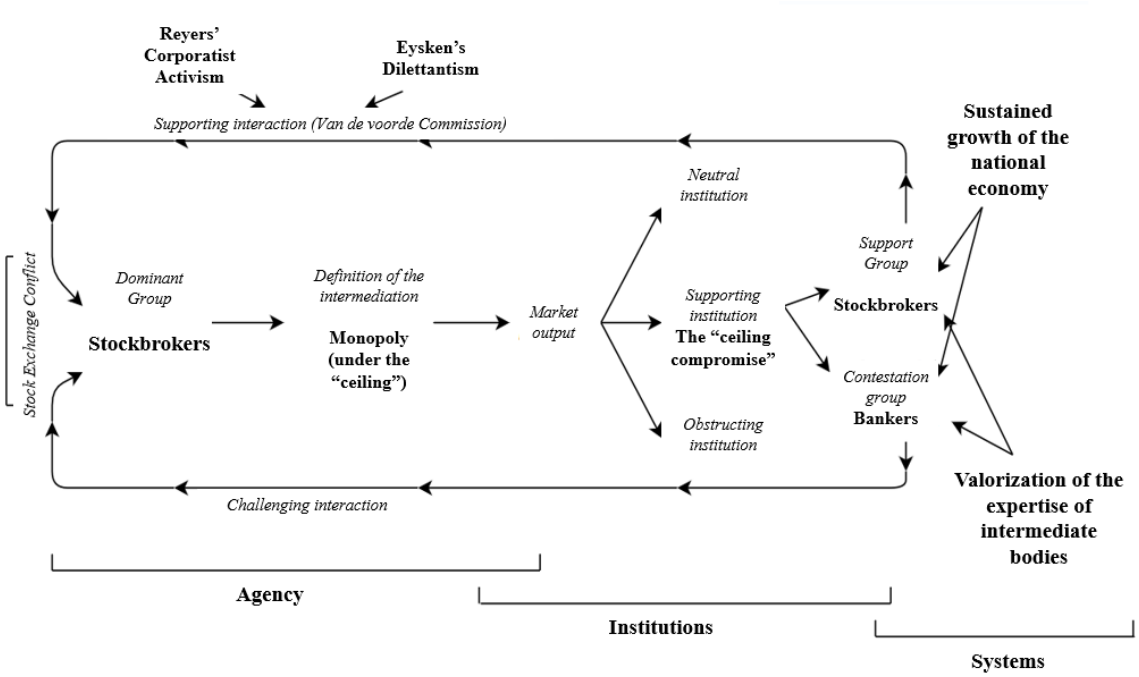


Figure 14 - Morphostatis for the first period

Although Archer's model can account for phenomena of continuity, it is above all designed to explain social change; this second period is therefore a test of its heuristic potential. It culminated in the adoption of the bill on December 4, 1990, but began with the initial preparatory work, undertaken shortly after Philippe Maystadt's arrival at the Ministry of Finance in May 1988. Unsurprisingly, the proud architects of this reform emphasized above all the "agential" factors that made this turning point possible. We shall see that these played a central, but not exclusive, role.

As already mentioned, the reformers were full of praise for Jean Peterbroeck, the 51-year-old who succeeded Jean Reyers as president of the stock exchange commission in 1987. The bank representative was also pleased to have an "old friend" to negotiate with[87] (interview with L. Goldschmidt). Playing the same role as Reyers, Peterbroeck differed in personality: "We were very lucky to have Peterbroeck, because obviously his predecessor wouldn't have understood... [gestures indicating Reyers' ignorance]" (interview with B. Snoy). But he differed from his predecessor above all as an agent: the size of his charge was much larger than the average[88]. At least as decisive as the change in people, the change in agents introduced heterogeneity within the corporation, divided between a few major charges certain to survive

[87] This friendship goes back to a partnership between their companies, which was to continue much later (2015): Peterbroeck's stockbroking firm (*Peterbroeck, Van Campenhout & Cie*) and the bank for which Goldschmidt was then working (*Degroof)* merged to form the current private bank *Degroof Petercam*.
[88] It is therefore likely that his election was favored by the weighting of the stockbrokers' vote by the volume of their business (interview with Dominique Valschaerts).

liberalization (and benefit from it through market concentration) and numerous "family businesses" that would not stand up to competition from the banks. This division of interests already existed in potential three years earlier, but the advent of Peterbroeck brought it to fruition, gave it shape. According to Margaret Archer, the transformation of a *primary agent* into a *corporate agent* (or, in this case, vice versa) is the result of a structural change (increase in the number of interested parties) or a cultural change (appearance of alternative ideas). In the case of the stockbrokers, neither their numbers nor their ideological support changed, but the terms of their representation had a negative impact on the corporation's federating power (internal criticism, creation of an alternative body, etc.). Other moments in the reform process will enable us to underline this point.

Still at *agency* level, the arrival of a new ministerial team played a key role. While Eyskens was considered less than proactive, numerous interview passages underline Maystadt's proactivity: "He was just as open and brilliant [as Eyskens], but more dynamic and determined" (interview with L. Goldschimdt). This "reforming zeal" - hailed by *Euromoney magazine* - came up against his lack of familiarity with the financial world. It was therefore essential for him to surround himself with a chief of staff capable of guiding him through this complex landscape: "For him, all these subjects were a bit new, so he was quite happy to be able to rely on me" (interview with B. Snoy). Baron Bernard Snoy et d'Oppuers was to fulfill this vital role. He introduced his friend and former colleague Charles Goldfinger as the official reform expert. After the publication of his book *La Géofinance*,

> [Goldfinger] had gained a reputation as... I was going to say almost a kind of "guru" on... the great transformations of the financial sphere. […] In other words, he was interviewed by, I think, RTB, and gave his opinion on the markets... on transformations, on the Big Bang. He had a certain loquaciousness, a certain roundness, eloquence, well... He wasn't a bookworm. He had a certain media presence (*Ibidem*).

Indeed, Goldfinger had no shortage of trump cards to play when it came to attracting cameras and microphones: in both his book and his columns, he never hesitated to invent concepts to describe a reality that was at once unprecedented, disturbing and fascinating: "financial innovations and deregulation are at once indispensable and excessive, chaotic and orderly, driven simultaneously by speculative fever and irrefutable economic logic" (Goldfinger, 1986: 397).

Maystadt's diplomatic charm, Snoy's conciliatory attitude and Goldfinger's scheming expertise would greatly facilitate the reform. The three men set up the "Maystadt Commission",

bringing together stockbrokers and bankers around the Minister, and tasked with drawing up the broad outlines of the bill... based on a working document: the Goldfinger Report. "We drew up the report with the idea that we were going to do the Maystadt commission, chaired by the Minister himself, and based on a consultant's proposal" (interview with B. Snoy). And indeed, this "proposal" - the Goldfinger report - contained the main measures of the reform as early as August 1988, and was only marginally amended. Once again, as in the case of stockbrokers' interests, the *form* of Goldfinger's ideas (a "report by an independent expert") is more important here than the originality of the content (in line with the new cultural system, see below) or the empirical soundness (surprisingly lacking in detail: see next section). It therefore seems necessary to consider the context in which ideas are enunciated, as logical relations can sometimes concede their power of constraint to causal relations; thus, Goldfinger's ideas convinced more by force (absence of contradiction, basic document for the commission, label of independence...) than by logic.

Another amendment to Archer's model, to which this "Maystadt Commission" invites us, is the integration of the causal power of situations. In the development of her approach, Archer sees the situation as the support for the influence of systems: structural and cultural properties shape situations, thus constraining the action of individuals. The materiality - or objectivity in Latour's sense - of the situation is not recognized in its active role in producing action. And this is exactly what we are talking about here: the ambitions and agents of the Maystadt commission are identical to those of the Van de voorde commission, but the former produced social change notably because the Minister (rather than a senior civil servant representing him) was around the same table as the bankers and stockbrokers. Bernard Snoy, who was also present at the table, insists on this situational issue: "[the stockbrokers and bankers] won't agree if the Minister doesn't get *personally* involved, which is why we created the *Maystadt* Commission". In other words, a virtual presence (via a senior civil servant) does not have the same social effects as a physical presence[89]. Similarly, if the discussions had taken place in bank offices or the Palais de la Bourse, rather than in the softly padded halls of the Federal Parliament, the outcome would undoubtedly have been different. The actors were more aware of this than Archer.

[89] Beyond the strictly corporeal stakes, Maystadt's presence weighs on the success of the reform through the index it sends to the parties involved in the discussions, particularly with regard to the more directive role of this reforming State. It is therefore difficult - and probably artificial - to isolate the situational component from more institutional effects. However, it remains essential to integrate this component, even if it is interwoven, into the modeling.

Conversely, what Archer has identified more clearly than the architects of this reform are the systemic factors that promote morphogenesis. In our case, the late 1980s saw the crisis of Fordist capitalism, supplanted economically by financialized capitalism (or *finance-led capitalism* in the terminology of the "regulation theory": Robert Guttmann, 2016) and culturally by the "new spirit of capitalism" (Boltanski & Chiapello, 1999). These two strands provided fresh ideas and structured interests differently, so that reform became "an imperative necessity". Economically, the crisis of Fordist capitalism was characterized in particular by a reversal of the relationship of dependence between states and capital owners, in favor of the latter, made possible by the increased mobility of capital. The origins of this greater mobility - which implied the collapse of the Bretton Woods agreements - are manifold (economic, political, technological, etc.), to such an extent that it is difficult to "fit" them all into the structural box of Archer's model. The model can then appear under-differentiated: shouldn't we consider, alongside economic and cultural systems, technological, political, mediatic and scientific systems? This would make it possible to integrate new interactions between systemic strata, which are also generators of social change. At the level of the *agency,* this pluralization would undoubtedly better reflect the variety of social worlds: the role of Snoy, for example, is very important in the political world, but virtually insignificant in the economic world (and vice versa for stockbrokers). The "cost" of this extension, of course, is the flexibilization of a model that becomes capable of explaining everything... provided it ingests all the data. Let's leave the benefit of complexity reduction to Archer's two parameters.

In any case, this financialization of capitalism put pressure on governments which, after the failure of European tax harmonization, tried to attract capital owners by reducing taxation (e.g. the reduction in withholding tax in February 1990) and curbing capital movements (abolition of the dual foreign exchange market in March 1990[90]). As a result, economic players previously protected from international competition (banks in particular) were forced to restructure. At the interactional level, this relative weakening of the banking sector was amplified by the end of the "consortium of banks", a public debt channel offering high profitability to the major Belgian banks. The more direct access to the stock market offered by the reform, via the abolition of the stockbrokers' monopoly, should therefore also be seen as a compensatory measure: "one of the ideas of the reform is also that the banks should have access

[90] This configuration, introduced in 1954, divides the Belgian franc market into a deregulated segment governed by capital flows and a segment reserved for commercial transactions, in which the NBB intervenes. Its aim is precisely to maintain an autonomous monetary policy while ensuring the franc's stability, in other words, to escape the "Mundell trilemma" (Durre & Ledent, 2014).

to modernized financial markets, as a source of profitability for themselves, rather than making a profit on Belgian government bonds" (interview with B. Snoy). As for stockbrokers, they were seen above all as a burden on the competitiveness of the Belgian financial center, their fixed commissions being seen as a factor repelling capital holders. But, as we shall see, this had more to do with the new cultural system than with economic factors!

The ideological reversal brought about by the management textbooks embodying the new spirit of capitalism is well known: stability becomes rigidity, state regulation a hindrance to innovation and budget cuts gains in competitiveness. It is easy to deduce the effects of this new stock of ideas on the four traditional justifications for the stockbrokers' monopoly. (1) Proximity to public authorities is no longer the guarantee of an institution under control, but of clientelist and nepotistic procedures: "these institutions didn't have a very good image, because they were highly politicized [...]. We also had to professionalize" (interview with B. Snoy). (2) The expertise of stockbrokers corresponds to a bygone national order; on the contrary, the banks' knowledge and development of information technology make them better adapted to globalized financial markets. (3) The power of self-management left to the stock exchange commission in matters of deontology is reduced by the reform: transparency is ensured instead by the "truth of prices" (published following the confrontation of supply and demand). (4) Above all, limiting competition is no longer seen as a guarantee of stock market stability, but rather of undue privileges affecting the country's competitiveness.

The argument for reform was generously and fruitfully nourished by this last point. As we saw in the story of the reform, this argument notably took the form, in Goldfinger's economic vocabulary, of penalizing "transaction costs" (see Figure 13). Although these figures are riddled with inaccuracies (see next section), their power lies not only in Goldfinger's shaping of the report. It is also indebted to the cultural system largely nurtured by Chicago School economic theory (Blyth, 2002; Chwieroth, 2010), which supplanted Keynesianism in the late 1980s. However, as Cornel Ban (2016) has shown in the case of Romania and Spain, the impact of these ideas depends greatly on their "local interpreters", much more so in any case than Archer's model suggests. This is also true in the Belgian case, where economic theory only emerged through the particular filter of Charles Goldfinger. The diagram below summarizes the main agential, structural and cultural factors that we have identified and which, in 1990 rather than 1986, favored the transformation of Belgian financial markets.

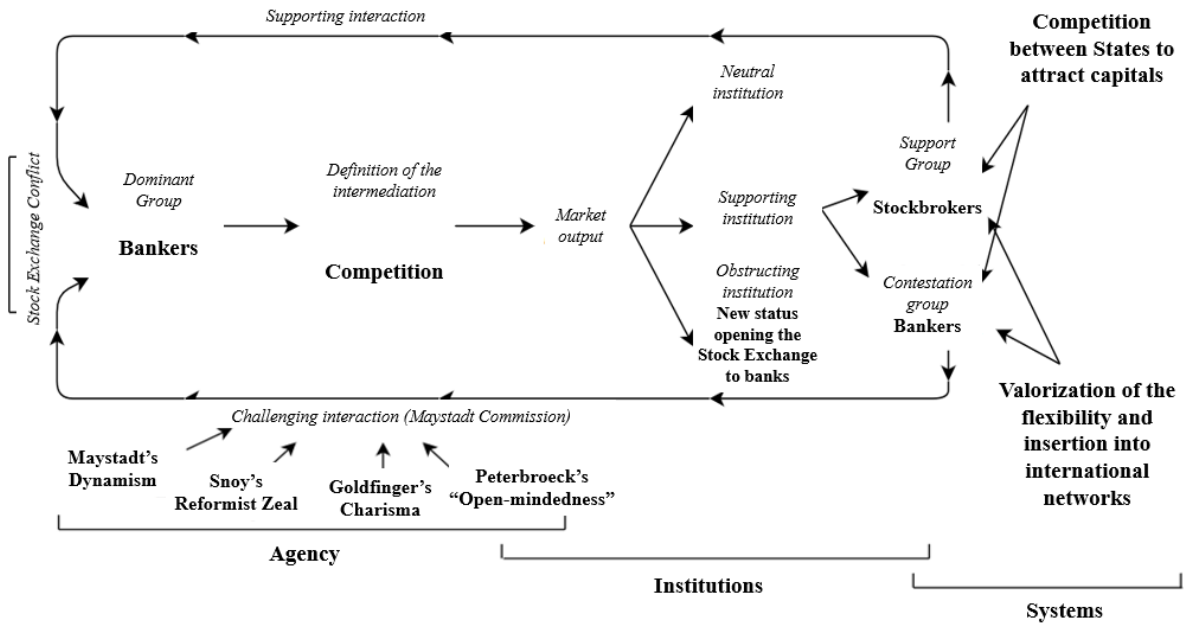


Figure 15 - Morphogenesis of the second period

We announced that one virtue of Archer's model, compared with the Marxist and neoclassical alternatives, is its ability to account for the incoherent and unpredictable dimensions of social change. On the contrary, at the end of this journey, doesn't it appear that the reform was characterized by a coherent and synergistic combination of the different strata of social reality? Wasn't Peterbroeck's arrival a perfect match with the emergence of the new spirit of capitalism? Is this not, after all, a functionalist model? First and foremost, we must recognize the elective affinities between strata: the valorization of competitiveness over stability did indeed favor the advent of a modern, enterprising president of the stock exchange commission, and vice versa - this is not a concession, but a characteristic of interactions between compatible strata. That said, elective affinity is not a necessary connection: several key factors in the reform occurred accidentally, independent of the intentions of the advocates of change[91]. While the *morphostatis* of the first period was undoubtedly burdened by necessary incompatibilities by the end of the 1980s, and thus called for social change, there was no guarantee that it would take this particular form; as the continuing diversity of stock market institutions across the West testifies, other reforms were possible.

The question remains: in the eyes of the reformers, wasn't this combination of strata such a miraculous "alignment of the planets" that it is doubtful whether it was unintentional? In other words, weren't Snoy, Maystadt and Goldfinger aware of the synergies between the

[91] Snoy thought of naming Goldfinger after running into him again on the train between Paris and Brussels, Maystadt was able to surround himself with Snoy because the latter's contract at the European Commission was coming to an end following Jean-Yves Haberer's departure for *Crédit Lyonnais*, and so on.

components of Archer's model? The rest of the story, made up of important "unintended consequences", will convince us of their very partial mastery of events. One of the central motivations (and most powerful arguments) of the reformers was the defense of national interests in the new financial landscape: "if we had done nothing, we would have run the risk of seeing Brussels, despite being the capital of Europe, gradually eliminated from the European financial map" (Maystadt's speech to the King, 1990: 7). Snoy concluded one of our interviews in the same spirit: "We had to reform the financial markets, but we did it in the interests of Belgium".

And yet, less than ten years later, the Brussels Stock Exchange was absorbed into the pan-European *Euronext* platform, where it now enjoys only marginal decision-making powers (proportional to its capitalization, which is much lower than that of the other "partners"). Admittedly, the architects of the reform had not foreseen this development: "Obviously, we were far from thinking that we would have... how do you call it... that our stock exchange would be merged with the French stock exchange in... [*Euronext*]" (interview with B. Snoy). But this is indeed a "perverse effect" of this morphogenesis: as we will develop in the next section, the liberalization and computerization of intermediation, as well as the less nationalized allocation of capital they induce, are conditions for the concentration of stock exchanges. The modernization of the stockbroker' corporation into a private company like any other made the Belgian Stock Exchange "commensurable" with its European counterparts, which - paradoxically - made our national institution vulnerable in the emerging "market of markets". More than a privatization (Lagneau-Ymonet & Riva, 2010), it was a standardization of the Belgian financial market, conceived as a modernization, but resulting in a minorization.

Conclusion

In our opinion, Archer's model passed this empirical test. Contrary to reductionist (*conflationist*) models, it allowed us to account for the two-dimensionality of inertia and change factors: actors, systems and their interactions are the components of social reality, in its continuity as in its rupture. However, the episode of the Belgian stock exchange reform led us to propose three amendments to the original model. The first is the costliest - in terms of "investments in form" (Thévenot, 1986): pluralizing the systems. A more complete differentiation would enable us to grasp in greater detail the innovations emerging within a system (e.g. technological) and their reception and translation by other systems (e.g. economic).

This addition of parameters will increase the explanatory power, but also the information base required; moreover, it will impair the model's readability and its ability to reduce complexity.

The other two amendments seem to us to be more "economical". One invites us to integrate the shaping of systemic influences: perhaps as much as their nature, the ways in which ideas and interests appear impact their causal power. The division of stockbrokers following Peterbroeck's election and the authority of the Goldfinger report's lame arguments are empirical illustrations of this. The other amendment argues for a consideration of the causal power of situations, in their material dimension: the modes of interaction between humans and objects act on social reality. This last point was suggested by the success of the Maystadt commission, due in particular to the physical involvement of the minister - as opposed to the failure of the Van de voorde commission, in which the minister was represented by a senior civil servant. These two amendments are intimately linked; together, they form a pragmatist argument in favor of "sensitizing" the strata of Archer's model. We experiment with ideas, albeit logically combined, but as they appear to us. Our projects are constrained by the distribution of wealth, power and expertise, but also by the materiality of the world: no matter how wealthy, influential and knowledgeable, Snoy will never again win the 100-meter dash at the Olympic Games.

Our analysis of financial reform, attentive to the plurality of factors in the emergence of a new institutional framework, impacts our apprehension of neoliberalism, both normatively and positively. In normative terms, the local configuration identified in this chapter proves to be more tangible than the macrosocial forces generally invoked to account for the neoliberal shift, and therefore also more fragile: by showing the forces of contestation that this complex of factors has succeeded in stifling, this chapter indicates, indirectly, those that may be revived by advocates of an alternative allocation of capital. On the positive side, this analysis of neoliberalism, based on a study of the devices that have enabled the deployment of its financial side in Belgium, is intended to echo recent initiatives bringing together the sociology of markets and political economy: the thoroughness of the former's inquiries can solidify the foundations of the latter's macroeconomic assessments (Braun, 2016). The following section extends this research perspective, investigating the foundations of an argument used in many countries to justify financial liberalization: that of competition from foreign stock exchanges.

2. Do modern stock exchanges emerge from competition? Evidence from the "Belgian Big Bang"

The question of the emergence of stock exchanges as we know them today – computerized, globalized and in competition – is rarely asked by mainstream economics, which is not very inclined to historicize its object of study[92]. And when it does pay attention, the answer is brief and scathing, governed by one of two complicit determinisms: sometimes the "technological revolution" forced the stock exchanges to modernize, sometimes the "liberalization of capital movements" put the exchanges in competition with each other, forcing them to converge on the most efficient model. Thus, a representative of this perspective can state that "until recently, exchanges have been considered part of the national identity and, therefore, 'untouchable' monopolies with a mutualized structure. This situation was untenable given the increasing international competition arising from new technology and regulatory reforms" (Slimane, 2012: 50). From an analytical point of view, it follows that the comparative studies of European stock exchanges, mainly carried out by works on "market microstructure", could be reduced to the usual model of competition; indeed, "exchanges operating in a competitive environment can be analyzed as firms" (Domowitz & Steil, 1999: 34). From a political point of view, the liberalization of financial markets appeared to be a natural and necessary evolution.

More surprisingly, historical studies of European stock exchanges have also often taken up the postulate of competition as a force for convergence towards the Anglo-Saxon model (introduced in Europe by the 1986 reform of the London Stock Exchange). Thus, at the end of their investigation of the determinants of the Big Bang, Bellringer and Michie (2014) conclude without elaboration that this reform made London "globally competitive". The effect of the Big Bang on other exchanges seems to constitute an unquestioned "backdrop", the "context" within which one investigates… but not *on which*. For example, in the case of the reform of the Paris Stock Exchange, both Cerny (1989) and Lagneau-Ymonet and Riva (2010) treat foreign competition as a backdrop to study, respectively, the originality of a socialist deregulation and the conflict between bankers and stockbrokers. The same is true of Posner's (2005) cross-

[92] This chapter was published as an article: Do modern stock exchanges emerge from competition? Evidence from the "Belgian Big Bang", *Review of Evolutionary Political Economy*, 3(2), 351-372, https://doi.org/10.1007/s43253-022-00069-4 (Duterme, 2022d).

cutting work on “new stock markets, created in the *context* of lively competition among Europe’s stock exchanges” (*Ibid*: 12).

In contrast to these two approaches, this article proposes to problematize the role of competition in the emergence of modern stock exchanges from the Evolutionary Political Economy point of view. For this issue is not self-evident and deserves to be problematized: in what cases, and under what conditions, has competition from a foreign exchange in general, and the London Stock Exchange in particular, forced stock market modernization? As White’s (2013) study of the NYSE in the 1920s illustrates, the forces of competition between stock exchanges are plural, of varying intensity and dependent on institutional factors that deserve analysis. Moreover, the dynamics of cooperation and complementarity between financial centers can just as easily be fostered by globalization (Schenk, 2020). In other words, the decisive impact of foreign competition in the reform process of a national stock exchange is a hypothesis that needs to be tested, rather than a trivial element of context. This article proposes a reassessment of this hypothesis based on a historical study of the reform of the Brussels Stock Exchange.

The Evolutionary Political Economy (EPE) approach is particularly suited to this undertaking. Contrary to mainstream economics, it addresses power issues in the evolution of the economic system, thus breaking with any determinism – technological or economic (Hanappi & Scholz-Wäckerle, 2021). Contrary to traditional financial history, it opens up to the contribution of many disciplines, including economic sociology – which makes it possible to grasp the weight of social norms and conventions in the evolution of an institution (Cincotti et al., 2020). In addition to its historical contribution, this article offers a first mobilization of the framework of EPE to the themes of the emergence of modern stock exchanges. On a more theoretical level, it proposes on the one hand to broaden the conceptualization of power – generally confined to the economic (market power) and political (balance of power) dimensions – in order to embrace *cognitive* power: we believe that the notion of “performativity of economics”, already well established in other fields such as the Social Studies of Finance (e.g. MacKenzie, 2006b; Muniesa & Callon, 2013), can enrich the framework of EPE. On the other hand, it intends to assert the contribution of economic sociology to EPE: through the concept of “tropes” (Borch, 2016), we will grasp the importance of social norms in the emergence of the modern stock exchanges.

This article therefore proposes a socio-historical perspective on stock markets. More broadly, it also feeds into the political economy debate on financialization, understood here as

the increase in the power of the financial sector over the rest of the economy (exemplified by shareholder value, tax dumping, etc.). Indeed, the reform of the stock exchanges represents a key step in the advent of finance-led capitalism (Guttmann, 2008). In particular, the introduction of competition between financial intermediaries – coupled with incentives for stock market savings – profoundly reshaped the logic of capital allocation: from an elitist investment governed by a relationship of proximity between the saver and the expert and therefore mainly oriented towards national issuers, we have evolved towards a "popular" investment dictated by impersonal diversification strategies and therefore much less focused on national securities. Yet, while the characteristics and consequences of this side of financialization have been documented in different local contexts (e.g. Storm, 2018), its causes have been less explored (Stockhammer, 2012; van der Zwan, 2014). The Belgian case study thus offers a fine-grained, local-scale view of financialization "in the making" – which has been pointed as a blind spot in historical approaches to this topic (Beck & Knafo, 2020).

The rest of this article is structured as follows. First, we will retrace the main stages of the reform of the Belgian stock exchange, by highlighting the omnipresence of the argument of "international competition" in the debates (I.2a). Then, we will problematize the argument, using data and analysis that has since become available (I.2b). The latter will greatly relativize the threat of capital flight to London; it will therefore be necessary to investigate the foundations of the reformers' argument (origin of the figures, author of the reports…), in order to account for this divergence (I.2c). It will appear that some minor, even erroneous, documents were brought to the center of the debates, overshadowing other publications that would probably have oriented the Brussels Stock Exchange differently. Finally, we will identify some roots of this powerful argument (I.2d); in this way, we will be able to provide an alternative and more faithful answer to our research question, by assessing – all in all – the economic and rhetorical impact of competition on the emergence of modern stock exchanges.

a. The London Big Bang, source of all liberalizations?

The London Stock Exchange (LSE) was the first European financial center to be hit by the wave of reforms that affected most stock exchanges on the Old continent. In October 1986, the Big Bang marked the abdication – after years of resistance – of the private club at the head of the LSE: its members conceded the end of the "single capacity" (jobber/broker distinction), the liberalization of commissions and the full participation of foreign firms (Michie, 1999). As we pointed out in the introduction, this institutional change had profound repercussions on the

economic system. But one condition for this reform to be so effective is its diffusion. We know today that it has spread to most European countries. From the Belgian case, we will question the driving force of this phenomenon of contagion. It will appear that the presumed suspect (competition) has not occupied the place attributed to it by the botched trial of mainstream economics.

"A condition of survival"

Throughout the three moments of the transformation of the Brussels Stock Exchange (delivery of the expert report, drafting of the bill by a commission and the debate and vote in both chamber), important actors supported their point of view by referring to the new LSE and the danger it represented for the Belgian situation. As already mentioned, Charles Goldfinger was the main architect of the new Brussels financial center. In his first book *La Géofinance. Pour comprendre la mutation financière*, Goldfinger advocates to "get on the train", by learning from the system in order to adapt to it – the British case was already the example to follow: "London offers a unique combination of tradition and innovation. It has become the model of an international financial center; a model that others seek to imitate rather than improve" (Goldfinger, 1986: 175). This is also the tone of the report Goldfinger submitted to Minister Maystadt:

> The modernization of the Brussels Stock Exchange is an absolute necessity. Indeed, the Brussels Stock Exchange lags considerably behind other European stock exchanges [...]. This delay puts it in a weak position compared to the alternative solutions, the off-exchange market or the London Stock Exchange (note of 29 July 1988: 1).

In the final version of the report, it appears that nine Belgian companies are listed on the Stock Exchange Automated Quotation International (SEAQI), the new London platform for foreign companies. Even more alarming, "for some countries (Holland, Belgium, France), transactions on SEAQI can represent between 20 and 50% of the daily volume" (Goldfinger report 1988: 78). But it was above all the end of the report, presenting the advantages and handicaps of the Brussels Stock Exchange, that made the London danger visible by comparing the differential in transaction costs between the two places: Brussels appeared to be more expensive, both for shares and bonds (cf. Fig. 17 and Fig. 19 below).

"This report was decisive" (interview with B. Snoy [henceforth IBS]). Indeed, in his introductory speech to the commission which was set up in September 1988 to draft the bill and settle the conflict between stockbrokers (*agents de change*) and bankers, the Minister took up

Goldfinger's main prescriptions (liberalization of access to the stock exchange and of brokerage), based on his report and on the argument of competition from the LSE: "as Charles Goldfinger has brilliantly demonstrated [...] the geofinance exposes us to the danger of relocation of financial activities from the Brussels financial center to more competitive centers, [to such an extent that] the modernization of the entire Brussels financial center becomes a condition of survival" (introductory speech to the commission: 7). When, at the end of his speech, Maystadt discusses the handicaps and advantages of the Brussels Stock Exchange, he focuses on the amounts of transaction costs, which we will analyze in the second part of this article: "It must be recognized, as shown in the tables on pages 159 and 160 of M. Goldfinger's report [see Fig. 17 and Fig. 18 below], that the Brussels Stock Exchange is not competitive" (*Ibid*: 10). To get a glimpse of the impact of this argument, let the Minister continue:

> I am fully aware of the negative role that the tax on stock exchange operations plays in this respect and I am willing to consider its abolition [...]. But the analysis of the components of stock exchange intermediation costs clearly shows that it is not taxation but the level of brokerage commissions that is mainly responsible for our low competitiveness and therefore for the exodus of these transactions to other markets (*Ibid*: 10-11).

The argument, quantified and supported by the expert and the Minister, is being dropped in the arena of the commission and is not about to come out of it.

Essentially composed of representatives of stockbrokers (wishing to maintain a privileged status) and bankers (wishing to have more direct access to the stock market), this commission gave birth in December 1988 to a reform project very close to the Minister's initial proposals. Although the latter were quickly perceived as largely unfavorable to the stockbrokers (by ending their monopoly), they were maintained, notably thanks to the interventions of Léo Goldschmidt, the main representative of the bankers who were in a position of strength. Faced with proposals to moderate or postpone the reform, Goldschmidt played the same powerful card – the threat of international competition: "our financial intermediaries are already lagging far behind foreigners; it is urgent to get the system up and running" (report of the meeting of 3 Oct. 1988: 7). This expression was used several times in the course of the discussions: "a too substantial [regulation of transactions] would *chase away* securities transactions abroad" (report of the meeting of 10 Oct. 1988: 4[93]). Finally, when it comes to the sensitive issue of brokerage, the Minister announces that "all means must be implemented to prevent securities

[93] We find again this expression pp. 6 and 8, as well as in the report of the meeting of 17 Oct. 1988, pp. 15 and 17.

transactions from being drained abroad" (*Ibid*: 3). Any obstacle to liberalization was stigmatized by bankers' representatives as an "incentive to create companies that would operate in London" (*Ibid*: 16), that is as a threat to the survival of the Belgian financial center.

The third and last moment of this reform involves the debates and votes of both Belgian chambers. As early as the explanatory memorandum, it is recalled that "the major advances in information technology and telecommunications have made capital flows highly mobile and there is a need to be very aware of the danger of a possible relocation of financial activities from our country to other more competitive financial centers"; consequently, "the modernization of the Belgian Stock Exchange and financial markets in general is not only desirable but even *vitally necessary*" (explanatory memorandum of 18 Apr. 1990: 4-5). The handicaps pointed out and quantified by Goldfinger are then taken up again to justify tax relief and the progressive liberalization of brokerage: "the competitiveness of a stock exchange is increasingly measured by the costs of transactions involving high amounts. European Commission [actually, Goldfinger's] statistics have shown that the Brussels Stock Exchange is not currently competitive for these transactions" (*Ibid*: 9).

During the work in the parliamentary committee, Minister Maystadt is even more explicit: "one of the most important objectives is to bring back to the Brussels Stock Exchange the transactions in Belgian shares that tend to move to London" (report of the parliamentary committee of 12 June 1990: 6). Here again, during their hearing before the committee, the bankers' representatives supported their wish for deregulation with the argument of international competition: the director of a big Belgian bank went so far as to argue that "because of the archaic structure of the Belgian financial center, the majority of the Belgian equity market is already located in London today" (*Ibid*: 49). During the discussions, references to the LSE continued to flow in, without any figures being mentioned or demanded – the Minister merely referred to the conclusions of the Goldfinger report: "brokerage rates in the Brussels market, for example, are significantly higher than in London. This is why some important transactions are carried out in London and not in Brussels" (*Ibid*: 143).

Surprisingly enough, the fiercest opponent of this bill was the young Guy Verhofstadt of the Flemish Liberal Party, then nicknamed 'Baby Thatcher', who strongly condemned Minister Maystadt's dirigiste orientation: "the total over-regulation [implies] [...] a great danger that some activities will be moved abroad". As proof of the Anglo-Saxon dynamism, he also points out that "the most important transactions of the Belgian star companies (*steraaridelen*) are still done in London and not in Belgium" (plenary session of 19 June 90: 3001). The

argument of international competition was therefore not contested, but its conclusions radicalized. However, the opposition was not threatening: Verhofstadt was marginalized, while only one ecologist MP gently warned against the "consequences of the speculative excesses" (*Ibid*: 3012). The climate was favorable to the Minister, with MPs from all sides praising his both "urgent" and "reasonable" approach. Liberal MP Poswick even made the following observation: "in 25 years of parliamentary life, I have never seen a technical document examined in such serenity" (*Ibid*: 2998).

Things were not much different in the Senate. One of the most debated issues, the degree of liberalization of brokerage, was the subject of many proposed amendments fed into the argument of international threat. Similarly, one member proposed the total abolition (rather than a sharp reduction) of the tax on stock exchange transactions, stating that, in this way, "transactions that are currently carried out either in London, Germany or other countries will return to Belgium" (Senate committee report of 30 Oct. 1990: 155). During the plenary debates, the tone was relaxed, with the vast majority admitting that this modernization was necessary – although some considered that it came too late: "we have lagged a little behind, for example, compared to the 'big bang' of four years ago" (plenary of 07 Nov. 1990: 185). In the final vote, the bill was passed by a rare majority: only nine members of parliament voted against it, while 108 were in favor (plenary session of 29 Nov. 90: 879). A few seconds before this vote, socialist MP Defosset reiterated for the umpteenth but last time that "the danger of relocation of financial activities to other, more attractive financial centers made it necessary to modernize the Belgian Stock Exchange and financial markets" (*Ibidem*). It is time to assess more carefully what this argument covers.

b. What forces behind "international competition"?

At this stage, it is clear that the argument of international competition has been under-problematized, despite its weight in the three stages of the reform project. Not only have no serious estimates documented the debates, but the concrete drivers of the dangers of relocation have never been made explicit. What do we mean when we talk about the risk of Belgian savings fleeing to the LSE? This phenomenon – whose importance for Belgium's economic stability is not in question – can in fact take two forms. Firstly, a company that finances itself via the stock exchange may withdraw from Brussels to be listed in London, in order to benefit from greater liquidity (more accessible and cheaper capital) or lighter regulations (in terms of information to be published in particular). Savers – both Belgian and foreign – wishing to put this stock in

their portfolio will then have to use the services of an intermediary in London, rather than in Brussels. Secondly, the investor may, on his own initiative or on the advice of his broker, direct his buy or sell orders to London rather than Brussels, in order to incur lower transaction costs. This second movement is all the more likely since the companies coveted by Belgians are listed in London, and vice versa – the two forms are therefore distinct, but interdependent.

In hindsight, what do we know about the first risk, that of capital flight through the listing of Belgian companies in London? First of all, let us notice that all the companies in question are listed *both* in London and in Brussels. This double listing does not mean that no capital flight is to be feared, but that capital flight will occur if and only if listing in London causes a drop in transactions in Brussels. To capture the effect of the Big Bang on this first aspect, it is necessary, as Goldfinger has done, to look at the SEAQI, the platform born during the reform in order to attract foreign companies to the London organized market. It should be noted that before the Big Bang, the phenomenon of double listing was not absent: moreover, it seemed to turn in favor of the Brussels Stock Exchange, which in 1981 listed 16 British companies and still 14 in 1986 (compared to only 2 Belgian companies listed on the LSE for both periods) (Biddle & Saudagaran, 1989; Pagano, Röell & Zechner, 2002). As far as SEAQI is concerned, no reliable data was in fact available when the Belgian reform was drawn up: "Accurate data on foreign equity trading in London only became available in February 1990 with the full introduction of SEQUAL, the London Stock Exchange's trade reporting and confirmation system for stocks quoted on SEAQ International" (Worthington, 1991: 247). This partly explains the discretion of figures supporting the argument during the debates…

How, then, did Goldfinger manage to assert in its report to the Minister in July 1988 that nine Belgian companies are listed on SEAQI, and that this would represent "between 20 and 50% of the daily volume"? Goldfinger was close to the financial world and probably relayed, without sufficient precautions, market rumors. The problem is that subsequent studies have invalidated these rumors. Anderson and Tychon (1993), two economists from the Catholic University of Louvain, were the first to look into companies listed both on the SEAQI and on the Brussels Stock Exchange: the first one was the *Kredietbank* (the forerunner of *KBC*), which was introduced on the SEAQI in… January 1990, that is two years after the Goldfinger report. However, some of the data in this article seem to confirm the danger of this first form of capital flight: the number of Belgian companies listed on the SEAQI does indeed rise, reaching a total of 12 in December 1992. There were even 14 in June 1994 (Degryse, 1999). Certainly,

Goldfinger anticipated the trend, but wasn't he visionary? Two lessons from the literature invalidate this conclusion.

Firstly, as we have noted, for this double listing of Belgian companies to reflect a capital flight, one must observe a fall in the volume of transactions made in Brussels on these companies. However, this is not the case. According to the econometric study by Anderson and Tychon (1993), we would even rather see the opposite phenomenon: "there is evidence that the fact that a stock is traded on SEAQ International has helped to promote trading of that share on the Brussels market" (*Ibid*: 368). We could, however, object that this increase in the volume of transactions in Brussels is due to the general increase in demand for financial products, and that it would have been greater without competition from SEAQI. Admittedly, one could no longer speak of capital flight, but at least of a deprivation of growth – equivalent, in 1992, to almost 30 percent of the volume of transactions in these shares (Bank of England, 1993: 355). Again, this would be wrong.

The second lesson from the literature allows us to rationalize, but also to radicalize Anderson and Tychon's observation. It comes from a little-known article by Jacquillat, Gresse and Gillet (1998), which scrutinizes the production of the official statistics of the SEAQI and the Brussels Stock Exchange. The SEAQI is a price-driven market: at any given time, market makers offer a range of prices for all the securities for which they are responsible. In the data recording system, if investor A wants to sell an amount M of shares and counterpart B wants to buy the same amount, the transaction will be encoded a first time when buying from A, a second time when selling to B, or even a third time if the market maker transfers the securities to another market maker. Conversely, the Brussels Stock Exchange is order-driven: in the same situation, A's sell order will meet B's buy order, so that the total volume encoded will be worth M, that is two or three times less than on the SEAQI for the same transaction. "Taking these differences into account to correct volume statistics, SEAQI's share in Belgian stock transactions falls to 19.15%" (*Ibid*: 382). But there is more. On the basis of a questionnaire survey of the main London market makers of Belgian stocks, the authors estimate that the vast majority of transactions received on SEAQI are offset by a symmetrical order in Brussels (which is itself encoded in the registration system)! This hypothesis is corroborated by a very strong correlation between the daily volume of a share on the SEAQI and that on the Brussels Stock Exchange. The dominance relationship seems to be the opposite of the one assumed in the debates: "SEAQI may be viewed as a non-independent satellite market" (*Ibidem*).

If the London market makers felt the need to offset each transaction with a symmetrical order on the Brussels Stock Exchange, it was firstly because they did not want to tie up their assets in too many illiquid shares (or, conversely, to replenish their minimum stock of Belgian shares which they quoted), and secondly because they probably had advantageous partnerships with some Brussels brokers. The latter also had a lot to gain, so much so that when Olivier Lefebvre, director of the Brussels Stock Exchange from 1995 to 2007, went to London to offer direct access to market makers active in Belgian stocks, some of them reacted violently: "when I came back from London, I was insulted by the head of *Kredietbank* because I was stealing his clients" (interview with O. Lefebvre). Indeed, at the time, "the *Kredietbank* probably channeled 30 percent of the orders coming from London on Belgian stocks" (*Ibidem*) and therefore lost a lot if London market makers had direct access to the Brussels trading platform. In the end, the London market represents for the Brussels Stock Exchange less a competitor than a (very irregular) provider of liquidity on cross-listed shares, as well as an undeniable marketing promoter.

Is the second form of capital flight to London more verified? At the end of the 1980s, did savers redirect their orders to the City rather than to Brussels? We know that even if the investor wants to buy a Belgian share in London, the transaction will very often be executed, at the end of the chain, on the Brussels Stock Exchange. Our investigation should therefore focus on the redirection of orders on non-Belgian stocks, that is, for example, on the decision of a Belgian resident to sell his *Petrofina* shares to acquire *Tesco* shares in order to incur lower transaction costs. Unsurprisingly, data filtered in this way was not available at the time. However, the National Bank of Belgium (the Belgian central bank) regularly published the balance of amounts invested by residents in shares abroad (purchases - sales), as well as the balance of shares acquired by non-residents in Belgium – two valuable indicators of the attractiveness of the Brussels Stock Exchange, which were surprisingly absent from the debates on the reform. These figures have been included in the Figure 16 below.

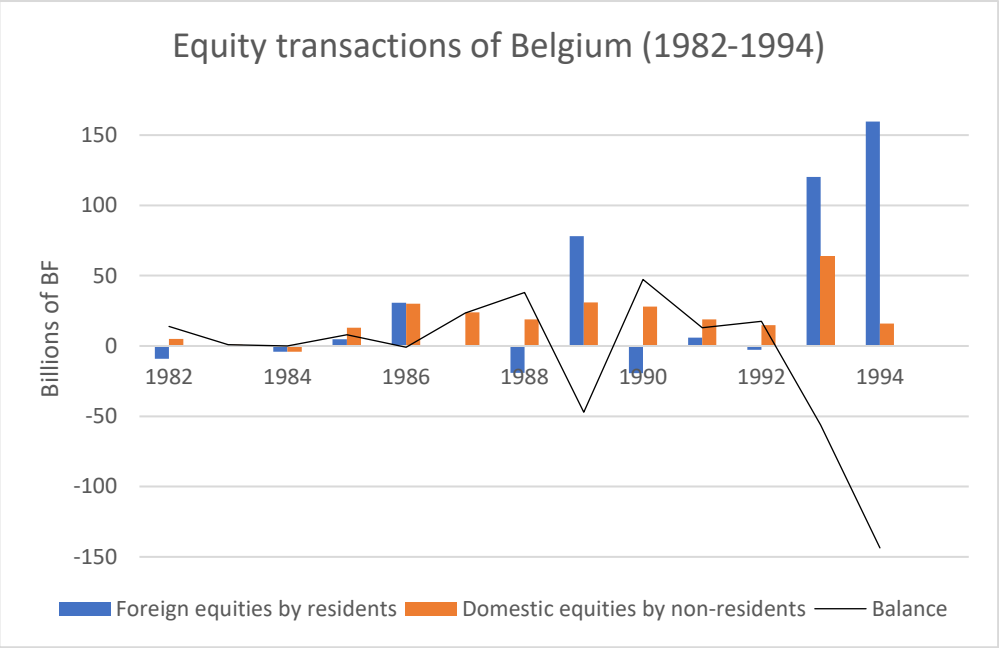


Figure 16 - Equity transactions of Belgium (from National Bank annual reports)

It is clear that from 1986 to 1988, the period between the Big Bang and the beginning of the reflections on the Brussels reform, no capital flight was recorded on shares. Admittedly, in 1986, the National Bank noticed an explosion in the purchase of shares abroad by residents; however, it does not think of associating this event with a lack of competitiveness of the Belgian financial center, but rather with a legitimate desire for diversification: "this development can undoubtedly be explained by the fact that Belgian investors, after having discovered Belgian shares in previous years, wanted to further diversify their portfolios in this area as well" (annual report 1986: 161). In 1987, the balance became largely positive, with Belgian residents reducing their purchases of foreign shares. The year 1988, the reference year for Goldfinger's work, will not provide more arguments to the reformers: Belgians repatriate their capital to Brussels without foreigners moving away from it. According to the National Bank, "this relative disinterest of residents in investing in foreign equities can probably be interpreted as a consequence of the stock market crisis of October 1987, which, by abruptly interrupting the rise in prices observed since the beginning of the 1980s, led savers to reassess the risks inherent in investing in shares" (annual report 1988: 115).

At this stage, it should already be noted that the argument of capital flight to the new LSE, so powerful from the early stages of the reform, is not supported by any facts between 1986 (year of the Big Bang) and 1988. We will see later why the weakness of this second form of capital flight is not so surprising. In 1989, however, a first deficit appears, largely attributable to purchases by residents of shares abroad. How can we account for this evolution? The

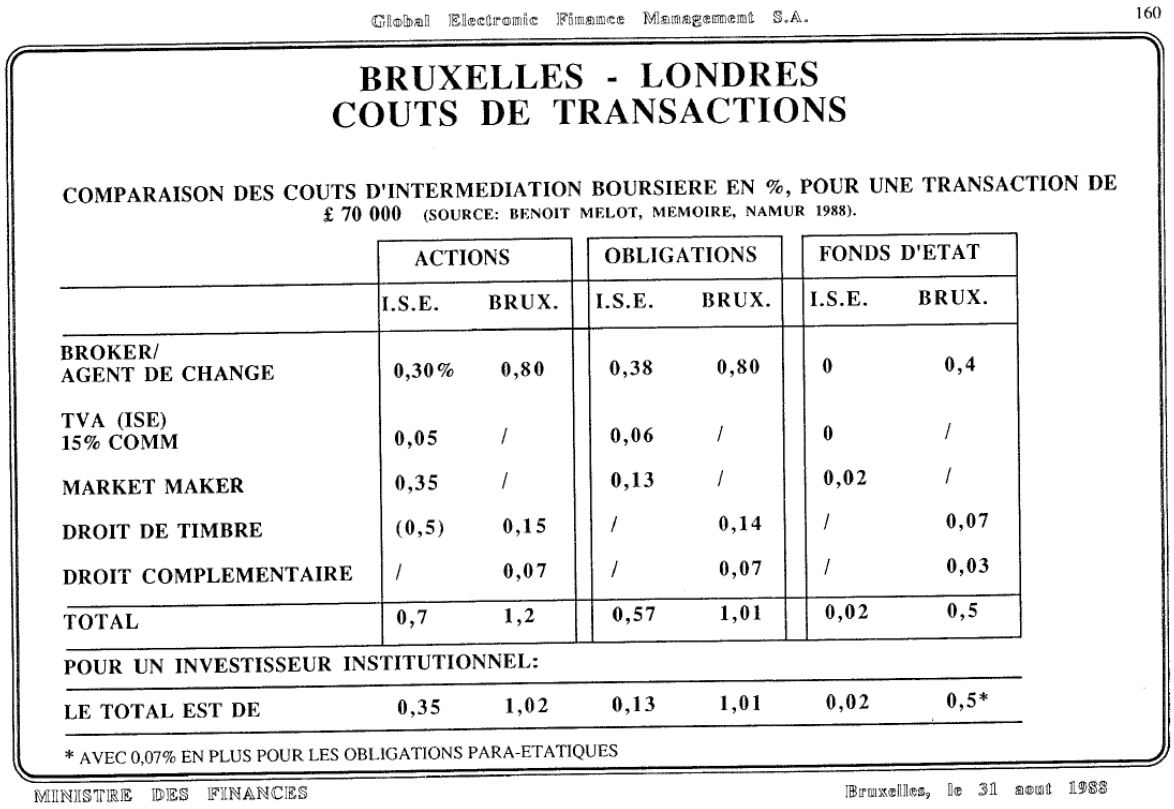
argument that the Brussels Stock Exchange was not very competitive appears weak, given that neither the London nor the Brussels Stock Exchange changed their structure profoundly in that year. As the National Bank notes, it is more likely that this initial deficit was due to the advent of a new technique for managing shares: "residents made – mainly through collective investment schemes – large purchases of shares in foreign companies, particularly French and British ones" (annual report 1989: 71). It is this delegation of decision-making power to mega-investors in charge of asset diversification that explains these capital movements, much more than the institutional structure of the various stock exchanges. The same applies to the swing back in 1990: "the fall in stock market prices, particularly in the United States and Japan, led residents and, above all, collective investment schemes, to which the latter had entrusted the management of their assets to an increasing extent in recent years, to liquidate a large proportion of their foreign shares" (annual report 1990: 82).

Less patriotic than the Belgians whose assets they manage, mutual fund managers are certainly more inclined to sacrifice Belgian shares for foreign securities. More unstable, their allocation of these collective saving does not, however, seem particularly unfavorable to the Brussels Stock Exchange before the reform (cf. above) … and even less particularly favorable afterwards! This is evidenced by the unprecedented capital flight of the following years: these "institutional investors", whose establishment in Belgium was favored by the reform of the stock exchange which offered them a privileged fiscal status, seem to be more influenced by their "anticipations of exchange rate and interest rate evolutions" (annual report 1993: 100) than by the institutional nature of the stock market. Thus, would the reform of the Brussels Stock Exchange have created the danger that it thought it was fighting against? Faced with such an accusing observation, Bernard Snoy retorts: "it is true that mutual funds have made savings more mobile, but in any case, savings were going to be more mobile, and above all it was clear that Europe was going to impose the free circulation of capital on us" (IBS). This is an argument of a completely different nature, probably more relevant, but whose assessment goes beyond the scope of this article.

c. The mystery of transaction costs

We have seen that the flight of capital from Brussels to London – the *manifestation* of international competition – has not taken place. However, the transaction costs put forward by Goldfinger – the *basis* of international competition – are much lower in London, apparently thanks to the computerization and liberalization of brokerage that took place during the Big

Bang. To resolve this paradox, let us take a closer look at the figures. It should be remembered that these statistics, taken up several times by Minister Maystadt, were the main database documenting the reform. They are taken from two slides of the Goldfinger report. The first one, shown below (see Fig. 17), compares the transaction costs for an order worth 70,000 pounds (about 4,600,000 Belgian francs), for three different securities (shares, bonds and government securities). As in our previous analyses, we will focus on equities – a focus justified by the increasing weight of this category of securities (especially in the portfolio of institutional investors), its independence from public borrowing (allowing the institutional structure of the stock exchange to be isolated) and its importance in the economic justification of the reform ("enabling companies to access cheap financing"). The source mobilized by Goldfinger is surprising. It is a master's thesis, namely the work of a student at the end of his university program.



Global Electronic Finance Management S.A. 160

BRUXELLES - LONDRES
COUTS DE TRANSACTIONS

COMPARAISON DES COUTS D'INTERMEDIATION BOURSIERE EN %, POUR UNE TRANSACTION DE £ 70 000 (SOURCE: BENOIT MELOT, MEMOIRE, NAMUR 1988).

	ACTIONS		OBLIGATIONS		FONDS D'ETAT	
	I.S.E.	BRUX.	I.S.E.	BRUX.	I.S.E.	BRUX.
BROKER/ AGENT DE CHANGE	0,30%	0,80	0,38	0,80	0	0,4
TVA (ISE) 15% COMM	0,05	/	0,06	/	0	/
MARKET MAKER	0,35	/	0,13	/	0,02	/
DROIT DE TIMBRE	(0,5)	0,15	/	0,14	/	0,07
DROIT COMPLEMENTAIRE	/	0,07	/	0,07	/	0,03
TOTAL	0,7	1,2	0,57	1,01	0,02	0,5
POUR UN INVESTISSEUR INSTITUTIONNEL:						
LE TOTAL EST DE	0,35	1,02	0,13	1,01	0,02	0,5*

* AVEC 0,07% EN PLUS POUR LES OBLIGATIONS PARA-ETATIQUES

MINISTRE DES FINANCES Bruxelles, le 31 aout 1988

Figure 17 - Slide 160 of the Goldfinger report

The master's thesis from which this table is taken was written by Benoît Mélot, a student from Namur who had the opportunity to complete a two-month internship at the LSE thanks to his uncle who worked for a major Belgian bank. Impressed by the discrepancy between the modernity of the English financiers he had met and the archaism of the 'provincial stock exchange (*Bourse de province*) … full of dust [with] the old stockbrokers, and the chalk...'

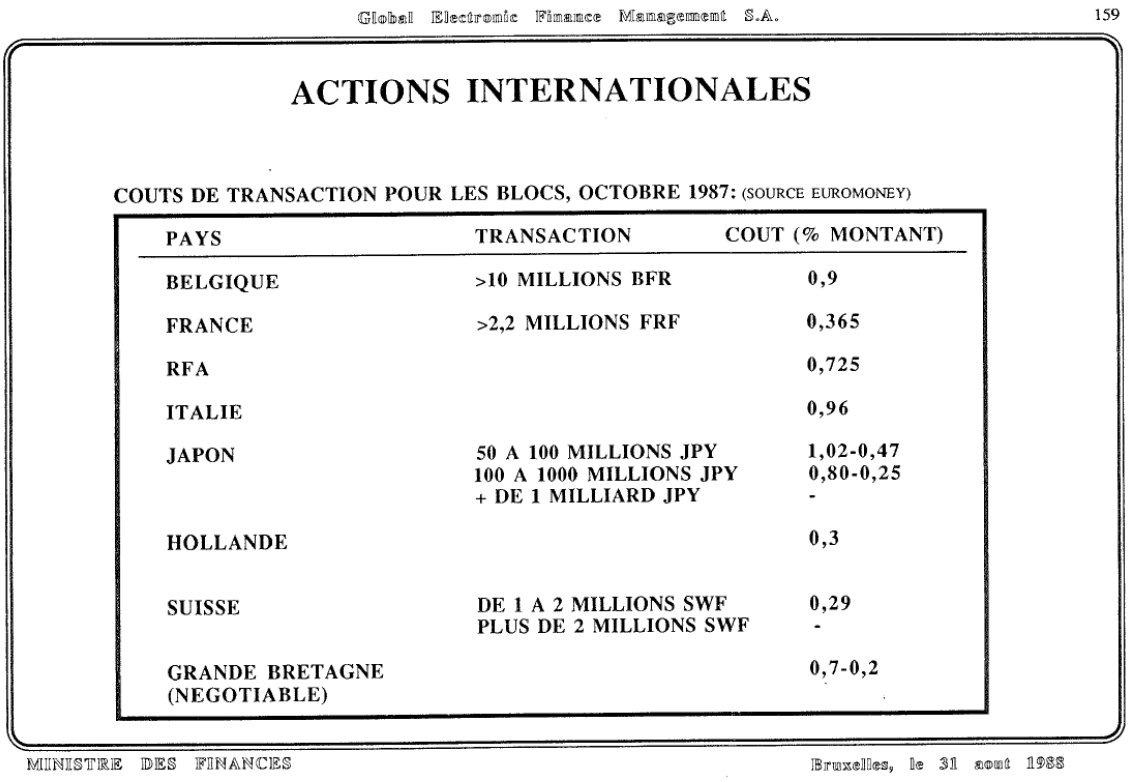
(interview with B. Melot), Mélot mobilize this table to case for a liberalization of the Brussels Stock Exchange. First of all, let us note the arithmetical error (or lucky misprint) of Goldfinger: the first total of the transaction costs for shares in Brussels indicates 1.2, whereas the sum of the components is 1.02.

But, more fundamentally, three methodological options can explain the difference between Mélot's unequivocal conclusion – "transaction costs are significantly lower in London" (Mélot, 1988: 86) – and the more nuanced results of subsequent studies (Anderson & Tychon, 1993; Degryse, 1999). Firstly, Mélot puts himself in the perspective of a Belgian investor and therefore integrates the exemption from stamp duty that London grants to foreigners (the 0.5 percent is therefore not included in the London total). Secondly, the cost that Mélot associates with the market maker will generally be lower than that faced by the Belgian investor. This cost – referred to as an "indirect cost" in the literature – represents the price range offered for a given share: if a market maker is the only one to quote a share, he will be able to afford a large spread between the buying and selling prices he offers (this spread being the implicit commission paid by the investor to the market maker); if, on the other hand, many market makers compete with each other, they will be forced to narrow their range to be more attractive. Generally, the indirect cost also includes the impact of the investor's order on the price: in an illiquid market, a large buy order cannot be fully absorbed by the first sell order and will have to resort to the second or even third sell order (at a higher price, by definition). In the two studies already cited comparing the transaction costs of the two exchanges, these indirect costs were higher in London than in Brussels and well above 0.35 percent (0.98 percent for a transaction of the same amount at Anderson & Tychon).

The origin of this major difference is simple: Mélot took over the spread of "alpha shares", that is the most liquid shares on the LSE, whereas subsequent studies were based on cross-listed shares, which are of course much less liquid. Mélot's choice appears difficult to justify: it seems logical to select shares that are listed on both stock exchanges, that is shares on which these exchanges compete, if the objective is to measure the competitiveness of each of them. All the more so since, as indicated in the *Bank of England* study mobilized by Mélot, alpha shares represented at the end of 1986 barely 3.5 percent of the shares listed in London (Ingram, 1987: 58), and we know that Belgian stocks were not among them. For less liquid shares ("beta" and "gamma"), the costs associated with the spread were close to Anderson & Tychon's estimates, ranging from 0.7 to 1.6 percent (*Ibid*: 59).

And thirdly, the last reason for the difference in results is that transaction amount used by Mélot to represent the individual investor (as opposed to the institutional investor) is very high: it is about 4.6 million francs, whereas the average transaction on the Brussels Stock Exchange was about 0.9 million (Degryse, 1999: 1339). Again, this choice has serious consequences, since subsequent studies estimate that the total transaction cost (direct + indirect) is lower in Brussels for transactions of *less* than 1.5 million (*Ibid*: 1350). It would therefore appear that, prior to the Brussels reform, the pricing structures of the two exchanges were compatible with the division of tasks that was subsequently established: small orders are directed to Brussels, while large orders – often from abroad – arrive in London (before finally being executed in Brussels).

Finally, let us briefly look at the second slide presented by Goldfinger (see Fig. 18 below), which called for similar conclusions on the competitiveness of the Brussels Stock Exchange for a larger transaction (above 10 million francs). The magazine behind these pioneering calculations, *Euromoney*, was founded in 1969 by and for investors active in the flourishing Euro-currency market. It is therefore not surprising that their original table (see Fig. 19 below) is based on statements by London market participants, who were too uninformed about Belgian legislation to know that the stamp duty was 0.15 percent and not 0.4.



Global Electronic Finance Management S.A. 159

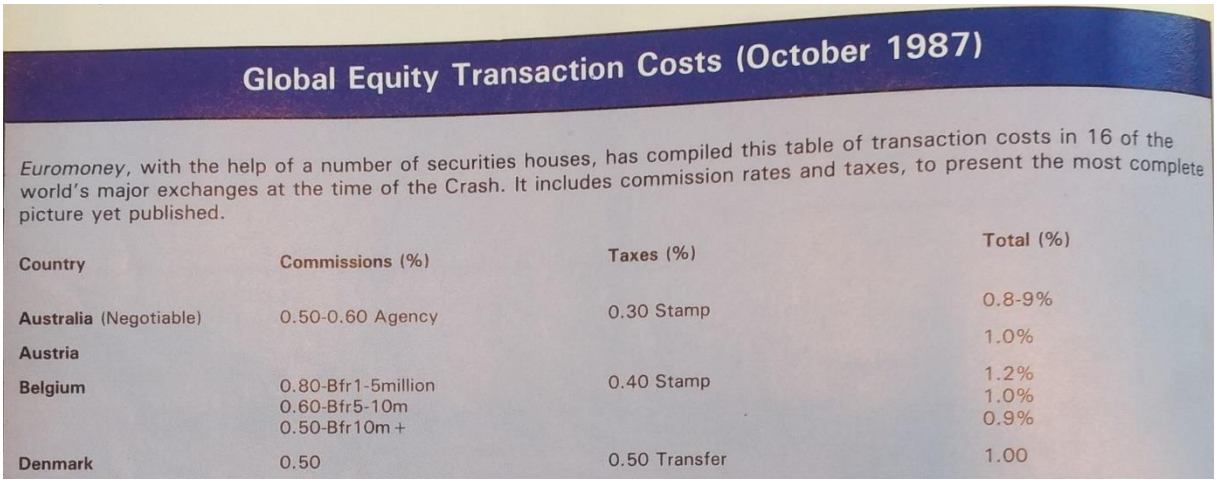
ACTIONS INTERNATIONALES

COUTS DE TRANSACTION POUR LES BLOCS, OCTOBRE 1987: (SOURCE EUROMONEY)

PAYS	TRANSACTION	COUT (% MONTANT)
BELGIQUE	>10 MILLIONS BFR	0,9
FRANCE	>2,2 MILLIONS FRF	0,365
RFA		0,725
ITALIE		0,96
JAPON	50 A 100 MILLIONS JPY 100 A 1000 MILLIONS JPY + DE 1 MILLIARD JPY	1,02-0,47 0,80-0,25 -
HOLLANDE		0,3
SUISSE	DE 1 A 2 MILLIONS SWF PLUS DE 2 MILLIONS SWF	0,29 -
GRANDE BRETAGNE (NEGOTIABLE)		0,7-0,2

MINISTRE DES FINANCES Bruxelles, le 31 août 1988

Figure 18 - Slide 159 of the Goldfinger report



Global Equity Transaction Costs (October 1987)

Euromoney, with the help of a number of securities houses, has compiled this table of transaction costs in 16 of the world's major exchanges at the time of the Crash. It includes commission rates and taxes, to present the most complete picture yet published.

Country	Commissions (%)	Taxes (%)	Total (%)
Australia (Negotiable)	0.50-0.60 Agency	0.30 Stamp	0.8-9%
Austria			1.0%
Belgium	0.80-Bfr1-5million 0.60-Bfr5-10m 0.50-Bfr10m+	0.40 Stamp	1.2% 1.0% 0.9%
Denmark	0.50	0.50 Transfer	1.00

Figure 19 - Transaction costs of the different places, by Euromoney magazine (Barrett, 1988: 98)

In contrast, the brokerage rates, published by the stock exchange commission, were known to all and are therefore those effectively demanded by stockbrokers. It is easy to imagine why the London securities houses overestimated Belgian stamp duty: without direct access to the Brussels Stock Exchange, they were forced to go through a Belgian intermediary who had every interest in exploiting the asymmetry of information on transaction costs inherent in Belgian legislation. But Goldfinger knew all this. And Minister Maystadt, to whom he presented this report, also knew that the stamp duty was not worth 0.4 percent. It is therefore difficult not to see behind the merging of the two columns (hiding the division of the cost between commission and taxes) an intellectual dishonesty on the part of Goldfinger. At the same time, let us note that the *Euromoney* table ignores the indirect costs mentioned above, which were favorable to the Belgian position, and that the 0.2-0.7 range shown for London reflects the possible exemption, already mentioned by Mélot, of British stamp duty of 0.5 percent for foreign investors.

It is likely that, as two subsequent studies have shown (Anderson & Tychon, 1993; Degryse, 1999), transaction costs for large volumes are lower in London than in Brussels. But, contrary to what the Goldfinger report suggests, this difference was not very significant. Yet for institutional investors to cause a capital flight from Belgium to the City, Belgian shares must either be listed in London, or the gain in terms of transaction costs must compensate for the loss of diversification caused by the abandonment of Belgian stocks. But this was not the case at the end of the 1980s. On the one hand, we saw that orders on cross-listed shares were finally executed in Brussels. On the other hand, where they existed, the differences in transaction costs were smaller than those found in the documents used in the Goldfinger report and insufficient

to dictate the allocation policy of mutual funds. The table 5 below summarizes these key findings.

Form of capital flight to London	Conclusions
Listing to *London Stock Exchange*	- Only cross-listings (12 in 1992) - Cross-listing increases transaction volumes in Brussels - The SEAQI volume is overestimated - Most SEAQI orders for Belgian shares are executed in Brussels
Redirection of orders	- Positive equity balance from 1982 to 1988 - Sharp movements caused by the institutionalization of savings - Transaction cost differentials too small to impact institutional investor allocation

Table 5 – Summary of findings

d. The other causes of Big Bangs

Our analysis leads us to greatly relativize the importance generally admitted in economics of competition as a factor of institutional convergence, at least for the Belgian case. But the study by Gresse and Jacquillat (1998) suggests that the same was true for the "competition argument" between the LSE and the Paris Stock Exchange. To conclude, we shall put forward another explanatory factor, of a sociological nature, which makes it possible to account for the contagion of the London Big Bang and for the *rhetorical* importance of the argument of international competition. The reform of the European stock exchanges was fueled by the power of three tropes[94]: the authority of economics, the mixture of fear and attraction to new technologies and nationalism.

Goldfinger, the expert of markets

Some authors have rightly argued that EPE can be enriched by Michel Foucault's power-resistance duality (Hanappi and Scholz-Wäckerle, 2021). We would like to add his concept of "power-knowledge". This reading allows us to broaden our conception of power by integrating issues of cognitive space creation and scientific authority. Certain alternative disciplines in economics, such as the Social Studies of Finance, have already been able to reap the benefits

[94] We take this notion from Borch (2016) who mobilizes it to capture the power of the technological fear in the "eventalisation" of another financial episode (the Flash Crash of May 2010), compensating the weakness of other – more traditional – arguments such as the economic importance of the Crash.

of such a perspective by studying the impact of a theory on its object (Muniesa & Callon, 2013): certain financial models, for example, have only become true because they were used by traders (MacKenzie, 2006a). With respect to the financial liberalization of the 1980s, several works have traced the influence of the Chicago School economics (Mirowski, 2014; Blyth, 2002; Chwieroth, 2010). This scientific discourse is said to have provided world leaders with decisive arguments for, among other things, lowering barriers to capital movements or letting exchange rates float. In the same spirit, but using the approach of the "sociology of translation" (Latour, 2005), Cornel Ban (2016) has highlighted the impact of local relays of neoliberal precepts: depending on their insertion in certain professional networks, national experts reformulate, much more than they apply, American economic theories. In our case study, this last perspective seems particularly appropriate for understanding the influence exerted by Charles Goldfinger. Indeed, if he was the main relay of American economics in Belgium for thinking about the reform of the financial markets, it is a very particular version – "translated" – that he transmitted to us.

With a degree in architecture from Paris and a doctorate from the *Berkeley Institute of Urban and Regional Development*, Goldfinger was nevertheless received by the Minister as a "doctor of economics from the University of Berkeley" and listened to as an expert on markets. If Belgian economics, already "Americanized" since the late 1960s (Maes & Buyst, 2005), has learned little from Goldfinger, it is nevertheless thanks to him that the concept of "transaction cost", which was born less than 20 years earlier in the United States (Ketokivi & Mahoney, 2017) and which constituted a fundamental component of the argument of international competition, has been imported into the political debate. But, as can be seen from his book *La géofinance*, Goldfinger's economics is a singular version of the Chicago School. Fascinated by recent economic-technological developments, Goldfinger introduced, for example, as a survival imperative with respect to London, the latest products of financial economics that had only been introduced in the United States a few years earlier (Millo, 2007) and that were not yet established throughout Europe (McLean, 1991), such as index-based derivatives. Thus, as early as March 1991, the BEL 20 index appeared for this purpose: "the main purpose of this index is to [...] serve as an underlying product for options and futures contracts" (brochure "The Indices of the Brussels Stock Exchange" 1995: 37). This first trope therefore appears convincing: certain economic theories from the American universities have exerted, through the very

particular relay of Charles Goldfinger, an influence on Belgian financial liberalization by supporting the argument of international competition and the urgency of reform[95].

The technophobia-philia

A second trope explaining the power of the argument of international competition is its ambivalent modernist resonance, both technophile and technophobic. On the one hand, an anxious fascination with the new communication technologies, fueled by Goldfinger's reading, further dramatized the image of a small Belgium stripped of all its resources in a fraction of a second. During the debates in both chambers, this second point was particularly striking: "the great advances in computing and telecommunications have made the flow of capital very mobile and there is reason to be very aware of the *danger* of relocation" (explanatory memorandum of 18 Apr. 1990: 4). But on the other hand, this modernism was also technophile. The London Big Bang represented an opening towards the future, in the face of which the corporation of stockbrokers could only symbolize, in Brussels as in Paris (Lagneau-Ymonet & Riva, 2010), a retreat into the past. In his book, Goldfinger was already of the opinion that "[the Big Bang] should lead to the transformation of what is still largely a rather artisanal and closed club into a modern and open market" (Goldfinger, 1986: 361). The reformers at work shared this conception:

> The technological revolution allowed the computerization of transactions [...] and the *modus operandi* of the stockbrokers (*agents de change*) appeared very old-fashioned [...] the example, obviously, of the London Big Bang, is the arrival of banks on the financial markets [...]. But the stockbrokers lived like the corporations of the old regime [*laughs*] (IBS).

As for the other tropes, the Belgian press contributed to this feeling: "the auction, the chalk, the small notebooks, all this has an indisputable charm which will be, if we are not careful, that of a provincial stock exchange" (Coenjaerts, 1988: 3). Often attached to the Napoleonic Code of 1801 which established their monopoly, or, which is not much better, to the last important stock exchange legislation of 1935, stockbrokers obviously did not enjoy the same power of attraction as that of the LSE. In addition to the conceptual support of Goldfinger-style economics, the liberalization of the stock exchange was thus also based on the attraction

[95] This can be qualified as "performative", provided that the concept is extended beyond "Barnesian performativity" (restricted by MacKenzie to the self-fulfilling effects of a theory) to include all the effects of economics on the economy (as initially proposed by Callon, 1998a). Indeed, if Goldfinger's concepts did not make the transaction cost differential "truer" (Barnesian performativity), they did influence the shaping of the new Belgian stock market.

of British modernity – perceived as opposed to "the fundamental archaisms of the Belgian financial world" (Vanempten, 1992: 426).

The "Poor Little Belgium"

The last trope refers to the national dimension of the argument of international competition. The image of a nation powerlessly noticing that its financial resources are running away at the speed of light has undeniably a power of interpellation. The dramaturgy of the lexicon – "flight", "drainage", "exodus"… – is still prominent in the memories of Bernard Snoy, Maystadt's chief of staff:

> You have this mass of capital floating around that you can't prevent from coming in or going out [...]; as soon as the liberalization of the capital markets appears inevitable, well... savings will be sucked up (*aspirée*) where the transaction costs are the lowest... And so, the Belgian financial center can deflate (*se dégonfler*) (IBS).

The interest of the whole nation was at stake: "if you let your financial activities slip away, as we did, you lose your sovereignty" (*Ibidem*). In this respect, a major player was again the press: many journalists have rushed wholeheartedly into this eloquent register. For example, the editorialist Tony Coenjaerts wrote at the beginning of the reform: "More fundamentally, why should foreigners be interested in a stock exchange that our *dentists* are fleeing by full trains (*fuient par trains entiers*)?" (Coenjaerts, 1988: 3). At the end of the year, the main Flemish financial newspaper entitled an article "Capital exports reach dramatic levels this year" (JV, 1988: 30). This was enough to make the Belgians anxious… and convince by the necessity of a radical reform.

Conclusion

EPE aims to break with traditional economics by taking a different approach to the evolution of the economic system – integrating the plurality of agents involved, power issues and the weight of social norms. Our analysis of the role of competition between stock exchanges in the institutional convergence of the 1980s has highlighted the heuristic and political interest of such an approach. On the heuristic level, rather than postulating a situation of competition by modeling the exchanges as classical firms, we have mobilized historical, sociological and economic methods that have led us to put the importance of international competition into perspective. The power relations between heterogeneous agents – bankers and stockbrokers during the commission, experts and MPs during the debates in the Chambers… – and certain social norms (nationalism, technophobia-philia…) favored the Big Bang more than the threat

of London. But once the institutional changeover has taken place, a "threshold of irreversibility" has been reached, and what was uncertain and contingent yesterday now appears obvious and indispensable. On the political level, through its effort to denaturalize competition and demystify expertise, this article invites us to beware, in a context of institutional instability, of experts reducing the field of possibilities: they often bet on their performativity.

The field of explanations of the mutation of the European stock exchanges has been blocked by the technological and economic determinisms presented in the introduction. By exposing the fragility of their foundations in the Belgian case, this article aims to reopen this field, but not to exhaust it. The tropes we have put forward need to be complemented by other factors, relating among other things to the positions of the actors in power at the time. In particular, the proximity between the Minister of Finance (Philippe Maystadt), the new head of the Brussels Stock Exchange (Jean Peterbroeck, one of the few stockbrokers in favor of "modernization") and the Governor of the central bank (Fons Verplaetse) increased the weight of these arguments (for a critical contextualization, see Maissin, 1997). The nature of the power mobilized by these different actors – economic, cognitive, infrastructural… (Braun, 2020; Pinzur, 2021a) – would deserve to be brought to light to enrich the analysis. Beyond the Belgian case, this article therefore invites us to rediscover the plurality of explanatory regimes for this side of financialization, which had been overshadowed by the "sledgehammer argument" of competition.

3. The fall of European stock exchanges as trading venues

The liberalization of intermediation has had an impact on the way supply and demand meet on financial markets. Historic stock exchanges, such as Brussels, no longer have a monopoly: they have lost their infrastructure status[96]. Thus, the trajectory of Europe's traditional stock exchanges as trading venues illustrates a process of "de-infrastructuralization"[97]. While Petry (2021) is right to emphasize the power gained by some exchanges through the diversification of their services (upstream and downstream of trading itself), this should not obscure the context of insecurity in which these exchanges have been able to thrive at the expense of others. In fact, over the last twenty years, the continental European stock exchanges have lost their secular status of "trading venue by default." They have become optional. This is evidenced by the emerging financial economics literature that attempts to identify "the main factors that traders consider in making their venue selection decisions" (He et al., 2015). This is also evidenced by the development within investment firms of Execution Management Systems (EMS) whose aim is to "facilitate order execution by offering an overview of liquidity and prices on various venues, subsequently sending the orders to the preferred trading venue or trading venues for execution" (ESMA, 2022b: 16). Exchanges were, throughout the 19th and 20th centuries, obligatory passages for financial actors, infrastructure *par excellence*. Now optional, in competition and included in networks that provide a comparative advantage for certain market players: have exchanges become mere devices?

To shed light on this evolution of European stock exchanges, it may be useful to divide it into three phases. The first is characterized by a monopoly of execution – and even sometimes of reception – of orders by professionals attached to the stock exchange itself. While the nature and extent of this monopoly varied, it structured the European stock market landscape during the 19th and 20th centuries (Vanthemsche, 1992; Michie, 1999; Lagneau-Ymonet & Rivat, 2012). The stock market was *the* place to buy and sell securities; equally important, its price was *the* official quotation. A network both inescapable and extended. A second stage opened with the London Big Bang of 1986: reflecting a combination of technological, political and economic factors, the doors of the stock exchange were opened to other financial institutions, domestic or foreign. From then on, stock exchanges became private companies selling access

[96] For a discussion of the concept of infrastructure, see Section I.2a of the introduction.
[97] This text is from an article co-authored with David Pinzur and submitted to the *Journal of Cultural Economy* in November 2023. For the first part of the article, see Section I.2a of the introduction, p. 31.

to an electronic trading platform. However, this second phase did not seriously threaten their infrastructural position: contrary to the fears of many regulators and brokers, this liberalization did not undermine the volume of transactions on national stock exchanges (Gresse & Jacquillat, 1998; Jacquillat et al., 1998). These were still the default places for trading; their framing was still radical.

It was therefore the third stage that proved fatally decisive. Its starting point was the adoption of the MiFID I Directive in 2004, which prohibited the use of the "concentration rule"[98] and authorized the registration of new trading platforms. On the one hand, therefore, the lifting of the obligation to go through the stock exchange allowed large financial institutions to trade shares Over-the-Counter – in particular for hedging purposes (cf. Figure 20). On the other hand, new firms came to challenge the market shares of the exchanges by offering cheaper services and being better adapted to new practices such as high-frequency trading (Geranio, 2016). These two trends are easily identifiable in Figure 21 below: even on the shares of leading European companies – the product at the heart of their historical activity – the nine main historical exchanges no longer collect even one third of trading value. Certainly, some of them, like the London and Frankfurt exchanges, have managed to become "groups" by acquiring competing platforms and diversifying their services. But, as trading venues, the historical European exchanges have lost their monopoly. For today's traders, they have become optional. They no longer define the order of the situation; their radical framing has vanished.

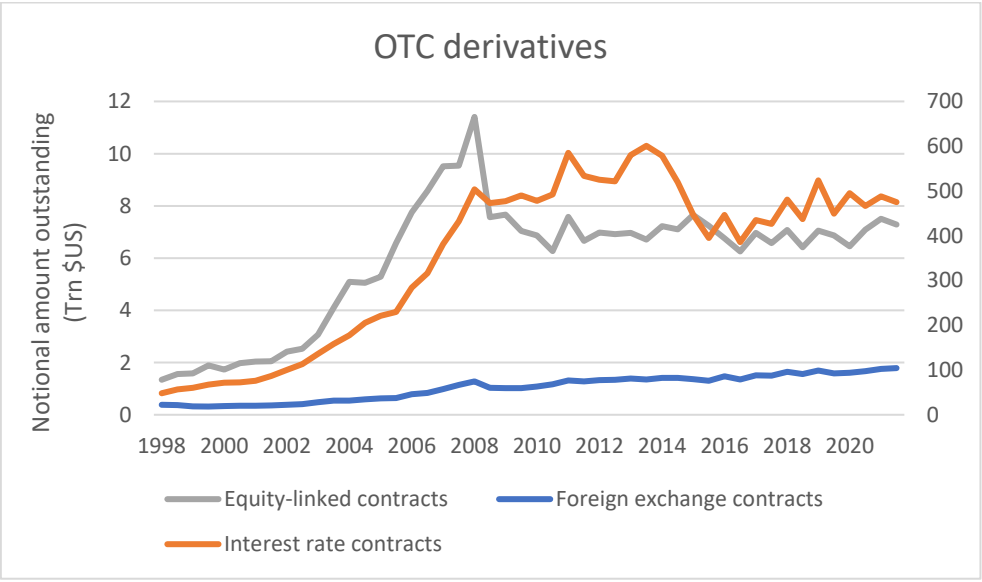


Figure 20 - Based on BIS surveys (ELC left-hand scale, IRC and FEC right-hand scale)

[98] This rule limited the competition between traditional exchanges and alternative electronic platforms, by imposing (or encouraging) the placing of orders through the traditional exchanges.

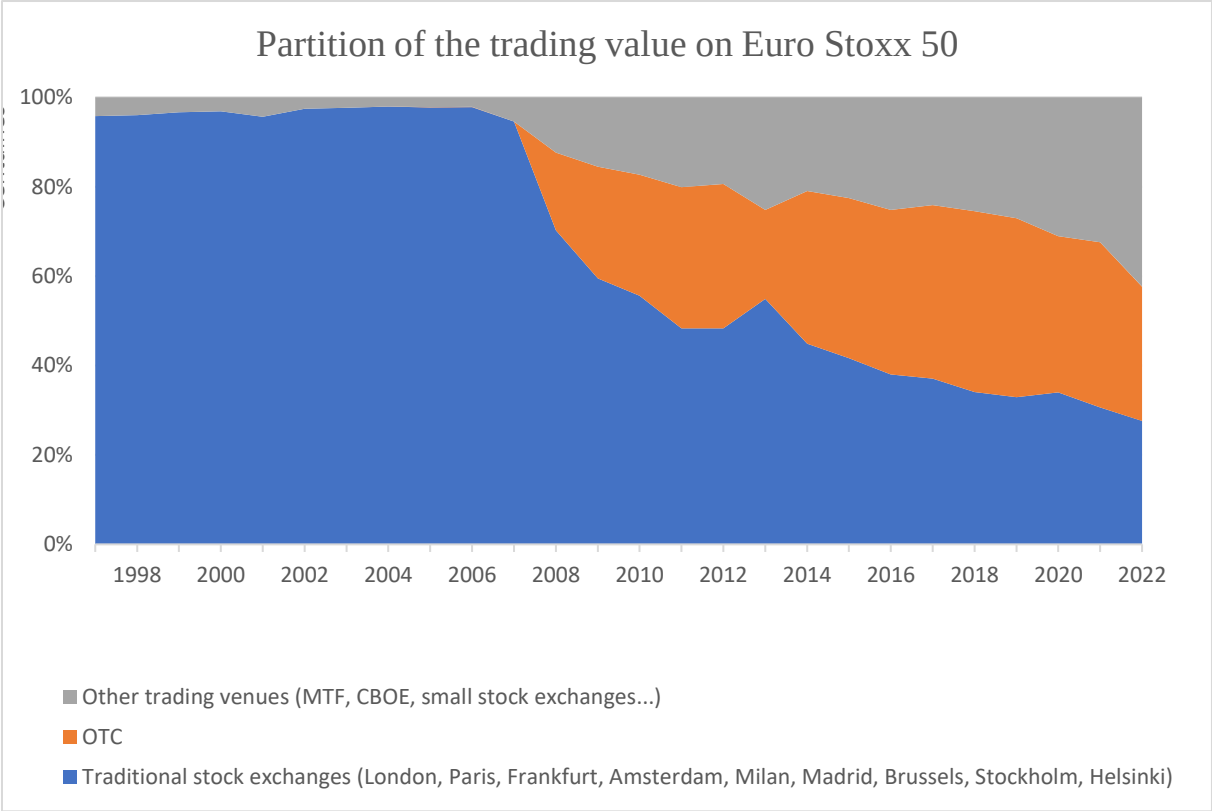


Figure 21 - Data collected on the Bloomberg Terminal

This "fall" of the stock market also means a shift in power between traditional stock exchanges and high-frequency trading companies. As a reminder[99], the emergence of these companies was complicated by a component of the NYSE and NASDAQ infrastructure: these stock markets published only the best bid and offer prices, while masking the rest of the order book, preventing the algorithms from exploiting these signals (MacKenzie, 2021). In a second phase, however, faced with the appearance of new trading platforms more adapted to high-frequency trading, the traditional exchanges amended their rules by publishing their order book. However, this trend is not hegemonic and the fight is not over: the presence of these algorithms has led to the disaffection of certain platforms (e.g., dark pools) by important clients (e.g., asset managers) and then to their regulation via MiFID II in 2014[100] (MacKenzie, 2019a). This analysis of institutional change opens the way to a nuanced appreciation of the contemporary role of historical exchanges. Neither masters of the financial markets, nor powerless archaisms, European stock exchanges participate in different networks, sometimes infrastructural (e.g., clearing house, data production, index construction), sometimes more local (e.g., trading venue, pre-listing consultancy). A detailed understanding of these dynamics of

[99] Cf. p. 41, where this point is already developed.
[100] This regulation could favor a reorientation of flows towards traditional exchanges (and thus contribute to a re-infrastructuralization), even if some authors doubt it (Johann et al., 2019).

(dis)infrastructuralization reveals the shifting and ongoing nature of the apparently most stable components of the market environment.

For the market participants whose decision-making processes we will study, the institutional changes analyzed in this chapter have far-reaching repercussions. It considerably extends the perimeter of the "financial community", each member of which tries to anticipate actions in order to profit from capital gains and escape capital losses. This community is no longer restricted to the 220 stockbrokers who meet Monday to Friday from 10am to 5pm at the Palais de la Bourse. Its boundaries are more blurred. The most selective commentators include only industry professionals, i.e. employees of financial companies who are able to place buy and sell orders on the market. Highly concentrated in a few financial centers (New York, London, Singapore...), these participants are now too numerous to know each other in the same way as stockbrokers did. Nevertheless, they are able to understand market movements by relying on signs conventionally recognized as sources of authority. It is some of these signs that we study in this work.

Other commentators, promoters of "financial democracy", are less selective, extending the boundaries of the new financial community to the whole of humanity: from now on, thanks to "disintermediation", any individual can take part in the market. In recent years, however, this optimistic interpretation has become less convincing. A trend towards the "reconcentration" of decision-making power has characterized recent developments in financial markets. This is the subject of the next chapter.

Chapter II: New market leaders

The institutional changes discussed in the previous chapter, in particular the computerization of financial markets, are not the only factors affecting the range of individuals participating in financial markets. Wealth inequalities, the advertising efforts of financial product vendors and the proximity of the last financial crisis are factors already singled out by Edwin Burk Cox in his famous study *Trends in the Distribution of Stock Ownership* (Cox, 1963). In this work, we are more interested in the distribution of decision-making power than in the inclusiveness of financial markets. Admittedly, around 60% of Americans now own at least one stock, compared with just 1% in 1900 (Cox, 1963; Fed, 2023). But if the same financial intermediaries *de facto* decide which securities to buy and sell with these savings, decision-making power is not shared either. And this is what the liberalization of intermediation analyzed in chapter I is changing: the abolition of the corporatist monopoly is paving the way for a democratization of decision-making power.

To grasp whether this path has been taken, it is necessary to study, as Edwin Burk Cox suggested, the *distribution* of share ownership, which is less pleasing in democratic terms: while 60% of Americans own a share, the richest 10% own 84% of shares (Wolff, 2017). But this distributive perspective is not enough. We must also investigate the decision-making power within the financial industry: the owners of shares are not always the ones who decide to buy and sell these securities. They delegate this decision-making power, no longer to members of a corporation such as the Brussels stockbrokers, but to other financial players. But who are they? Who inherits the decision-making power lost by the stockbrokers? Who has won the battle opened up by the liberalization of intermediation?

Short answer: asset managers. Mainly in the form of the investment funds analyzed in this chapter, these managers have succeeded in taking over the decision-making power of a large proportion of households owning shares, as well as of companies (such as insurance companies and pension funds). The level of concentration reached is worrying: the three main asset management companies - BlackRock, Vanguard, and State Street - hold so many shares (worth around $1.6 trillion) that they are majority shareholders in 88% of the major US companies included in the S&P 500 index (Fichtner et al., 2017). The situation is similar in Europe (Rosati et al., 2020). This empowerment of asset managers is of primary interest to us because, as we shall see, these managers are delegating a significant and growing share of their decision-making power to other players: stock index providers. Indeed, they manage the

majority of their portfolios “passively”, i.e. by replicating the allocation informed by one of the main stock market indices.

Once again, we propose to shed light on this dynamic using the Belgian case as a starting point. Investment funds play a central role in the country’s socio-economic structure: after bank deposits, they are the main investment vehicle for household financial assets. This chapter is structured in two parts. First, it reveals the conditions that led to the rise of this financial structure that did not exist until the Second World War. Caught up in broader macroeconomic dynamics (Europeanization of regulation, 2007-2008 financial crisis, mergers and acquisitions by banking groups, etc.), the Belgian history of investment funds provides valuable insights into the contemporary structuring of financial markets. And therefore on the conditions under which market participants are, or are not, able to make their decisions. Second, this chapter examines the current structure of the Belgian investment fund market. After tracing the origins of the billions entrusted to today’s investment funds, we report on the concentration of “fund supply”, controlled by the major banking groups. We then look at the money-allocation rationale that guides these funds, and the challenge of regulating them. The institutional framework of financial markets is thus clarified, paving the way for the sociological investigations that form the second part of this thesis.

1. Investment funds in Belgium

Investment funds are one of the most important institutions in contemporary capitalism: by December 31, 2021, they were raising more than 67,000 billion euros (IIFA, 2022; ICI, 2022). While funds in the United States remain dominant (33,000 billion euros), the phenomenon has expanded significantly in Europe, where 21,000 billion euros are invested in funds. In Belgium, resident households and companies now invest the equivalent of over 100% of the country's gross domestic product (GDP) in these funds (i.e. 510 billion euros by December 31, 2021)[101]. After bank deposits, funds represent the most important investment vehicle in the financial assets of Belgian households (see Figure 22). Despite this central role in the country's economic landscape, the topic has received little attention[102].

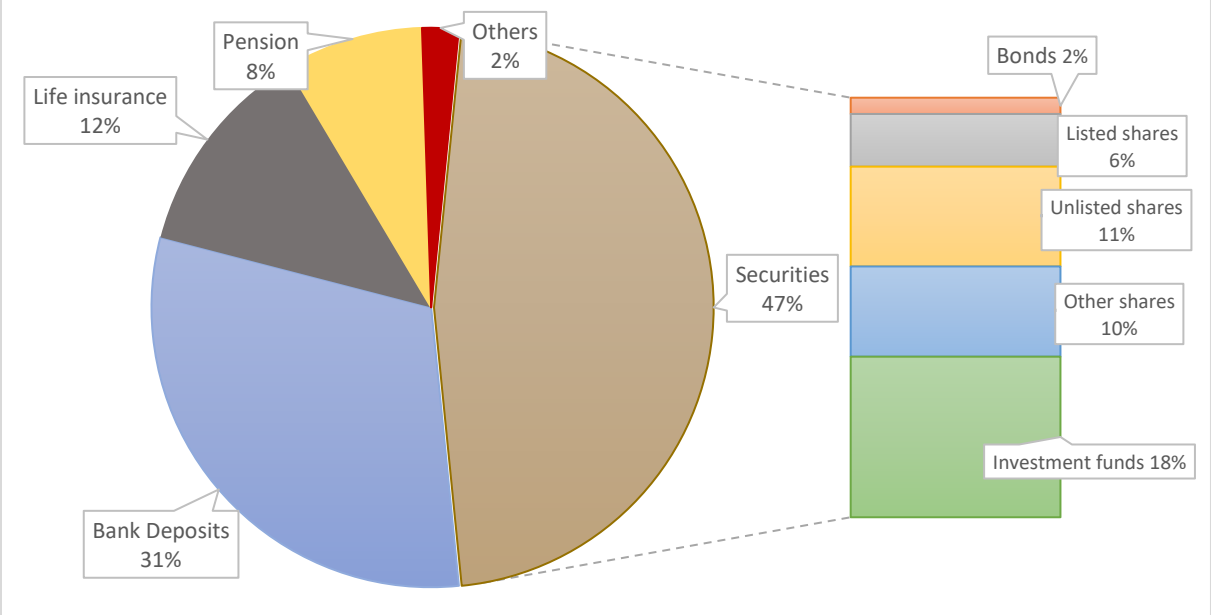


Figure 22 - Financial assets of Belgian households at December 31, 2021 (€1.556 billion)

This chapter aims to take a step in this direction, by documenting the history and current status of investment funds in Belgium. It is divided into four sections. The first specifies the scope of the funds studied, as well as the method used in this research. First, we present the characteristics that distinguish investment funds from other types of financial investment. We then review the sources of the data used, before outlining the "socio-economic" approach of our study.

[101] At the same date, the country's GDP was 502.5 billion euros (current prices).
[102] This chapter was published as a CRISP *Courrier Hebdomadaire*: Les fonds d'investissement en Belgique, *Courrier hebdomadaire du CRISP*, 2573-2574 (8-9), 5-92, https://doi.org/10.3917/cris.2573.0005.

The second section traces the history of investment funds in Belgium, from their first appearance in 1947 to the present day. This retrospective highlights two cross-cutting issues. On the one hand, funds are not a neutral investment vehicle. It meets with resistance, and only succeeds when its supporters, led by the banks, have sufficient clout. On the other hand, the growth in fund inflows is not the automatic result of the virtues of this form of investment. Over the past 75 years, this upward trend has been erratic: at first, it was virtually non-existent (stagnation from 1947 to 1981), then boosted by tax incentives and bank marketing strategies (soaring until the 2007 crisis), and finally revived by the intervention of new clients such as insurance companies (rebound from 2013 to 2021). The history of investment funds thus appears to be a political one, marked by interactions between various financial players (banks, insurance companies, asset management firms, etc.) and different public and para-public authorities (federal government, regional governments, the industry's regulator, the European Commission, etc.).

The third section looks in more detail at the current situation, through an analysis of the structure of the Belgian investment fund market. What sets this market apart, particularly in comparison with its counterparts in the rest of Europe, is the role played by households: Belgians are among those who invest the largest proportion of their wealth in funds (18% in 2021). Analysis reveals that this national peculiarity can be explained more by supply than by demand: from a position of strength, the country's major banking groups lead many customers to direct their savings to their investment fund management subsidiaries.

Finally, the fourth section "re-embeds" investment funds into society. On the one hand, we discuss their impact on three societal issues: wealth inequality, ecological transition and corporate governance. Although these impacts are tricky to quantify, several indications point to an increasing effect on wealth inequality. As for the other two dimensions, the managers of the major investment funds seem cautious, to say the least, in their commitments, both on the ecological aspect and in the governance of the companies in which they hold shares. Secondly, we look at the relationship between investment funds and public authorities. These relationships are not a one-way street. Admittedly, funds are subject to state regulation, today largely delegated to a specialized body, the Financial Services and Market Authority (FSMA). However, they are also key players in this regulatory process, notably through the organization representing the sector's interests, the Belgian Asset Managers Association (BEAMA).

This chapter offers a systematic presentation of investment funds in Belgium. Using numerous databases, it summarizes the sector's evolution and contemporary characteristics.

This is its main ambition, and its main contribution. That said, the history and current state of investment funds are also marked by wealth inequalities between households and struggles for influence within the political arena, by the globalization of finance and the Europeanization of its regulation, by a new orientation of capitalism and the tensions it generates. Beyond the first level of reading, the present study also provides information on broader issues, of which investment funds, now at the heart of Belgium's socio-economic structure, are privileged witnesses.

a. Purpose, method, approach

The ambition of this section is first to define precisely the object of this research. While the organizational and legal environment of investment funds is highly complex, their distinctive features are few and relatively straightforward. The main one is its collective dimension: an investment fund collects the savings of several households or companies and invests them in a set of securities (the "portfolio"). Each participant in the investment fund therefore obtains a right to the same portfolio. Unlike "discretionary management" and "investment advice"[103], the fund does not tailor its investment policy to individual desires. In return, it allows each participant to invest in a highly diversified portfolio: it has been touted from the outset as a vehicle for democratizing diversification. Although this does not rule out certain "borderline cases" that blur the boundary of the concept[104], this first characteristic is widely accepted and is included in financial dictionaries (Downes & Goodman, 2014; Morvan, 2017).

A second characteristic has become so central to the operation of investment funds that it is also often mentioned in the literature, and deserves to be developed further: the open-ended structure (Thauvron, 2020). On the one hand, each participant can redeem her share at any time, and on the other, new shares can be purchased. The amount at stake in these transactions is the "net asset value", i.e. the amount obtained by dividing the value of the fund's portfolio by the number of shares. To fully grasp this issue, let's consider it through the three stages in the life of an investment fund. The first is the acquisition of a share. For example, a young worker is

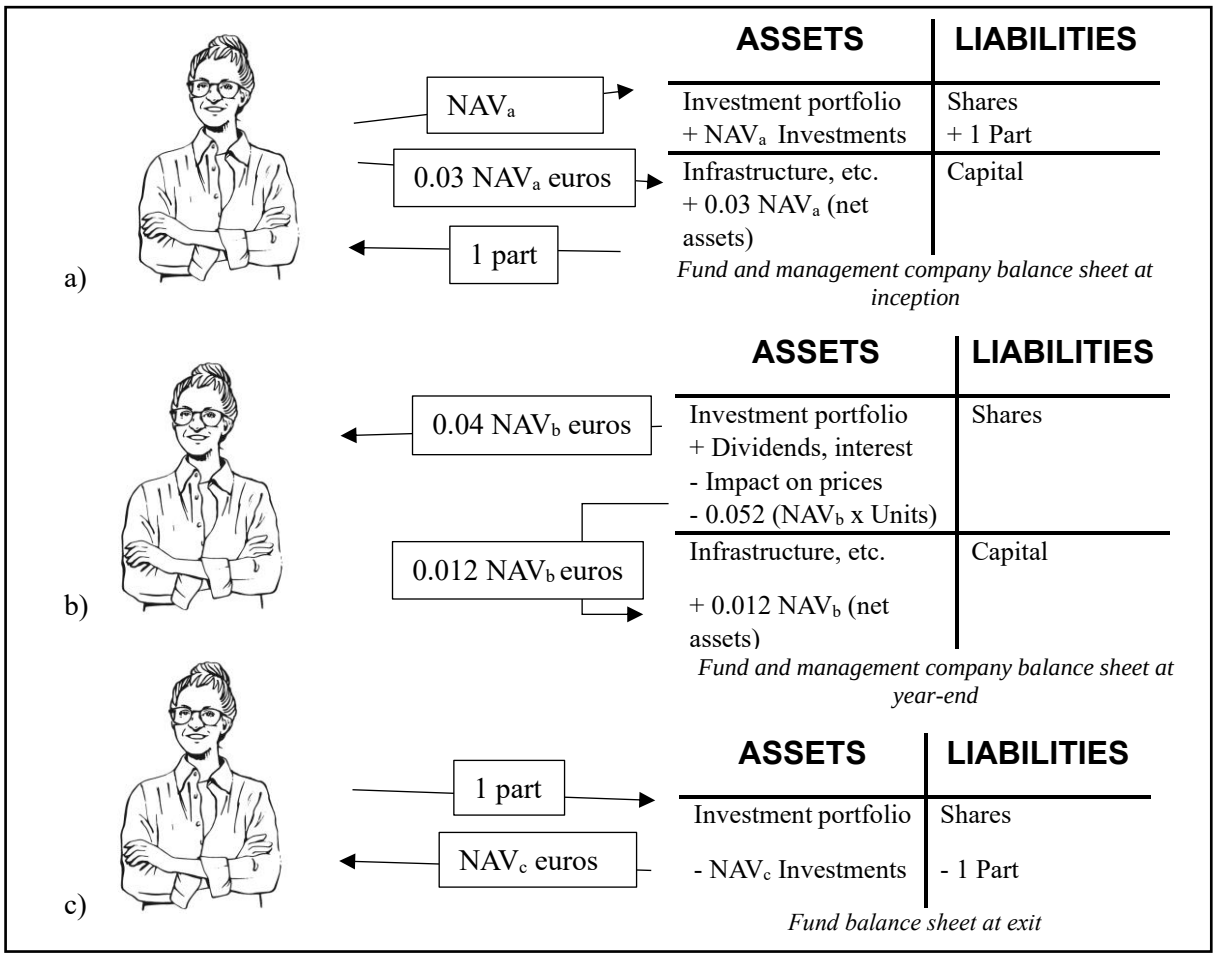
[103] Together with investment funds, these two other categories make up the asset management sector. In 2021, 60% of assets under management in Belgium are managed via investment funds (figures taken from the annual report of the Belgian Asset Managers Association).

[104] Funds that impose "barriers to entry" are among these ambiguous cases. If the barriers are too selective (for example, some hedge funds require a minimum investment of 10 million euros), the fund only collects amounts from a handful of individuals or companies, thus reducing its collective dimension. Another example of a barrier is that of "sovereign wealth funds", which collect and invest only government savings.

persuaded by her bank to invest in a fund and buys a share (see Diagram 1, part a). This investment fund is required to calculate its net asset value (NAV) on a daily basis, by valuing its investment portfolio and dividing the resulting amount by the number of shares; the buyer therefore knows what her share will cost. Assuming an entry fee of 3% collected by the fund manager, our young worker will therefore pay 1.03 NAV_a euros. As for the investment fund, its open-ended structure means that it will issue a *new* share for this worker, and that it will buy new securities for NAV_a euros to complete the portfolio. As for the 3% fees, they feed the assets of the management company, enabling it to pay its employees and make a profit. The second stage typically occurs at the end of the calendar year: the investment fund receives dividends and interest on the securities in the portfolio (see Diagram 1, part b). It transfers a fraction of this to the fund manager (in our example, 0.012 NAV_b, i.e. 1.2% "running costs"), and the remainder to the unitholders (here, 0.04 NAV_b, i.e. a net yield of 4% if the portfolio's value has not changed, that is if $NAV_a = NAV_b$)[105]. Finally, in the third and final stage, our young worker decides to exit the fund (see Diagram 1, part c). She has carefully monitored the evolution of the NAV (reflecting the variation in portfolio values) and believes that it is currently at its maximum: it is therefore time to sell her share. Assuming zero exit fees, NAV_c euros will be paid out and his share destroyed. To meet this repayment, the fund draws on its liquid assets or sells part of its portfolio.

[105] When a dividend or interest is paid, the price of the share or bond falls accordingly (as the security no longer entitles the holder to that dividend/interest). This explains the negative impact on the investment fund's portfolio prices in Figure 1, part b. Note that some funds, known as "capitalization funds", do not distribute dividends and interest at the end of the year, but reinvest them.

Diagram 1. Stages in the life of an investment fund



Sources: Author's production, illustration by Claude Duterme.

Investment funds are defined by this collective dimension and, for the overwhelming majority, by their open structure[106]. They can then be distinguished by many criteria, including their legal personality (investment company or mutual fund), their type of client (retail or institutional), their regulation (funds with European passport or alternative funds) and their investment scope (equities, bonds, currencies, etc.). In the course of this study, we shall be addressing most of these technical considerations. However, as our ambition is to offer an accessible overview of the socio-economic issues raised by investment funds in Belgium, we will only delve into them when the elements under study invite us to do so.

By focusing on investment funds defined in this way, this chapter deals with a relatively coherent socio-economic field, unified by its financial function and legal delimitation, as well

[106] Closed-end investment funds, where shares are issued only at the fund's inception and are not redeemable by the fund, still exist, but they are marginal. In the United States, they collect $309 billion at the end of 2021 (Duval, 2022), compared with over $37,000 billion for open-ended funds, or 0.83%. Of the 144 billion euros managed via Belgian funds at the end of 2016, 194 million euros were via such funds, i.e. 0.13%.

as by its complex of collective actors (banks, management companies, associations representing the interests of the sector, etc.). By the same token, it excludes from the scope of our research objects at the frontier of this field, such as insurance products and investment vehicles reserved for a particular clientele (hedge funds for "High Net Worth Individuals" or sovereign wealth funds). We will therefore only discuss these issues in terms of their impact on "collective and open" investment funds. As for the "territorial" dimension of this research, it targets investment funds that collect savings from Belgian households and companies. The national criterion therefore relates to the origin of the money invested, rather than the registration of the fund (a Belgian household investing in a foreign fund will interest us). This is not the only possible option, but it is not arbitrary: as the nationality of funds is much more volatile than that of investors, it often reveals little about the impact of funds on the national economy. Conversely, the share of national savings captured by the funds provides information on their presence in the Belgian economic fabric.

This delimitation of the research perimeter also paves the way for the exploitation of consistent databases across time and space. This consistency is due to the legal basis of the investment funds studied, as well as to the census work undertaken by certain players in the field. This is particularly the case in Belgium: as early as 1957, the contemporary form of the fund, "collective and open", was enshrined in law, and a para-public body was responsible for quantifying the amounts invested in it. Consulting the annual reports of this body, the *Commission Bancaire*, gives us access to a historical overview of rare methodological continuity[107]. As for international comparisons, they are mainly based on aggregation by organizations representing the interests of the sector at various levels: the European Fund and Asset Management Association (EFAMA) and the International Investment Funds Association (IIFA). Once again, the consistency of these data is based on a common legal definition of the funds concerned. Given their promotional ambitions, these publications should be viewed with caution. On the quantitative side, however, they generally confine themselves to aggregating figures produced elsewhere: the Belgian Asset Managers Association (BEAMA), for example, largely reproduces data from the regulatory body, the promotional ambition being reflected above all in the formatting of these data. In addition to these two main sources, this chapter is based on the national accounts published on the website of the National Bank of Belgium (NBB), and in particular on the "financial account", which records the investment assets of the

[107] Other financial sectors, such as the Belgian stock market, did not benefit from these circumstances. Quantifying developments is therefore a perilous task (Duterme, 2021b).

country's households, companies and public administrations. Finally, some figures are taken from the Belgian statistics office (Statbel), annual fund accounts and newspaper articles. A more detailed explanation of the processing of these databases can be found in Appendix II.

The methodology adopted in this research is mixed. In addition to the databases presented, three types of qualitative material are mobilized. Firstly, several archives document the history of investment funds in Belgium, such as the brochures published by the *Comité national pour le développement de l'épargne mobilière* (CNEM) in the 1950s and 1960s, or the publications of the banking sector *think tank*, published in the *Revue de la banque*. These largely unexplored sources immerse us in the discussions that have marked the history of investment funds. Secondly, we have drawn on articles from the general and financial press. Provided we place their content in a socio-historical context (who is talking? at what period?), they shed light on developments in the sector. Thirdly, this research is based on semi-structured interviews conducted between August 2021 and April 2023 with a number of players in the Belgian investment fund market: fund managers, private bankers, the director of BEAMA, regulators, and so on. These discussions brought to light certain dynamics that structure this field, but which have never yet been put down on paper. The intersection of these three types of qualitative material has yielded a number of reliable findings that enable us to go beyond the figures, and explain the way things work.

This chapter proposes an original treatment of these data, inspired by a "socio-economic" approach. This approach aims to grasp economic phenomena using tools borrowed from both economics (examination of macroeconomic aggregates, balance sheet analyses, monitoring of capital flows, etc.) and sociology (identification of supporters and critics of economic developments, analysis of power relationships, embedding of financial issues in a socio-historical context, etc.) (Gadrey, 2003). It is thus defined less by a theoretical framework than by a methodological attitude aimed at embedding the economic dynamic under study - in this case, the evolution of the investment fund sector in Belgium - in the institutional space that refrains or amplifies it - in this case, the pillarized political system, competition between financial centers, the Europeanization of regulation, and so on. The socio-economic approach has already demonstrated its fruitfulness through numerous thematic studies, notably relating to the place of investment funds in contemporary capitalism (Benquet & Bourgeron, 2019; Braun, 2022; Brice et al., 2022). The present article follows in the wake of these studies, exploring this issue in a little-documented territory: Belgium.

b. History of investment funds in Belgium

The aim of this section is to identify the various factors that have shaped the development of investment funds in Belgium. More precisely, it looks at the plurality of these factors. Contrary to a linear interpretation of the history of funds, often used by industry players and sometimes repeated in academic works[108], the growth in the amounts invested in funds is not the automatic result of the superiority of this "collective and open" form of investment. This is illustrated by the erratic evolution of the share of GDP invested in funds in Belgium since 1947 (see Figure 23): the first investment funds, which were already "collective and open", collected less than 3% of GDP.

Thus, far from being linear, the Belgian history of investment funds can be divided into three periods. The first period, from the immediate post-war years to the early 1980s, saw the emergence of investment funds and their moderate development. Then came the first "wave", which considerably expanded the amounts collected. Mainly underpinned by tax measures designed to encourage stock market investment and by the banks' new commercial strategies, it was brought to an abrupt halt by the financial crisis of 2007. The third and latest period began with a structural decline in the amounts managed via investment funds, but ended with a second wave of growth driven by the new involvement of "institutional investors" (insurance companies, pension funds, etc.). As this chapter illustrates, the history of funds is not determined by the characteristics of this form of investment. Other factors - legal, fiscal, commercial, etc. - play a part in the Belgian story. Here, we attempt to analyze them.

[108] The financial company Forward You (FWU), among many others, praises Belgian investment funds on its website: "If [investment funds] are increasingly popular, it's not for nothing! Indeed, the advantages of this type of investment are many and varied" (FWU, 2023). More soberly, a university dissertation argues that "the success of mutual funds can be explained above all by the fact that they offer access to financial markets for savers who do not have sufficient resources and experience to diversify their assets themselves" (Engels, 2013: 11).

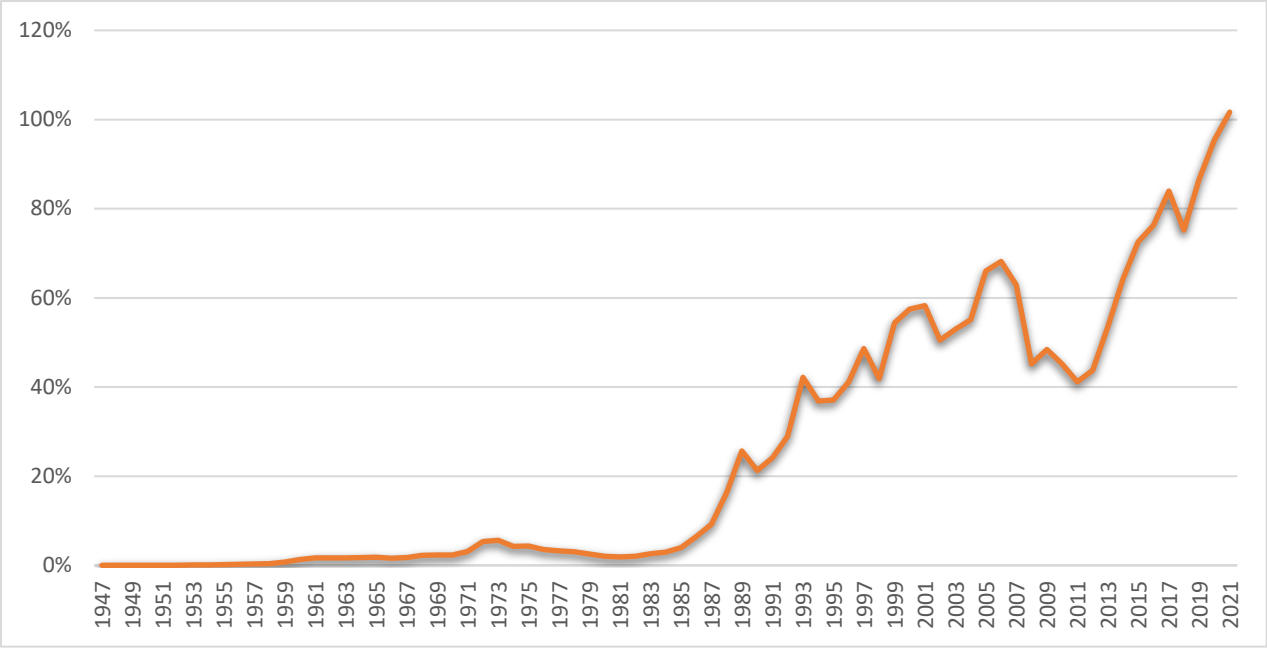


Figure 23 - Share of GDP invested in funds (Belgium, 1947-2021)

1947-1981: a "modern" but marginal investment technique

The first period in the history of investment funds in Belgium saw the importation into Belgian law of an Anglo-Saxon financial technique, fervently advocated by a now defunct association, the *Comité national pour le développement de l'épargne mobilière* (CNEM). It was also a time of stagnation in the amounts collected, as the sector's regulatory body, the *Commission Bancaire*, repeatedly regretted: "It must therefore be noted [...] that the development of Belgian investment funds has not lived up to the hopes which had [...] seen in this form of collective investment a means of directing the savings of the general public towards judicious investments" (Commission Bancaire, 1971). Finally, a handful of Belgian banks, such as Kredietbank and Banque Lambert, dominated the meagre nascent investment fund market, with funds labeled in the Grand Duchy of Luxembourg and sold in Belgium.

The first Belgian investment funds thus bear the imprint of British and American experience. From 1868 onwards, many Britons financed economic development projects in the United States via investment trusts (Hutson, 2005). These differed from today's investment trusts in their closed structure (see footnote 106), in their high level of debt, which magnified profits and losses, and - frequently - in their opacity. The financial crisis of 1890 ("Barings crisis") revealed the fragility of many investment trusts, and undermined British savers' confidence in this form of investment. In the aftermath of the First World War, the US experience was similar to that of the UK. Closed-end funds, heavily indebted and lacking in transparency, gained in popularity from 1921 onwards, before collapsing and being discredited

by a financial crisis (the Great Depression of 1929). The crisis also led to regulation of the sector - the *Investment Company Act* (1940) - which, in the post-war period, fostered the development of today's investment funds (Fink, 2011). When importing this concept to Belgium, financiers and academics explicitly drew on this American precedent.

Max-Léo Gérard was undoubtedly the leading Belgian advocate of investment funds. Alternately Secretary to the King (1919-1924), Liberal Finance Minister (1935-1936 and 1938) and President of the *Banque de Bruxelles* (1939-1952), this engineer bridged the gap between financial and political elites on a number of issues (Kurgan-van Hentenryk, 2010), including investment funds. He prefaced the first two Belgian works on investment trusts (Smets, 1936; Larcier, 1953), then founded and chaired the association that promoted investment funds to regulators and the public: the *Comité national pour le développement de l'épargne mobilière* (CNEM), which came into being in 1952. Like the *Fédération des employeurs du commerce, des banques et des assurances* - founded the same year and also chaired by M.-L. Gérard - this committee represents the interests of non-industrial employers[109]. More specifically, it aims to encourage stock market investment through tax incentives and propaganda campaigns. Frantz Gevens, president of the Brussels stock exchange commission, sums up these two points as follows:

> One of the most important points of its program is to keep in close contact with the public authorities, to whom it constantly reminds of the urgency and necessity for the economy as a whole to rectify a situation for which the State, notably through taxation, is largely responsible. [...] Thanks to the invaluable support it has received from the press from all horizons, it enjoys a wide audience and a growing influence on public opinion. The [CNEM] has also produced the first Belgian documentary film on savings and investments. This film is shown in schools. [...] The scope of this campaign must be commensurate with the tasks still to be accomplished. It's about nothing less than recreating the right psychological conditions for productive savings[110].

From its very first year of activity, the CNEM made the promotion of the principle of investment funds one of its main hobbyhorses (along with the abolition of the circulation tax on listed securities). At a conference in November 1953, M.-L. Gérard asked the Social-Christian Finance Minister (and future CNEM president), Albert-Édouard Janssen, to "facilitate, through legal and tax measures, the establishment of those financial structures which have rendered such great service abroad, particularly in England and the United States, and

[109] Twenty-two "constituent groups" formed the CNEM: in addition to the *Fédération des entreprises de Belgique*, they include representatives of banks and insurance companies (3), stockbrokers (10), chambers of commerce (4), colonial interests (1) and regional interests (3: *Conseil économique wallon*, *Financiegroepering der Vlaanderen* and *Vlaams Economisch Verbond*).
[110] Quoted in *Les Annales de la Bourse de Bruxelles*, 1954.

which in Anglo-Saxon parlance are called '*investment trusts*'"[111]. To achieve its aims, the CNEM took the initiative and commissioned a number of its members, grouped together in an internal "study commission", to draft a bill ready for submission to Parliament. The resulting short text had two aims: firstly, to "organize in a simple and practical way the aggregation and control of these bodies", i.e. to give investment funds state approval; secondly, to "provide a solution to the tax difficulties which, until now, have been an obstacle to the possible creation of investment funds in Belgium", i.e. to avoid "double taxation" of income acquired by the fund and then distributed to fund participants[112]. *In fine,* the law of March 27, 1957[113] was adopted.

As a result, the CNEM's liberal demands were soon heard by the political authorities and translated into legislation. To account for this situation, two issues can be raised. On the one hand, the proximity between CNEM members and the men at the head of the state. This was particularly the case from 1952 to 1954, when the Prime Minister was Jean Van Houtte and the Minister of Finance A.-É. Janssen: both were close to the CNEM, and later became its president. Until November 1955, the CNEM also benefited from the influence of its president and founder, M.-L. Gérard. The modus operandi of the "study commission" that led to the bill seems inspired by "the method [M.-L. Gérard] adopted to achieve his ends when he was secretary of Albert I[er]. After drawing the King's attention to a problem that seemed important to him, he proposed that it be studied by a commission made up of representatives of the circles concerned and experts. [...] He never ceased to emphasize the technical nature of the problems in order to advance and push through liberal solutions" (Kurgan-van Hentenryk, 2010: 286-287). Although complicity was undoubtedly less marked with the next government (which brought together socialists and liberals between 1954 and 1958), those close to the CNEM did not disappear from the political world. For example, the rapporteur of the Senate Finance Committee discussing the bill was none other than Jean Van Houtte.

On the other hand, the adoption of the law "commissioned" by the CNEM was facilitated by its apparent lightness: its supporters kept pointing out that this legal framework was provisional (its text referred to a definitive law to be adopted before December 31, 1961) and only aimed to provide a framework for already existing practices (Kredietbank and Banque Lambert already offered six funds in the form of contracts). The Minister of Finance, the liberal Henri Liebaert, relied on this register to avoid substantive discussions. The parliamentary

[111] Quoted in *Bulletin d'information du CNEM*, n° 20, 1954, p. 12.
[112] Quotations from *Bulletin d'information du CNEM*, n° 28, 1955, p. 10.
[113] Loi du 27 mars 1957 relative aux fonds communs de placement et modifiant le Code des droits de timbre et le Code des taxes assimilées au timbre (*Moniteur belge*, April 13, 1957).

documents read: “Opening the general discussion, the Minister recalled the history of the bill and emphasized its limited and provisional nature, as well as its necessity”[114]. This *modus operandi* was crowned with success: the substantive discussions did not take place. Unanimously adopted by the Senate, the bill met with outright resistance in the House from the Social Christians now members of the opposition. Represented by lawyer Maurice Schot, who condemned in particular the “very serious derogations from the principle of common law”[115], these MPs voted overwhelmingly against the bill. However, this did not prevent the bill from being adopted, by 99 votes (from the Socialist-Liberal majority and four Communist members) to 82 (from the Socialist-Christian opposition)[116]. Apart from this challenge - driven by party strategies and confined to issues of legal technique - the CNEM’s initiative succeeded without a hitch.

Although initially intended as a temporary measure, this law of March 27, 1957 ultimately provided the framework for Belgian regulation of investment funds until 1990. It therefore deserves our attention. Firstly, it concerns - and therefore enshrines - investment funds set up in the form of an “indivision”, rather than as a limited company: the Belgian investment fund does not enjoy an autonomous legal personality, but is attached to a management company whose assets are clearly distinct (cf. Diagram 1). This position is justified by the extent of the arrangements required by the alternative option (tax exemption to avoid double taxation, authorization to issue shares on a continuous basis without the approval of the general meeting, etc.); however, it does not appear to have had an impact on the structure of the Belgian market until much later (see below).

Secondly, it confers broad powers on the *Commission bancaire*[117], which is responsible for approving, regulating and supervising Belgian investment funds (i.e. those whose management company has its registered office in the country) and, to a lesser extent, foreign funds active in Belgium. The jurist Francis Requette notes that “the 1957 legislator, by granting de facto full powers to the *Commission Bancaire* to decide on the approval of management

[114] Report by the Senate Finance Committee, reproduced in *Bulletin d’information du CNEM*, n° 39, 1956, p. 19.
[115] Chambre des représentants, *Annales parlementaires*, March 19, 1957, p. 6. Among the aspects of the draft that Mr. Schot was concerned about were the provisional nature of the law, the technique for calculating unrealized capital gains, the definition of a “public” call for savings (IPO), and the contradiction between the limits on the exercise of voting rights and the provisions of a law on commercial companies.
[116] House of Representatives, *Annales parlementaires*, March 21, 1957, p. 9.
[117] The *Commission Bancaire* changed its name several times between 1957 and 2021: it became the *Commission Bancaire et Financière* in 1990, then the *Commission Bancaire, Financière et des Assurances* in 2004, and finally the Financial Services and Markets Authority (FSMA) in 2011. In this article, for the sake of brevity and to avoid confusion, we adopt the name *Commission Bancaire* until 2011, and FSMA thereafter.

companies, was merely following the example of its 1935 predecessor, which granted the same powers to the Commission with regard to the establishment of new banks" (Requette, 1968: 175-176)[118]. This parallel points in particular to the longevity of the influence of M.-L. Gérard, who had already exerted pressure in the 1930s to "protect the banking sector from the nationalization of credit and to assert the *Commission Bancaire*'s autonomy from the State" (Kurgan-van Hentenryk, 2010: 287). The composition of this body limited the risk of radical reforms in the financial sector: of the seven members, three were appointed by the government, two by the banking sector (represented by the Belgian Bankers' Association - ABB) and two by the NBB. In practice, from 1935 to 1975, this selection procedure resulted in "a mix between two elements linked to the socialist current, two others close to the Catholic employers, arbitrated by one or two technical profiles" (Giddey, 2017a: 37)[119]. While such continuity, favored by a term of office whose only limit was the age of 65, protected the banks from the possible inclinations of Socialist elected officials, it also guaranteed M.-L. Gérard lasting power: his former chief of staff, Eugène de Barsy, chaired the *Commission Bancaire* from 1945 to 1973. Until his death in November 1955, M.-L. Gérard ensured that the "technicians" at the head of the *Commission Bancaire* did not succumb to interventionism.

Thirdly, the law of March 27, 1957 gives investment funds a tax "boost". It prohibits double taxation of income distributed by the fund. What's more, it reduces two taxes - stamp duty and tax on stock market transactions - based on the principle that the purchaser of a fund share is already subject to these taxes when the fund buys the securities making up its portfolio. This favorable regime remains less permissive than the law in force in Luxembourg: taking advantage of the benefits granted to holding companies since 1929, management companies there pay no tax on their income (Muhlen, 1964). An investment fund distributed exclusively in Belgium but managed by a Luxembourg-based company is therefore not taxed on its income. This Luxembourg tax framework was largely responsible for the surge in foreign funds in Belgium - relative to the stagnation of Belgian funds - that characterized this early period (see Figure 24).

[118] On this subject, see in particular Giddey (2017a, 2017b).
[119] When the law of March 27, 1957 was passed, the *Commission Bancaire* was made up of Eugène de Barsy (chairman, former head of M.-L. Gérard's cabinet), Karel Steverlynck (textile industrialist), Henri Lemaire (director of a cooperative insurance company), Carlo Van den Bosch (lawyer), Jean Mertens (doctor of law), André Huyssens (chairman of a socialist savings bank) and Franz De Voghel (director of the NBB).

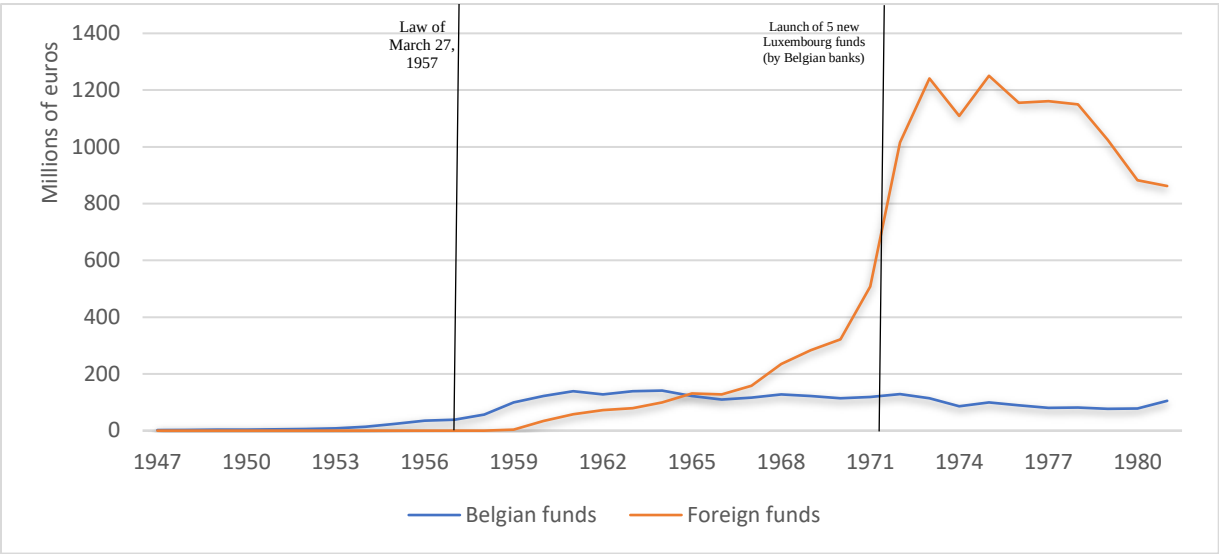


Figure 24 - Amounts invested by Belgian residents in investment funds (1947-1981)

Fourthly, a final important aspect of this law of March 27, 1957 stems from an amendment incorporated by the Senate Finance Committee during its discussion of the bill. It prohibits management companies from "permanently" exercising the voting rights attached to securities held by their investment funds. Committee members agreed on this measure as follows: "Every precaution must be taken to prevent an investment fund, an instrument of collective savings, from degenerating into a holding company, an instrument of control of one company by another"[120]. In other words, they sought to limit the influence of investment fund managers on the policies of Belgian companies - a concern that has since remained at the heart of debates between regulators in the sector (see 3.3 below). The members of the House of Representatives' Finance Committee also made similar points during their discussions. As this measure applies only to Belgian management companies, it possibly contributes to the competitive advantage of Luxembourg funds distributed in Belgium.

The adoption of the law has not had all the effects expected by CNEM members. However, the beginnings were encouraging. In December 1956, the six Belgian investment funds managed by the Kredietbank and Banque Lambert management companies collected 34.7 million euros[121]; five years later, 138.8 million euros were managed via nine Belgian funds. But twenty-five years later, in December 1981, Belgian investment funds raised 104.1 million euros (see Figure 24). Over this period, Luxembourg funds absorbed the entire growth of the Belgian market. Their appeal, primarily fiscal (exemption of income), was reinforced by looser

[120] J. Van Houtte, quoted in *Bulletin d'information du CNEM*, n° 39, 1956, p. 21-22.
[121] For ease of comparison, all references in Belgian francs are converted into euros (at the rate of 40.3399 Belgian francs to 1 euro).

regulation: the ban on permanent voting rights at general meetings did not extend to foreign funds, whose advertising was less closely monitored by the *Commission bancaire* (Stafford, 1977). Most of these funds were set up by Belgian banks, via Luxembourg subsidiaries (CRISP, 1972) or via European bank groupings such as *Eurosyndicat* (Smets, 2012). Until 1981, investment funds were therefore a banking phenomenon: their development - which was very moderate – was almost entirely supported by Luxembourg management companies attached to the major Belgian banks, and benefited the latter. Over the same period, in the United States, funds set up by non-bank structures experienced unprecedented growth, rising from $450 million raised in 1940 to $17 billion twenty years later (Fink, 2011).

Several factors can be invoked to explain the relative stagnation of this first period. Firstly, the share of national income earmarked for private consumption was substantial: it stood at 66% in 1981, leaving - once public consumption had been deducted - only 17.7% for investment[122]. CNEM members consider this share to be excessive. They regret that the emerging middle class of the Trente Glorieuses, too assured of its future by the structures of the social state, no longer thinks enough about saving:

> Our era calls everything into question. Saving is no longer held in the same esteem as it once was: it is no longer seen as a necessity. The organization of our society is characterized by protection against most risks. Everyone feels much more secure than before. [...] It's to the point where we consume before we save, and there's a risk that we'll soon be saving only to pay for what has already been consumed. [...] What the young households that are starting up today consider indispensable, used to be called luxury, superfluity or sumptuary expenditure by those from whom they were born[123].

The CNEM's conservatism, which runs through most of its *Bulletins*, seems to be contradicted by national accounting figures: the share of investment in national income did not fall between 1954 and 1981. During this period, the Belgian savings rate rapidly exceeded 20%, and even reached 24% in 1975[124].

Secondly, another factor in the stagnation of the amounts collected by the funds, which is more solid on a macroeconomic level, lies in the way savings are used. The latter is devoted to housing construction, and the balance is largely invested in public debt via the banks (Cassiers et al., 1998). In fact, at a time when the majority of government creditors were still residents, "the coverage of the enormous government deficit [relied] on resources from household financial savings" (NBB, 1979: XXXI). As a result, the CNEM's initiatives, despite

[122] Figures from the *Institut national de statistique* (INS), published in NBB, Annual Report, 1982.
[123] Quoted from *Bulletin d'information du CNEM*, n° 166, 1969, p. 18.
[124] NBB, Annual Report, 1979, p. 14.

the political support they enjoyed, were not sufficiently reflected in the country's macroeconomic structure. As is the case in France (Tadjeddine & Cotta, 2011), popular savings are entrusted to banking institutions whose profitability is ensured - in a context of high interest rates - by mortgages and public debt, while the more affluent invest directly in securities or surround themselves with personal advisors, but rarely make use of this collective management vehicle.

Finally, even in the restricted field of private securities, the development of investment funds encountered obstacles. It was certainly not stimulated by the returns offered by the country's first investment funds, which, according to simulations by F. Requette (1968), were lower than those generated by Belgian "fetish securities" such as government bonds. Moreover, Belgium's relatively strict advertising regulations limited their popularity; one of the first presidents of the Belgian Investment Fund Association, Jacques Thierry, suggested "relaxing the rules on canvassing and advertising [which] would enable investment funds to reach new categories of savers" (Thierry, 1967: 711).

Thus, at the outset, the ambition of the first Belgian supporters of investment funds to attract "small savers" unaccustomed to stock market investments was not met: the few participants in investment funds distributed in Belgium remained members of the wealthy classes (Duvivier, 1972). According to a 1975 census (Parmentier, 1975), the Belgians investing in these funds are mainly annuitants (36.5%), company directors (28.6%) and executives (25.5%), who are also quite old (69% are over 50). As for "institutional investors" (insurance companies and pension funds), they have lost interest in this type of investment, preferring to bet on the two most popular investments: real estate and government debt. Marginal in economic terms, the emergence of investment funds in Belgium mainly fascinated legal experts, many of whom commented on the impact of the law of March 27, 1957 on commercial, tax and civil law (Verteneuil, 1958; Van Gerven, 1960; Craps, 1967; Requette, 1968).

1981-2006: tax incentives, innovations and stock market take-offs

The second period saw investment funds take center stage in the Belgian financial system. As a proportion of GDP, the amounts collected multiplied by 36. This phenomenal growth was not due to the activism of the CNEM, which died out in the mid-1970s. Its ideological heirs did, however, have something to do with it: now dominant on the Belgian political scene, they promoted a new conception of the economic role of the state and its integration into the single European market, which would benefit investment funds. From now

on, it is investment funds that can stimulate growth and employment. The aim is to offer Belgians a tax incentive to invest their savings in these funds. Against a backdrop of European integration, these tax measures are gradually being aligned with the most "generous" regime, namely the almost complete exemption offered by Luxembourg funds (the famous SICAVs). But that's not all. Fund growth is also being stimulated by a reconfiguration of banking strategies. Dissatisfied with the margins resulting from lower interest rates, Belgian banks are moving away from their intermediation business and focusing more on the sale of services that generate substantial commissions. They are thus developing advertising campaigns designed to shift their customers' savings from traditional accounts to their investment funds. Sometimes even masking the risk of exotic funds.

On December 31, 1981, investment funds distributed in Belgium - both Belgian and foreign - collected the equivalent of just under one billion euros[125]. This figure rose to 5.8 billion five years later, then to 23 billion in 1989, and finally to 221.6 billion on the eve of the 2007 financial crisis (December 2006)[126]. Over this second period, the sector experienced phenomenal growth, with Belgian funds catching up with foreign funds, which in retrospect were negligible (see Figure 25). To fully grasp this trend, we need to identify the driving forces behind it: the amounts raised by investment funds depend on both net subscriptions (purchases - sales of units) and variations in the value of the funds' portfolios (capital gains or losses). Relative to GDP (see Figure 23), the growth in amounts invested in funds can therefore reflect three trends: either an increase in the share of savings in national income ("wealth effect"); or an increase in the share of savings allocated to funds ("popularity effect"); or an increase in the prices of securities held by funds that exceeds GDP growth ("market valuation effect").

[125] As shown in Figure 24, the amount managed via foreign funds declined during the 1970s, mainly due to economic conditions in general, and stock market conditions in particular: inflation, the 1974 bond crisis, the rise in interest rates by the US Federal Reserve (Fed) in 1979, and so on. Cf. De Clercq and Van Hulle (1992).
[126] These figures do not include shares in Belgian funds acquired by non-residents.

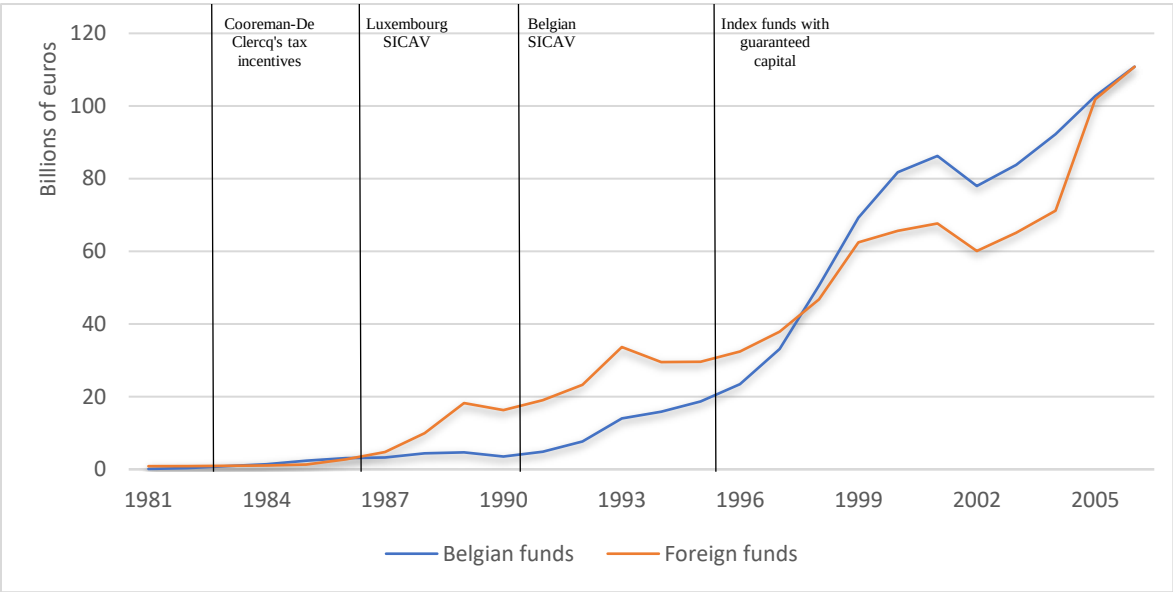


Figure 25 - Amounts invested by Belgian residents in investment funds (1981-2006)

The boom of the 1980s - particularly visible when expressed as a percentage of GDP (see Figure 23) - is not linked to the wealth effect: as we have seen, the savings rate was already substantial in the 1970s, and even fell to 17% in 1982. In fact, the rise was entirely due to the "popularity effect" and the "market valuation effect". On the one hand, the average price of stocks listed on the Brussels Stock Exchange quadrupled between 1979 and 1989. The worldwide fall in interest rates and the tax incentives introduced by the Belgian government partly explain this unprecedented rise (De Clercq & Vanderlinden, 1992). As the assets of Belgian investment funds are mainly composed of equities - between 68% and 79%[127] - the rise in the price of these stocks increases their net asset value. On the other hand, the proportion of savings invested in investment funds is exploding, in response to a stimulus clearly identified by the Belgian Asset Managers Association (BEAMA): "The remarkable growth of Belgian investment funds in the 1980s is largely attributable to these tax measures"[128]. The measures in question were deployed in two stages.

The first period ran from 1982 to 1985. Belgian politicians were increasingly inclined to adopt measures inspired by neoliberal arguments (Maissin, 1997): the need for budgetary efforts, tax cuts to boost business competitiveness, social security reform to curb unemployment, etc. The Martens V government (known as the first Martens-Gol government, 1981-1985) enshrined this logic of action in a "silent revolution" (Evrard, 2023). Shortly after taking office, he resorted to special powers "with a view to economic and financial recovery,

[127] *Commission bancaire*, Annual reports, 1983-1989.
[128] Quote from the Belgian Asset Managers Association website: www.beama.be.

economic growth, encouraging business investment, motivating the population to work and creating jobs"[129]. It was in this context that Royal Decree no. 15 of March 9, 1982 was adopted, "encouraging the subscription or purchase of shares in Belgian companies"[130].

Inspired by the French "Monory law" of 1978, this royal decree - better known as "loi Cooreman-De Clercq" - boosts both the issue and purchase of shares in Belgian companies through temporary tax incentives. On the one hand, for a period of five to ten years, income distributed via shares issued in 1982 and 1983 (known as "AFV shares", for "avantage fiscal-fiscaal voordeel") is exempt from corporation tax, as well as - for the beneficiaries of these dividends - from personal income tax and inheritance or gift tax. On the other hand, from 1982 to 1985, purchases of shares in Belgian companies or in funds investing at least 60% of their assets in shares in Belgian companies can be deducted from taxable income (up to a maximum of around 1,000 euros a year, plus 248 euros for the spouse and any other dependants).

These measures transformed the Belgian stock market landscape[131]: 1 household in 6 is now a shareholder, compared with 1 in 10 in 1982 and 1 in 25 a few years earlier (Cardon de Lichtbuer et al., 1985; Abraham, 1987). According to economists Jozef Pacolet and Hans Geeroms (1985), tax benefits, which cost the State 3.4 billion euros, brought in an average of 137 euros for the lowest income groups and 1,149 euros for the highest[132]. In terms of investment funds alone, Belgian funds rose from 105 million euros (1981) to 3 billion euros (1986), outstripping foreign funds distributed in Belgium. Given the eligibility requirements for the tax advantage (at least 60% Belgian shares), the composition of investment funds was reversed: Belgian securities, which had been in the minority since 1957 (around 20% of the portfolio), represented 80% of the portfolio of Belgian funds from 1983 onwards[133].

The second phase of the tax measures pinpointed by the BEAMA came with the introduction of pension savings funds in 1986. These funds were both permitted and encouraged by legislation which, under the Martens VI government (known as the second Martens-Gol government, 1985-1987), took over from Royal Decree no. 15 of March 9, 1982: "The

[129] Loi du 2 février 1982 attribuant certains pouvoirs spéciaux au Roi (*Moniteur belge*, February 4, 1982). While this technique of special powers has since become somewhat commonplace, Dimitri Yernault points out that "successive Martens-Gol national governments [...] have been invested with special powers on an unprecedented scale" (Yernault, 2001: 13).
[130] *Moniteur belge*, March 12, 1982.
[131] On the contrary, the impact on business investment is limited (Farber, 1984).
[132] The authors also point out that the rise in prices has accentuated inequalities, given that the top 1% of income groups declare - and therefore hold - 40% of income from financial securities (INS figures for 1981). For other figures along the same lines, see Lewalle (1986).
[133] *Commission bancaire*, Annual reports, 1957-1992.

exceptional circumstances which motivated Royal Decree no. 15 still persist today, as the economic crisis has led to a crisis in risk capital"[134], states the bill which ultimately led to the law of August 4, 1986 containing tax provisions[135]. By virtue of the special powers granted by this tax law, the Royal Decree of December 22, 1986 "introducing a third-age savings or pension savings scheme"[136] was adopted: in line with the intentions of the Deputy Prime Minister and Budget Minister behind the bill, Guy Verhofstadt (PVV), its primary aim was to "extend Royal Decree no. 15 and [to] ensure the permanence of its tax benefits" (Saliën 1987: 15). Specifically, any taxpayer under the age of 65 can deduct from his taxable income the amounts invested in a pension savings account[137] (up to a maximum of 496 euros per year per spouse), and will only be taxed on the final nest egg at a rate of 16.5%. Financial institutions managing these accounts are also required to invest at least 30% of the amounts collected in shares of Belgian companies.

Although the pension savings account could take three forms (insurance contracts, individual savings accounts, investment funds), three quarters of the 900,000 people who took part in the scheme's launch opted for the fund form (Schockert, 1988). Thanks to an "unprecedented advertising effort on the part of financial institutions" (*Ibidem*: 107), eleven newly-created pension savings funds collected 560 million euros in 1987. Their growth was then relatively linear for ten years: 1 billion euros in 1988, 3.2 billion in 1993, 4.6 billion in 1996 and 8 billion in 1998[138]. The cost to the State, a *priori* estimated at 37 million euros a year, is finally estimated at 111.5 million euros a year (Schockert, 1988). As shown in Figure 25, this success did not lead to an increase in the amounts invested in Belgian funds; rather, it offset sales stimulated by the end of the tax benefits of Royal Decree no. 15 of March 9, 1982, and by the crash of October 1987. The same Figure 25 shows that the major event of the second half of the 1980s was not the appearance of pension savings funds, but the new surge in foreign investment funds distributed in Belgium.

To understand this evolution, we must now turn to the Europeanization of the investment fund industry. As early as 1966, a group of experts mandated to identify measures for the integration of the European capital market devoted several recommendations to the issue of institutional investors, and investment funds in particular: harmonization of regulations and

[134] Sénat, *Projet de loi portant des dispositions fiscales*, no. 310/1, June 19, 1986.
[135] *Moniteur belge*, August 20, 1986.
[136] *Moniteur belge*, January 1er 1987.
[137] This tax technique, identical to that of Royal Decree no. 15 of March 9 1982, implies that "the tax advantage increases in proportion to the increase in income" (*ibidem*: 48). Indeed, the deduction reduces taxable income "from above", and thus reduces the bracket subject to the highest rate.
[138] *Commission bancaire*, Annual reports, 1988-1998.

taxation should make it possible "to eliminate the obstacle to the free circulation of investment fund units throughout the Community [European Economic Community (EEC)]" (European Economic Community Commission, 1966: 207). It was only ten years later that investment funds were the subject of a proposal for European legislation, based no longer on the argument of defending the interests of savers, but on that of European integration (Moloney, 2014). This proposal languished until the announcement of the single market program: in declension of the principle that "the liberalization of financial services, in parallel with that of capital movements, will represent an important step towards European financial integration and the deepening of the internal market", it was agreed that, "once authorized by the authorities of the home Member State, an undertaking for collective investment in transferable securities (UCITS) will be able to market its units freely throughout the Community, without the introduction of additional control measures"[139] .

This liberalization was confirmed by the adoption of the European Directive of December 20, 1985, known as the UCITS Directive[140], which grants investment funds approved by a Member State a "European passport", enabling them to be marketed in other Member States. The Grand Duchy of Luxembourg was the first country to transpose the European directive, with its law of March 30, 1988. Several commentaries and historical analyses see this as the founding act of the country's modern financial center: "The rapid implementation of the 1985 UCITS Directive was decisive for Luxembourg's rapid growth [...] as an investment fund domicile" (Wójcik, 2022: 518)[141]. Without being unfounded, this interpretation - like many others on Luxembourg's financial history (Majerus & Zenner, 2020) - deserves to be qualified. At least as decisive was the adoption, on August 30 1983, of a law paving the way for a new form of investment fund with major tax implications: the *société d'investissement à capital variable* (SICAV). Formally, the only significant difference from the traditional investment fund set up in the form of an "indivision" is that the SICAV is a company with legal personality. The economic operation, illustrated in diagram 1, is unchanged. However, as we explain below, this formal difference enables a novel tax optimization technique.

Compared with the legal obstacles that had justified the introduction of "indivision" in the law of March 27, 1957, the Luxembourg law of August 30, 1983 removes the obstacles to

[139] Paragraphs 101 and 106 of the European Commission's White Paper to the European Council, "Completing the Internal Market", June 14 1985.
[140] Council Directive 85/611/EEC of 20 December 1985 on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (*Official Journal of the European Communities*, *L 375, 31 December 1985*).
[141] For a similar view, see Dörry (2015) and Fassone (2022).

setting up a SICAV by authorizing the continuous issue of shares. More importantly, it grants this structure the tax exemption previously enjoyed by traditional investment funds. The country's Deputy Prime Minister and Minister of the Economy, Jacques Poos (Socialist Party), gives a clear account of the spirit of this measure:

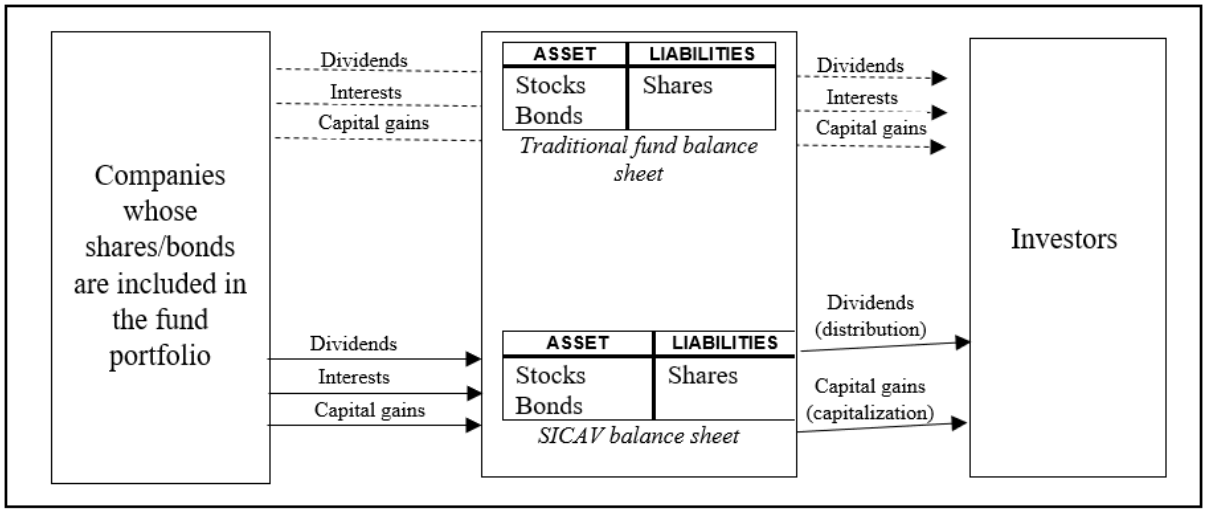
> Luxembourg's financial center was formed and developed because its political, administrative and legal framework corresponded to a certain number of specific needs on the part of international economic players. [...] It is therefore up to the authorities and financial institutions to constantly enhance the virtualities of this existing framework to meet the specific new needs of international financial exchanges (Poos, 1985: 13).

Financial circles were quick to hail "the Luxembourg authorities' policy of non-taxation of savings income, and the enlightened development of a framework conducive to the development of [investment funds]" (de la Rochefordière, 1989: 164). But what advantages do they derive from this new form of fund, which differs only in its legal nature?

Unlike a traditional investment fund, which acts simply as an income transfer (a dividend received by the fund is distributed *in this form* to investors), the SICAV is a company that remunerates investors as shareholders (see Diagram 2). It can therefore transform the returns from its portfolio - dividends, interest and capital gains - into two types of income for fund participants: dividends (if it distributes income flows) or capital gains (if it capitalizes these flows, i.e. reinvests them in new securities). The SICAV thus becomes a weapon for tax optimization: the form of income is determined by the tax system of the resident's country. Since 1986, Belgians have been able to invest in a Luxembourg SICAV, whose income takes the form of capital gains which, unlike dividends and interest, are not taxed[142]. The scale of tax evasion was phenomenal: the following year, 19 Luxembourg SICAVs had already collected 1.6 billion euros in Belgium; by 1988, the number had risen to 37 and reached 7 billion euros. In 1989, 11.3 billion euros were entrusted in Belgium to 48 Luxembourg SICAVs, more than double the amount collected by all Belgian funds[143].

[142] The situation is similar on the French market (Delattre & Charpentier, 1990).
[143] *Commission Bancaire*, Annual Report, 1989.

Diagram 2. Origin of the SICAV tax advantage



For advocates of reform of the Belgian framework, the planets seem to be aligned: successive Martens governments convinced of the need to "modernize" the economic structure, a European directive to be integrated, and impressive capital flight[144]. Under the Martens VIII government (1988-1991) and at the instigation of Finance Minister Philippe Maystadt, a series of macroeconomic measures were adopted between December 1989 and January 1991 to promote the Belgian financial center, covering areas such as public debt, monetary policy, the stock market and taxation. As far as investment funds are concerned, several relaxations of *Commission Bancaire* regulations were adopted as early as 1986, covering investment policies, transparency and distribution[145]. As for the reform brought about by the law of December 4, 1990[146], it "goes further than strict adaptation to the European directive would have required: [it] responds to the concern to place Belgian financial institutions in a competitive position in a liberalized market"[147]. In concrete terms, it encourages the creation of Belgian SICAVs by granting their income almost complete tax exemption: the company's tax base is limited to "*tantièmes*" and "excluded expenses" (generally equal to zero), and distribution to investors is not taxed if it takes the form of capital gains. Thirty Belgian SICAVs were marketed as early as 1991, raising 2.4 billion euros directly, or as much as traditional investment funds[148]. As a manager at Banque Bruxelles Lambert summed up, "we are therefore organizing a system which, on the one hand, 'normalizes' the attraction of foreign investment companies and, on

[144] On the role of the capital flight narrative in the 1990 financial reform, see chapter I.
[145] *Commission Bancaire*, Annual Report, 1986.
[146] Law of December 4, 1990 on financial transactions and financial markets (*Moniteur belge*, December 22, 1990).
[147] House of Representatives, *Bill on financial transactions and financial markets*, no. 1156/1, April 18, 1990.
[148] *Commission Bancaire*, Annual Report, 1991.

the other, allows the creation of Belgian investment companies whose income is not discriminated against in comparison with the former" (De Baenst, 1990: 298).

While it succeeded in popularizing investment funds in Belgium, the decade of fiscal stimulus (1981-1990) also had a wider impact on the distribution of wealth within the country: while taxation of income from work stagnated - its share of GDP was falling (Valenduc, 1991) - taxation of income from capital fell in barely six years (1985-1991) from 83.7% to 68.5% for dividends, and from 43.2% to 15.8% for interest on bonds (Conseil supérieur des finances, 1993). Consequently, the *Conseil supérieur des finances* (CSF) warned of the consequences of "competitive tax exemption", such as "an erosion of social consensus, since in a period of fiscal consolidation, the mobility of financial bases prevents efforts from being equitably distributed" (*Ibid*: 22).

In addition to this fiscal dimension, the new legal framework of 1990 breaks new ground in two respects. Firstly, in line with the European Directive of 1985 and contrary to the 1957 law, it authorizes investment funds to freely exercise the voting rights attached to the shares in their portfolios, while prohibiting them from acquiring "decisive influence" over a company's management (Nothomb, 1998). Secondly, it considerably extends the spectrum of authorized investment policies. The result was a profusion of funds whose "innovative" character led to dazzling commercial success; the fashion phenomenon thus underpinned the impressive growth of the rest of this second period (1991-2006) (see Figure 26).

Cash SICAV - or "money market funds" - were the first popular investments, raising 6 billion euros in December 1990 and peaking at 14.8 billion euros three years later[149]. Their unique feature is that they fill their portfolios with short-maturity securities (within six months), rather than equities and bonds. The main advantage of these structures, apart from tax immunity, is that they offer similar liquidity and higher yields than traditional bank accounts. Born in the United States in the 1970s, these funds put pressure on traditional banks there and helped reach a new audience (Fink, 2011). According to the *Commission Bancaire*, the same was true in Belgium twenty years later: "cash SICAV are to some extent replacing traditional bank deposits and pose a threat to the intermediation role of credit institutions" (*Commission Bancaire*, 1990: 229). The future will defuse these fears: in contrast to the situation in the USA, the Belgian investment fund market remains largely supported by banking groups, so that "the success of

[149] Figures from the *Association belge des organismes de placement collectif* (ABOPC), quoted in D. Forthomme (1995).

this instrument is above all leading to a shift in banks' balance sheet activities towards off-balance sheet activities" (Belgian Bankers' Association, 2001: 57).

Falling interest rates are gradually eroding the popularity of money market funds, in favor of structured products. These products are defined by a combination of at least two financial securities, enabling a predetermined investment strategy to be deployed over a limited period; for example, the simultaneous purchase of a reliable bond and a call option[150] on a risky stock. If the stock price performs well, the structured product's yield is inflated, but in (almost) all cases, the bond's income is retained (hence the term "capital-guaranteed product"). Despite their complexity, structured products have been sold to retail investors in several countries since the 1990s, including Belgium, where they absorbed 8.5% of household financial savings (between 2002 and 2010) - by far the highest score in the world (Célérier & Vallée, 2013). They can take a variety of legal forms, including investment funds. The fall in interest rates in the early 1990s fueled bond prices; the first structured products to conquer the Belgian market were therefore SICAVs whose portfolios were made up of bonds and derivatives (to achieve a return similar to the example given above). In its annual report, the *Commission Bancaire* welcomed this development: "The impressive growth in the number and type of investment vehicles shows the extent to which this disintermediation movement is increasingly taking precedence over the distribution of traditional savings products. After the cash SICAV, the bond SICAV, which offer repayment of a minimum amount after a pre-established term, are a further step in this direction" (*Commission Bancaire*, 1991: 182).

Thus, between 1990 and 1993, due to rising prices ("market valuation effect") and net subscriptions ("popularity effect"), bond funds grew at an annual rate of 81.5%, from 9 to 22 billion euros[151]. The Fed's rate hike in the United States triggered a sharp fall in bond prices - sometimes referred to as the "crash of 1994" - and abruptly cooled the bond SICAV craze, which was mainly driven by Luxembourg funds (see Figure 26). From the following year onwards, growth in the amounts invested in investment funds continued, thanks to a new phenomenon: the "capital-guaranteed index SICAV". Their portfolios are made up of shares included in a benchmark stock market index (such as the BEL 20), along with derivatives designed to maintain the value initially invested. Despite their complexity, as pointed out by

[150] A call option is a contract between two parties which gives the holder the right to buy another security (called the underlying) from the other party at a predetermined date and price. The party who bought the option only exercises it at maturity (i.e. buys the underlying from the other party) if the predetermined price is then lower than the price of the underlying.
[151] ABOPC figures, quoted in D. Forthomme (1995).

the *Commission Bancaire* (1993), these funds are presented as a "risk-free investment, rather than an equity investment" (ABB, 2002: 84). Their success outstripped that of previous stars: non-existent in December 1992, they collected 20 billion euros six years later, representing over 20% of the total volume managed via funds in Belgium[152].

Guaranteed-capital index funds benefited not only from the stock market boom of the 1990s, but also from the banks' advertising efforts: "[The growth of funds] is largely explained by the success of the so-called 'equifix' funds, whose risk profile and attractive returns were strongly emphasized on the marketing front" (*Commission Bancaire*, 1995: 196). Even the non-financial press now echoes these sales arguments. In 1996, for example, *Le Soir* wrote: "The development of 'new' SICAVs (fixed-term SICAVs, guaranteed SICAVs, index-linked SICAVs) is also noteworthy. Both more sophisticated and more reassuring, they seem to have seduced investors"[153]. The fall in stock market prices in March 2002 - the "bursting of the Dot-com bubble" - interrupted the growth in amounts invested, but not the ingenuity of the banks' "structurers", who were constantly coming up with new "solutions" for investors. Thus, by the following year, the market share of structured products was growing once again: "The 25% mark [of volume invested in funds was] passed for the first time, and analysis of sales results in 2003 shows that the year can in fact be divided into three sub-periods, with the average risk level of funds launched systematically increasing as the year progressed (and investor sentiment improved)" (Schoeters, 2003: 151). In 2007, the amount invested in funds made up of structured products reached 42.6 billion euros, or over 12% of GDP[154].

Until the end of this second period, marked by the subprime crisis, structured products were the main driver of growth in investment funds: they accounted for 88% of funds created in 2005 and 93% in 2006[155]. Three factors can be singled out to account for this phenomenon: the permissiveness of the *Commission Bancaire*, the evolution of banks' business models, and the government's stance on the issue of the competitiveness of financial centers.

Firstly, as noted by Erwin Schoeters, "structurer" at KBC Asset Management and future president of the Belgian Asset Managers Association (BEAMA), "in Europe, this type of fund is currently only successful in Belgium, France, Spain and Luxembourg. This is largely due to the attitude of the supervisory authorities in the other countries [who] have often adopted a very

[152] ABOPC figures, reproduced in the statistical appendix of *Revue de la banque*, volume 63, no. 6, 1999, p. 298.
[153] *Le Soir*, June 28, 1996.
[154] BEAMA figures, cited in Arickx et al. (2018).
[155] *Commission Bancaire*, Annual Report, 2006.

cautious approach to these types of funds due to the absence of a clear regulatory framework concerning the use of derivatives by these funds" (Schoeters, 2003: 153). In fact, contrary to its more conservative stance in the 1960s and 1970s, the *Commission Bancaire* wished to encourage the development of this sector by minimizing its intervention in both investment policy and advertising strategy[156]. For example, it authorized the marketing to the public of a very risky structured product - the reverse convertible - while allowing it to be presented as a "bond SICAV" until 2002[157]. We may therefore be surprised by the opinion of the four experts appointed by the special commission charged with examining the financial crisis: "When we examine Belgian regulations on investment funds, it is clear that Belgium has remained cautious in this respect"[158].

Secondly, Belgian banks are heavily involved in the development and sale of investment funds. The context of the 1990s and 2000s provided an incentive in this respect, both in terms of regulation - despecialization, privatizations, liberalization of access to financial markets and introduction of capital adequacy ratios - and macroeconomics - reduction of intermediation margins through low interest rates (Hulpiau et al., 2011). In addition, the privileged position of Belgian banks vis-à-vis public debt, which had guaranteed comfortable profitability since the end of the Second World War, was criticized (De Grauwe, 1978), then reformed in the early 1990s[159]. Now competing with foreign investors on a "debt market", Belgian banks reduced the proportion of public debt on their balance sheets. As a result, they are (over)compensating for the pressure on intermediation revenues (private and public loans from deposits) with commissions generated by offering new "financial services", such as the sale of shares in investment funds. Georges Martin, a member of the Belgian Bankers' Association (ABB), is delighted:

In the major banks in 1998, income from financial intermediation represented only 58% of banking income, and miscellaneous income 42%. Belgian banks have shown remarkable adaptability in this area, and their role in the recent boom in the [fund] sector is certainly not to be underestimated. In particular,

[156] During the 1980s and 1990s, the *Commission Bancaire* was structured around the mandates of four men: Jean-Louis Duplat (lawyer, chairman from 1989 to 2001), Bernard Van Ommeslaghe (businessman, member from 1982 to 2000), Bavo Cool (lawyer, member from 1976 to 1997) and William Fraeys (economist close to the Socialists, member from 1980 to 1999). At the turn of the 2000s, the membership changed. Jean-Paul Servais (former head of cabinet for Liberal minister Didier Reynders) joined as vice-chairman in 2002, and became chairman in 2007.
[157] *L'Écho*, January 22, 2008. The term "bond SICAV" refers to a fund whose assets are mainly composed of bonds, suggesting low risk.
[158] House of Representatives and Senate, Special Committee on the Financial and Banking Crisis, *Report*, no. 1643/2, April 27, 2009, p. 176. The four experts are Georges Hübner (professor of finance at HEC Liège), Michel Massart (professor of management at Solvay), Ludo Swolfs (company auditor) and Walter Van Gerven (lawyer, professor of law at KULeuven).
[159] For a presentation of the reform by one of its players, see Lefebvre (1993). For analysis, see Lemoine & Piron (2023).

they had to overcome the proverbial risk aversion of the Belgian saver, and the development of products such as capital-guaranteed funds is one of the best illustrations of the creativity of their specialists in meeting specific customer needs (Martin, 1999: 465).

For example, the "Safe funds" launched by Fortis in 2004 (structured products with guaranteed capital) charge annual management fees of 1.75% and entry fees of 2.5%[160]. Moreover, despite their name, they only offer protection for a percentage of the capital invested, and this percentage depends on changes in the value of the fund's portfolio. According to the head of structured products at Fortis Investments, this "is necessary in order to enter the market at 100%, otherwise we would have to remain in cash"[161]. A former trader in the structured products department remembers "the aggressive client-driven strategy: we sold reverse convertibles on trendy companies like Lernout & Hauspie. We had a VaR[162] of 15 million for equity structured products alone"[163]. This commercial strategy produced unprecedented results for Belgium's leading banks: return on equity (ROE) for Fortis, Dexia and KBC was around 20% from 2004 to 2006[164]. It also enables them to continue dominating the fund market, which the UCITS directive has not yet succeeded in Europeanizing: "Penetration of the Belgian market by foreign promoters is hampered by the strong branch networks of the major national credit institutions" (Forthomme, 1995: 132).

Thirdly, successive governments – from Dehaene I (1992-1995) to Verhofstadt II (2003-2007) - provide a framework to stimulate financial innovation and the development of investment funds (and structured products in particular). In this respect, the law of August 5, 1992 on debt securitization[165] is symptomatic: in order to "see Belgium develop a privileged position in this 'niche' of international debt securitization", it ensures that "the legal and fiscal framework is rapidly put in place, and that Belgian financial intermediaries develop sufficient expertise in this field"[166]. Before they became at the heart of the subprime crisis, these new funds were a resounding success, raising 510 million euros in 1996 and 2.9 billion euros two years later[167]. They were also mobilized by the public authorities to organize the privatization

[160] *L'Écho*, May 24, 2008.
[161] F. Stoop, quoted in *L'Écho*, May 24, 2008.
[162] VaR (value at risk) is a measure of a portfolio's exposure to price movements. It captures the loss corresponding to a confidence interval: the daily 10% VaR is equal to a loss that will only be exceeded one day in ten, under certain statistical assumptions.
[163] Extract from an interview conducted by the author with a trader.
[164] House of Representatives and Senate, *Special Committee on the Financial and Banking Crisis*, *Report*, no. 1643/2, April 27, 2009.
[165] Loi du 5 août 1992 modifiant, en ce qui concerne les organismes de placement en créances, la loi du 4 décembre 1990 relative aux opérations financières et aux marchés financiers (*Moniteur belge*, September 9, 1992).
[166] Sénat, *Projet de loi modifiant, en ce qui concerne les organismes de placement en créances, la loi du 4 décembre 1990 relative aux opérations financières et aux marchés financiers*, no. 1377/1, June 21, 1991.
[167] ABOPC figures, reproduced in the statistical appendix of *Revue de la banque*, volume 63, no. 6, 1999, p. 298.

of the *Office central de crédit hypothécaire* (OCCH) in 1998[168] and the securitization of tax receivables in 2005[169]. At the same time, until 2006, the tax regime for SICAVs remained very similar to that in force in Luxembourg, to such an extent that some countries - such as Switzerland - refused to grant Belgian SICAVs the reduction in withholding tax provided for in "double taxation treaties", believing that Belgian corporate tax liability was "artificial" (Gheret & Mareels, 1999).

The metamorphosis of investment funds during this second period (1981-2006) is not due to the evolution of the Belgian savings rate: while this climbed between 1988 and 1993, it then returned to its initial level of 16% in the early 2000s (NBB, 2002). The 36-fold increase in the share of GDP invested in funds in Belgium is therefore entirely due to the two other factors identified above. Firstly, the market valuation effect: the Brussels Stock Exchange index multiplied by 14.93 over this period[170]. Secondly, the popularity effect: the proportion of savings invested in funds is boosted by tax incentives and marketing strategies (on the supply side), and probably by a more enthusiastic attitude towards stock market investments (on the demand side).

The financial crisis, which lasted from 2007 to 2012, had a profound impact on these various levers: stock prices plunged, investors became distrustful, and the political climate is conducive to limiting tax incentives and banks' commercial strategies. As a result, the share of GDP invested in investment funds fell by 27% between 2006 and 2011 (see Figure 24). The sector then rebounded, regaining its pre-crisis level in 2015 and surpassing the historic threshold of 100% of GDP by 2021.

2006-2021: a rebound through institutionalization

The last period of our historical overview can be divided fairly neatly into two phases. Firstly, from 2006 to 2012, the Belgian investment fund sector shrank. The effect of falling prices during the financial crisis immediately affected the value of assets managed by funds. It is prolonged by more structural developments: households turning away from risky investments, regulation of structured products, and reduced tax incentives. As of December 31,

[168] Founded in January 1936, the OCCH aimed to regulate the mortgage market, notably through direct lending and debt repurchase (NBB, 1960).
[169] *La Libre Belgique*, September 29, 2005.
[170] The Brussels stock exchange commission index was worth 836.31 in 1981 and 2,974.09 in 1990, before being replaced by the BEL 20, which was worth 1,000 in 1990 and 4,199.75 in 2006; the significant methodological differences between these two indicators limit the validity of the 14.93 result. For a sociological explanation of these differences, see Duterme (2021b).

2011, investment funds collected only 70% of the amounts collected in 2006. Then, from 2013 to 2021, the trend reverses. At first glance, the break is staggering: by December 31, 2021, the amounts invested in funds by Belgians had more than doubled compared to 2006, and more than tripled compared to 2011. Analysis reveals that this "rebound" is both of a different nature to the growth of the previous period, and less marked than these figures suggest. Indeed, it is not Belgian households, but insurance companies, pension funds and SMEs that are the main drivers. What's more, investment funds themselves are now placing substantial amounts in other funds, contributing to inflate the sector's statistics.

Investment funds have often been portrayed as the collateral victims of the crisis that began in 2007: their value plummeted as a result of the irresponsibility of *other* financial institutions. As early as March 2008, BEAMA - successor to the ABOPC - made this point in a press release[171]. This interpretation needs to be qualified on two counts. On the one hand, the institutions at the heart of the subprime crisis are the banks; yet, unlike the situation in the USA (Fink, 2011), the Belgian investment fund market remains concentrated around products sold by Fortis, Dexia, KBC and ING. Moreover, as we have pointed out, the aggressive marketing of funds is contributing to a reorientation of these banks' business models, which is at the root of their fatal balance sheet fragilities. On the other hand, one type of investment fund - the money-market fund - has been an essential link in this new business model, filling its portfolio with short-term debt securities issued by banks. In 2007, over 35 billion dollars of such securities were issued via Belgian banks, 30 of which were denominated in dollars for investment in the subprime market (Acharya & Schnabl, 2010). Although some Belgian investment funds were at the heart of this spiral when the crisis hit, such as Petercam, which froze its "Moneta" money-market fund[172], this second nuance is less directly relevant to Belgian funds, among which money-market funds accounted for just 7.78% in 2007[173].

The investment fund sector is therefore not a collateral victim of the financial crisis. Nevertheless, it has been profoundly affected: not only has the value of portfolios plummeted, but many Belgians are demanding repayment of their share[174]. The impact was long-lasting: amounts managed via funds fell from 221.6 billion euros in 2006 to 154.8 billion euros five

[171] Relayed in *L'Écho*, March 4, 2008.
[172] The assets of the Moneta fund are mainly composed of these short-term debt securities issued by banks, and have lost over 10% of their value in just a few months. To avoid a liquidity crisis (the equivalent of a bank run for funds), management company Petercam froze the fund: investors were no longer allowed to sell their shares. Cf. *L'Écho*, November 5, 2008.
[173] BEAMA figures, cited in Arickx et al. (2018).
[174] *L'Écho*, February 18, 2009.

years later (see Figure 26). However brutal, the effect of stock market valuation was momentary - the BEL 20 reached its lowest index in February 2009 - and therefore cannot account for the longevity of the decline in amounts collected. Three additional factors need to be highlighted.

Firstly, Belgian households are changing their attitude: they are withdrawing from funds to buy traditional bonds; the financial press is advising its readership to "withdraw" from funds[175]. Thus, from 2007 to 2013, redemption requests for fund shares exceeded new purchases six years out of seven[176]. Conversely, bonds held by individuals rose from 71.9 to 106 billion euros between 2007 and 2011[177].

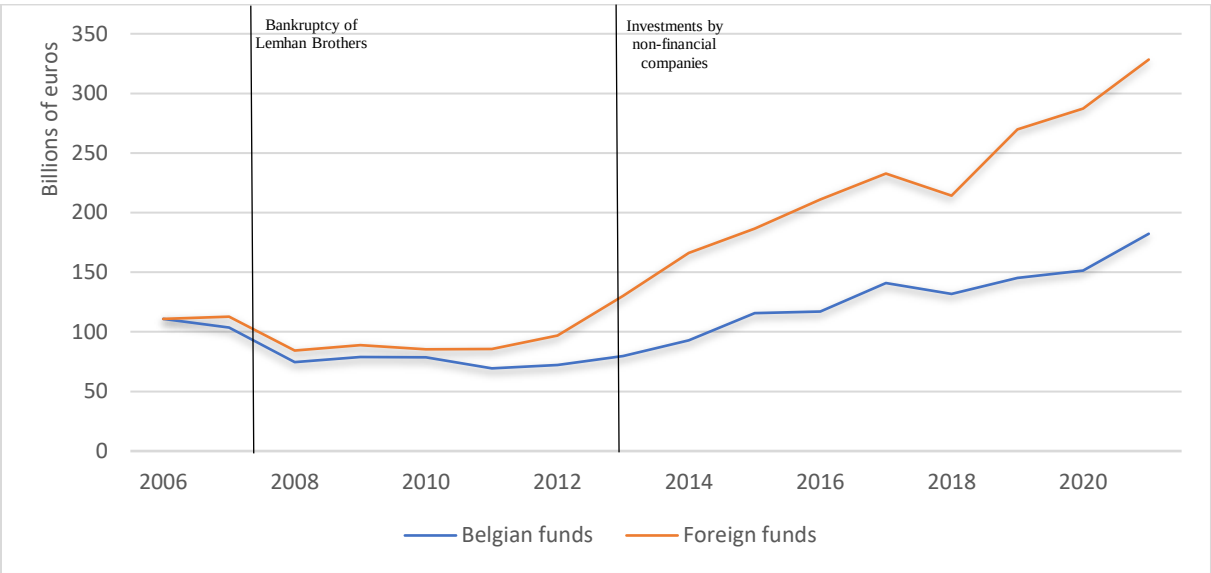


Figure 26 - Amounts invested by Belgian residents in investment funds (2006-2021)

Secondly, regulation of the financial sector is being overhauled in the wake of the crisis. More critical of the regulatory authorities than the experts commissioned by Parliament (see above), the High Committee for a New Financial Architecture - set up in December 2008 at the initiative of the Leterme I government and chaired by Alexandre Lamfalussy[178] - prescribed a reorganization of the supervisory institutions, leading to the introduction in April 2011 of the "Twin Peaks model". Under this new regime, the *Commission Bancaire*, renamed the Financial Services and Markets Authority (FSMA), delegates large parts of its powers to the National

[175] *L'Écho*, January 22, 2008.
[176] BEAMA figures, cited in Arickx et al. (2018).
[177] NBB, Financial Account, https://stat.nbb.be.
[178] Banker at the head of the European Monetary Institute (EMI) from 1994 to 1997. Joining him are Jean-François Cats (auditor), Daniel Gros (former IMF and European Commission economist, head of the think tank Centre for European Policy Studies - CEPS), Willy Kiekens (IMF director), Olivier Lefèbvre (former head of cabinet for minister Philippe Maystadt: cf. above), Geert Noels (economist at Petercam), Peter Praet (former head of cabinet to D. Reynders and economist at the Basel Committee) and Eddy Wymeersch (Chairman of the European Regulators Committee, the European arm of FSMA).

Bank of Belgium (NBB), and focuses on investor protection issues and the supervision of financial companies whose importance is deemed non-systemic. These include investment funds. Prompted by the political climate and the initiatives of regulatory authorities in neighboring countries, FSMA Chairman Jean-Paul Servais quickly announced his intention to intervene in the field of structured products. But the authority, which in the past had aspired above all to "help the financial sector in its harmonious development" (Servais, 2007: 388), didn't change its strategy overnight: in June 2011, this intention translated into a "voluntary moratorium", during which financial institutions could adhere to the invitation "not to market to retail investors structured products that are considered particularly complex"[179]. This was followed by a consultation of the main players in the sector, with a view to operationalizing the "particularly complex" demarcation criterion. Having met with near-unanimous support from the sector, the moratorium was finally made permanent. Admittedly, the amounts invested in funds made up of structured products began to fall in 2008, dropping from 42.6 to 19.6 billion euros in four years[180]. However, as some "structurers" are quick to complain[181], the downturn is likely to be prolonged by this gentle regulation, since these products will account for just 10.8 billion euros in 2015 and 2.7 billion euros in 2021 - barely 1% of the volume invested in funds[182].

Thirdly, tax incentives are being reduced, particularly under the Di Rupo government (2011-2014). The amnesty enjoyed since 1990 by the "capitalization SICAV" - a fund that reinvests its income and whose return therefore takes the form of a capital gain (see Diagram 2) - is undermined by the tax on stock market transactions, which rises from 0.5% to 1% in 2012, then to 1.32% in 2014. When investors request repayment of their shares in the SICAV, they are taxed on the net asset value received, at this rate recently deemed "exorbitant" by liberal jurist Guy Kleynen[183]. In addition, a "capitalization SICAV" whose portfolio includes at least 10% of bonds must apply a tax on the fraction of the capital gain generated by these bonds when a share is redeemed. Introduced in 2006, this tax - known as the "Reynders tax", after the

[179] FSMA, "Moratorium on the marketing of particularly complex structured products", communication, June 20, 2011.
[180] BEAMA figures, cited in Arickx et al. (2018).
[181] Interviewed in *L'Écho*, May 15, 2012.
[182] BEAMA, Annual Reports, 2015-2021. As mentioned above, the investment fund is only one of the three forms a structured product can take. However, the other two forms - insurance products and bonds - have fallen less: while structured products are generally divided equally between the three forms, in 2021 investment funds will account for just 12.5% of the amounts invested (figures published from 2014 to 2021 by the Belgian Structured Investment Products Association in its quarterly *Market Reports*, https://belsipa.be). The fact remains that the sector as a whole has shrunk between 2010 and 2021, from 85 to 22 billion euros in invested amounts.
[183] *L'Écho*, July 6, 2022.

Deputy Prime Minister and Minister of Finance Didier Reynders - therefore relates only to the yield (and not to the net asset value), but it is getting heavier with successive increases in the rate of this tax (known as "*précompte mobilier*"): from 15% to 21% in 2012, to 25% in 2013, to 27% in 2016 and to 30% in 2017. Furthermore, in October 2012, following a ruling by the Court of Justice of the European Union (CJEU), SICAVs are no longer exempt from tax on dividends they receive from Belgian companies in which they hold shares. Finally, still in 2012, the tax advantage attached to pension savings funds was reformed: a tax reduction of 30% of the amount invested supplanted the tax deduction[184]. As BEAMA's complaints reveal[185], this weakening - and complicating - of tax incentives puts investment funds at a disadvantage compared to other financial products, such as "branch 23" (see below), rather than to foreign funds. Indeed, the "savings directive"[186] transposed in 2004[187], as well as successive laws on the "one-off declaration of financial assets", gradually subject all Belgian residents to the same tax rates, regardless of the fund's location.

These three factors help to explain the prolonged decline of this sector, which had experienced almost exclusively growth for thirty years. But how can we explain the trend reversal that will see the share of GDP invested in funds double between 2013 and 2021? The savings rate has nothing to do with it: with the exception of the "Covid years", it has stagnated at around 12.5%[188]. The main driver of this second wave is the pluralization of the investor base: retail investors are no longer the only ones feeding investment funds. The trend predates the crisis, but continues to deepen: while households accounted for 87.6% of the amounts invested in funds by Belgian residents in 1998, they represented only 65.8% in 2012, and 52.6% in 2019[189]. So-called "institutional investors" - pension funds, insurance companies and the investment funds themselves - are thus playing an increasingly important role in the Belgian market (see Figure 27).

[184] For a detailed view of the tax framework in place in 2019, see Van Caubergh (2019).
[185] Relayed among others in *L'Écho*, September 2, 2013 and September 18, 2019.
[186] Council Directive 2003/48/EC of June 3, 2003 on taxation of savings income in the form of interest payments (*Official Journal of the European Union*, *L 157/38, June 26, 2003).*
[187] Loi du 17 mai 2004 transposant en droit belge la directive 2003/48/CE du 3 juin 2003 du Conseil de l'Union européenne en matière de fiscalité des revenus de l'épargne sous forme de paiements d'intérêts et modifiant le Code des impôts sur les revenus 1992 en matière de précompte mobilier (*Moniteur belge*, May 27, 2004).
[188] NBB, Annual reports, 2013-2021.
[189] NBB, Financial Account, https://stat.nbb.be.

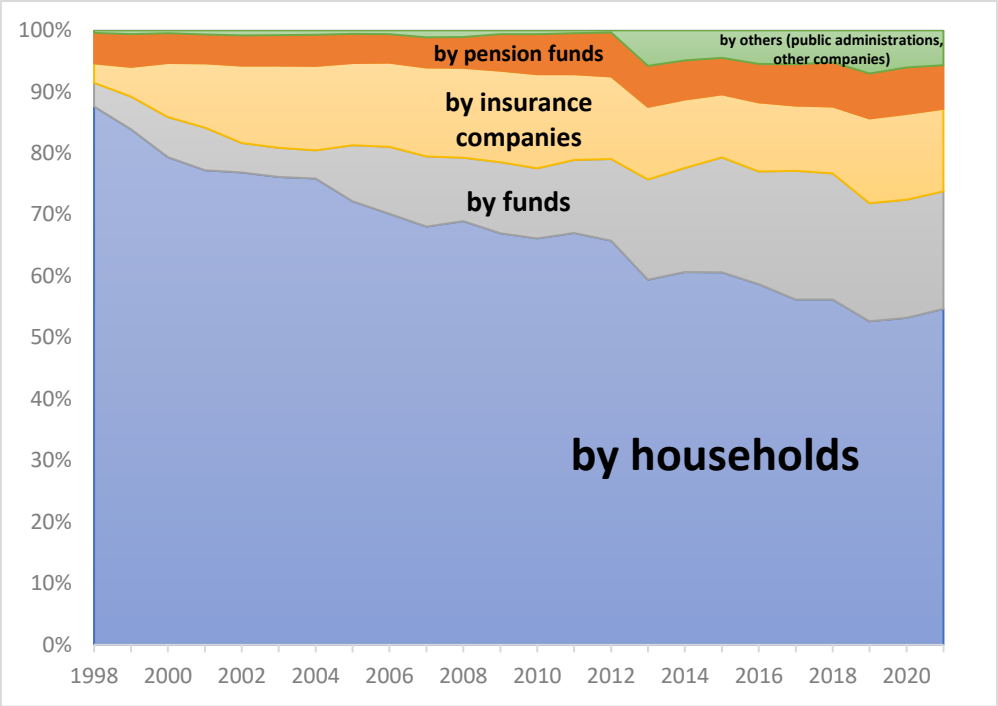


Figure 27 - Distribution of funds invested by Belgium (1998-2021)

The appearance of insurance companies on the Belgian investment fund market is closely linked to the success of a life insurance product: "branch 23". Benefiting from a tax amnesty very similar to that of the SICAV regime (Mohr, 2001), this "product" operates like an investment fund and has been a resounding success: the amounts invested in branch 23 rose from 3.2 to 24.8 billion euros between 1998 and 2005[190]. However, these insurance companies reinvested a substantial proportion of these amounts in other investment funds (1.5 billion euros in 1998 and 16.2 billion euros in 2005); as a result, while in 1998 they accounted for only 3.2% of the amounts invested in funds, six years later they represented 13.8% (see Figure 27). Prior to the crisis, several companies offered "funds of hedge funds" in the form of these branches 23[191]. As we shall see later in this chapter, given the role played by bancassurers in Belgium, this development has little impact on the concentration of the investment fund market.

Alongside insurance companies, the second "institutional investor" feeding the Belgian investment fund market is the pension fund. Officially known as an "institution for occupational retirement provision", the latter emerged in 1985, when the Martens V government decided - under pressure from insurers (Naczyk, 2013) - to "defamiliarize" the management of supplementary pensions: employers were henceforth required to entrust contributions to an insurance company (group insurance) or a pension fund (Lewalle, 1986). The role of pension

[190] *Commission Bancaire*, Annual reports, 1998-2005.
[191] *L'Écho*, February 23, 2002. Cf. also Lion (2004).

funds in the Belgian economy is initially very limited: the beneficiaries of these pensions are rare - less than 7% of pensioners in 1985 - and more than 70% of contributions are collected by insurance companies (CSF, 2002). While their market share with respect to the group insurance has remained at around 25% for the past thirty years[192], pension funds have benefited from the tax-incentivized expansion of membership of this "second pillar" of the pension system, and have made a substantial contribution to investment funds. Thus, from the boom of the 1990s onwards, which increased their balance sheet by a factor of 2.4[193], they accounted for 5% of the amounts raised by investment funds (see Figure 28); in other words, their investment in funds kept pace with the sector's growth rate, rising from 4.8 to 36.25 billion euros[194].

Thirdly, non-financial companies supported the Belgian investment fund sector with a dazzling entry in 2013: the amount placed in funds rose from 0 euro to 10.4 billion euros[195]. The driving force behind this turnaround is not easy to pinpoint. As is often the case in the Belgian market, it probably lies on the supply side. In 2013, several banks are marketing "institutional funds"[196] , i.e. funds that are not accessible to retail investors, but only to certain eligible investors (such as insurance companies or pension funds, as well as companies that request this status). Previously responsible for negligible amounts, these institutional funds jumped by 10.4 billion euros in 2013[197]. BNP Paribas was one of the main contributors, launching two "institutional SICAVs" that year: "Lecta" and "Zephyr". These two funds raised 3.3 billion euros and 1.6 billion euros respectively in less than a year[198]. The role of non-financial companies is not confined to that year. In 2019, following the emergence of a tax niche that exempts income received from a certain type of fund (the "SICAV RDT"), the share of amounts invested in funds originating from non-financial companies even reached 4.9% (see Figure 27).

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[192] FSMA, "Sector overview: 'The second pension pillar in pictures'", 2018-2021, www.fsma.be.
[193] FSMA, "Statistics on the operations of institutions for occupational retirement provision", 2008-2021, www.fsma.be.
[194] NBB, Financial Account, https://stat.nbb.be.
[195] *Ibid*.
[196] This concept made its appearance in Belgium via a law of March 10, 1999, which allowed the creation of investment funds reserved for institutional investors (deemed more sophisticated than retail investors): "given the quality of the target investors, these [investment funds] are subject only to a restricted administrative status; they are not subject to supervision by the [*Commission bancaire*]". Cf. Loi du 10 mars 1999 modifiant la loi du 6 avril 1995 relative aux marchés secondaires, au statut des entreprises d'investissement et à leur contrôle, aux intermédiaires et conseillers en placements, fixant le régime fiscal des opérations de prêt d'actions et portant diverses autres dispositions (*Moniteur belge*, April 14, 1999).
[197] NBB, Financial Account, https://stat.nbb.be; FSMA figures. See the appendix to this *Weekly Mail* for methodological details.
[198] 2013 balance sheet for the two SICAVs.

Finally, the innovation that has driven much of the growth in recent years is the "fund of funds", i.e. the emergence of investment funds whose portfolios are mainly made up of shares in other funds. Long prohibited by the *Commission bancaire* (forerunner of FSMA), the acquisition of shares in other funds became possible in 1985, but only up to a maximum of 5% of the total portfolio[199]. These conditions were progressively relaxed, before being virtually eliminated in 2005 by a Royal Decree completing the transposition of the UCITS III Directive[200]. That year, the proportion of amounts invested in funds *by funds* doubled from 4.6% to 9.1%. It then grew steadily, reaching 16% in 2013, then 21% in 2017 (see Figure 27). This situation means that certain investments are counted twice in statistics: once when they are invested by a Belgian resident - household, insurance company, pension fund or non-financial company - in a Belgian "fund of funds", and a second time when they are invested by the latter in another fund[201]. Insofar as we consider this doubling to be artificial, we can discount the second part (i.e. the investment *by* a Belgian fund of funds) either from the amounts invested in foreign funds (if we give precedence to the choice of the resident who initially invests), or from the amounts invested in Belgian funds (if we aspire to identify the fund in which, ultimately, this money lands). These two cases are represented by the dotted lines in Figure 28. Thus, if the amounts invested in Belgian funds are reduced by the share allocated to funds of funds, it appears that Belgian investment funds have not regained their pre-crisis level by 2021.

[199] *Commission Bancaire*, Annual Report, 1986.
[200] Arrêté royal du 4 mars 2005 relatif à certains organismes de placement collectif publics (*Moniteur belge*, March 9, 2005; and *erratum*, May 27, 2005).
[201] The risk of triple or quadruple counting is limited by certain legal restrictions that prevent a fund of funds from investing in a fund that itself invests the majority of its portfolio in another fund.

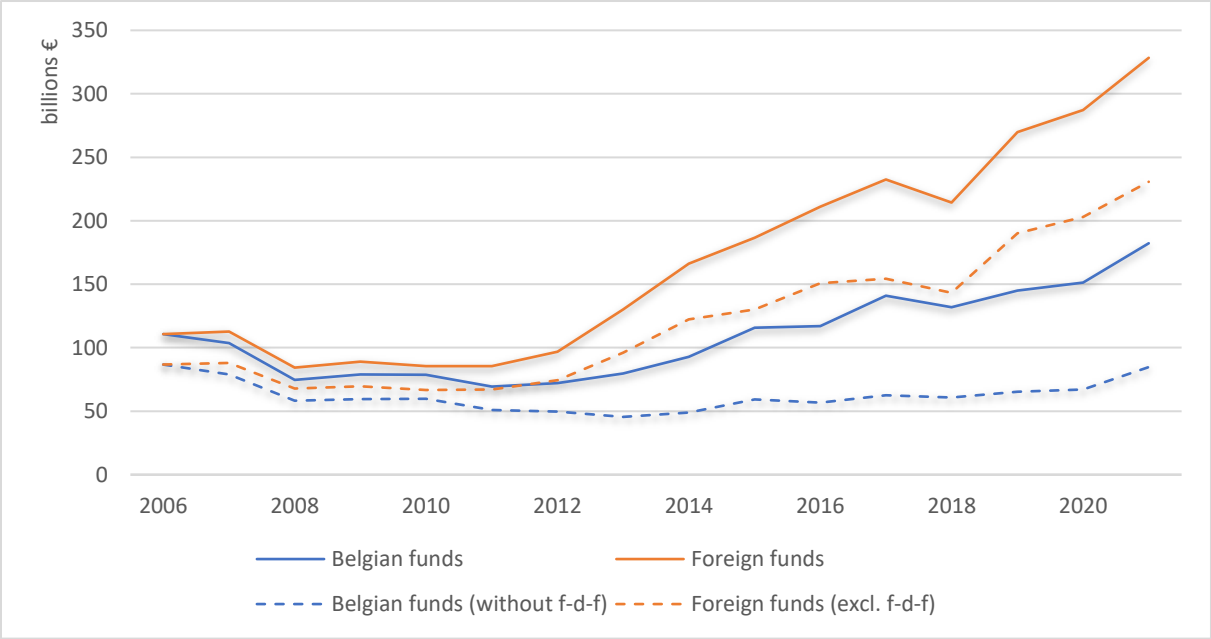

Figure 28 - Amounts invested by Belgian residents in investment funds (2006-2021)

What are the advantages of such an embedded structure? The sales pitch generally highlights the advantages for the client: even greater diversification of the investment portfolio, as well as access - via the fund of funds - to funds reserved for institutional investors, such as hedge funds. At the same time, this structure reduces costs for the management company: "Unlike a fund investing in traditional instruments such as equities and bonds, a fund set up as a fund of funds does not need to bear the costs associated with a detailed analysis of securities and financial instruments, nor the costs associated with their purchase" (Sokołowska, 2016: 86). The result is a higher profit margin and/or a reduction in costs for the customer - entry fees, management fees, etc. - increasingly decisive in the competition between funds. As we shall see in the remainder of this article, the current structure of the investment fund market therefore favors the rise of funds of funds, which in turn feeds industry concentration (funds of funds tending to invest in the same funds).

The conversion of many Belgian funds to this investment technique, combined with the growing involvement of institutional investors, also helps to account for the "regaining of power" of foreign funds. Whereas Belgian funds had caught up with and then overtaken foreign funds from the mid-1990s (see Figure 25), in this third period they are now largely dominated in terms of amounts raised (see Figure 26). Belgian funds of funds contribute to this trend, making up the bulk of their portfolio with foreign funds. However, as Figure 29 illustrates, the fastest-growing foreign funds are those that are not publicly distributed in Belgium (cf. the green bars in Figure 29). Marginal until 2004, these funds almost doubled in volume in 2005,

the year in which funds of funds gained momentum. Their growth was then sustained by that of funds of funds, but also by that - noted earlier - of the amounts invested in investment funds by pension funds and insurance companies. Indeed, unlike Belgian households, these players have access to these foreign funds, which are not publicly distributed in Belgium. The institutionalization of the sector therefore also rhymes with its globalization. However, a large proportion of these foreign funds are still held by banking groups (see below).

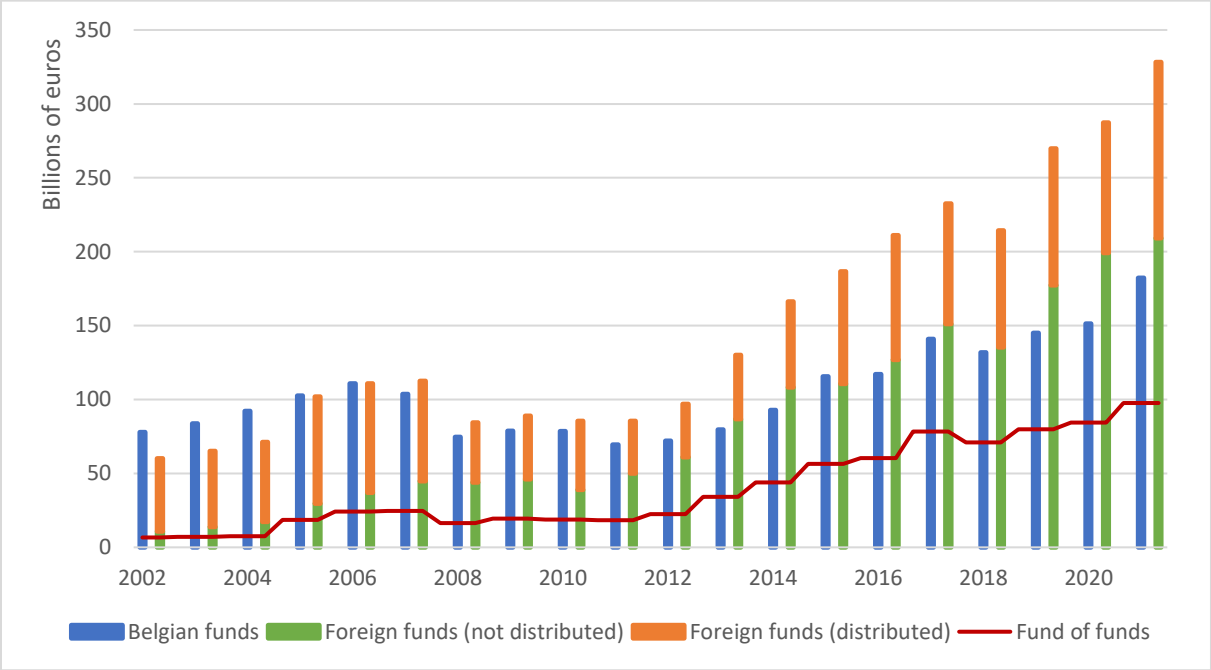

Figure 29 - Amounts invested by Belgian residents in Belgian and foreign funds (2002-2021)

The recent success of foreign funds can also be explained by the seductive efforts of certain financial centers, in particular the Grand Duchy of Luxembourg. As we have already mentioned, following the 2004 "Savings Directive", competition between countries is limited by the exchange of information on tax matters, which should enable all Belgian residents to be subject to the same tax rate, regardless of the location of the invested fund. However, while investors are increasingly prisoners of their country of residence, this is much less the case for investment companies. This is why taxation on income received - rather than distributed - by investment funds remains very light in Belgium: the tax base of SICAVs is still limited to "*tantièmes*" and "excluded expenses" (generally equal to zero). Against this backdrop, Luxembourg, where tax exemption is also the order of the day, stands out less for its tax rates than for its infrastructure and the attitude of its authorities. On the one hand, its financial center has become a hub for all the companies that make up the ecosystem of investment funds (accounting, consulting, auditing, etc.), once lured by tax incentives. On the other hand, the regulatory framework is minimal and stable: it even regularly proposes new, ever more flexible

statutes, such as the "reserved alternative investment fund" (FIAR) in 2016, which is not subject to any supervision by the *Commission de surveillance du secteur financier* (CSSF) - a fact that appeals to several Belgian asset managers[202].

Before concluding, it should be noted that, in 2012, this distinction between Belgian and foreign funds took on new significance thanks to the transposition[203] of the UCITS IV directive[204]. So far, we have scarcely mentioned the successive updates to this legislative framework designed to Europeanize the investment fund market[205] ; for good reason, in socio-economic terms, their impact has proved limited. Apart from the consequences already mentioned for funds reserved for institutional investors and for funds of funds, these directives have mainly led to the standardization of advertising requirements (content of the prospectus describing the fund's portfolio, calculation of net asset value, clarity of management fees, etc.). Banks dominate the market and have no interest in offering funds other than those they sponsor, nor in exporting a Belgian fund to the rest of Europe (it is more attractive for them to build another fund via a subsidiary).

Thus, introduced as early as 1985 by the European UCITS I directive, the European "passport" granted to funds whose investment policy complies with the most restrictive conditions ("UCITS funds") was under-utilized until 2014: barely 35% of the amounts invested in Belgian funds were in "UCITS funds"[206]. The transposition of the UCITS IV directive in 2012 is of interest less for its impact on the attractiveness of the European passport than for its reshaping of the distinction between foreign and Belgian funds: it uncouples the nationality of the management company from that of the fund. This means that a Luxembourg management company can now create a Belgian fund. The UCITS V directive[207], transposed in 2016[208],

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[202] *L'Écho*, March 14, 2019.
[203] Loi du 3 août 2012 relative à certaines formes de gestion collective de portefeuilles d'investissement (*Moniteur belge*, October 19, 2012). Since then, the title of this law has been changed to "loi relative aux organismes de placement collectif qui répondent aux conditions de la directive 2009/65/CE et aux organismes de placement en créances" by the law of April 19, 2014 referenced below.
[204] Directive 2009/65/EC of the European Parliament and of the Council of July 13, 2009 on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (UCITS) (*Official Journal of the European Union*, *L 302/32, November 17, 2009*).
[205] UCITS I was adopted in 1985 (and transposed in 1990); UCITS II and III were adopted as a single directive in 2003 (and transposed in 2004); UCITS IV was adopted in 2009 (and transposed in 2012); UCITS V was adopted in 2014 (and transposed in 2016).
[206] BEAMA, Annual reports.
[207] Directive 2014/91/EU of the European Parliament and of the Council of July 23, 2014 amending Directive 2009/65/EC on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (UCITS), as regards depositary functions, remuneration policies and sanctions (*Official Journal of the European Union*, *L 257/186, August 28, 2014).*
[208] Loi du 25 décembre 2016 transposant la directive 2014/91/UE et portant des dispositions diverses (*Moniteur belge*, December 30, 2016).

further encourages this practice, which is supposed to "decompartmentalize" the Belgian market, to such an extent that the number of Belgian funds managed by a foreign company continues to rise: 2 in 2016, 8 in 2018 and 20 in 2021[209]. The trend in amounts invested in Belgian funds should therefore be interpreted with caution: they may reflect the success of foreign management companies. Moreover, the political thrust of these directives is clear: to reduce the barriers to Europeanization so that all residents of member states can choose their fund from a range of cross-border funds. In 2018, however, 70% of the money invested in European funds was in a fund offered only in one country[210].

It remains to understand why Belgian funds with a European passport have taken off: up until 2014, they accounted for just 35% of the amounts collected by Belgian funds, but this figure will rise to 77% in 2017 and 99% in 2021[211]. The mainspring of this evolution is not the desire to export a fund to other member countries (the spirit of the UCITS directives), but the sudden loss of the advantages of *not* submitting to the requirements of the European passport. Indeed, in 2014, Belgium transposed[212] the Alternative Investment Fund Managers Directive (AIFMD)[213] which, in response to the financial crisis, operated a reversal of perspective: from now on, investment funds are, *by default*, subject to the AIFMD framework and must demonstrate compliance with European passport requirements to benefit from the UCITS framework (Moloney, 2014). Thus, "in the Belgian context - and in a whole series of other Member States - the AIFM Directive has ensured that investment entities that were previously not covered by any regulatory framework (because, for example, as in Belgium, they were not public or had not opted for a statute) are constrained by a relatively narrow straitjacket" (Landuyt, 2016: 7). To avoid the constraints brought on by the AIFMD - authorization, capital requirements, remuneration policies, rules of conduct, etc. – many Belgian funds are converting to "UCITS funds"[214]. Less than a month later, the Belgian authorities offered a loophole for real estate investment companies, by granting them a status that was not subject to the AIFMD

[209] FSMA, Annual reports, 2016-2021.
[210] European Commission, "Commission staff working document impact assessment. Accompanying the document Proposal for a regulation of the European parliament and of the council on facilitating cross-border distribution of collective investment funds and amending Regulations (EU) No 345/2013 and (EU) No 346/2013", March 12, 2018: 12.
[211] BEAMA, Annual reports.
[212] Loi du 19 avril 2014 relative aux organismes de placement collectif alternatifs et à leurs gestionnaires (*Moniteur belge*, June 17, 2014).
[213] Directive 2011/61/EU of the European Parliament and of the Council of June 8, 2011 on Alternative Investment Fund Managers and amending Directives 2003/41/EC and 2009/65/EC as well as Regulations (EC) No 1060/2009 and (EU) No 1095/2010 (*Official Journal of the European Union*, *L 174/1, July 1er 2011).*
[214] FSMA and NBB, "Report on Asset Management and Shadow Banking", 2017. This report also pinpoints the fall in structured products as the cause of the surge in amounts managed by UCITS funds.

framework: 22 “real estate SICAVs” thus left the perimeter of investment funds to become “regulated real estate companies”, contributing to the fall in the amounts managed by funds without a passport.

In summary, this last period reached its turning point in 2013. In its first phase, between 2006 and 2012, the share of GDP invested by Belgium in investment funds plummeted from 68.2% to 41.2% (see Figure 23), under the combined effect of falling stock prices and household disaffection. The meteoric rise to 101.6% in 2021 is not really the result of a “recovery in household confidence” or a new stock market boom: both the proportion of financial assets devoted to funds and the share price index have only just returned to their pre-crisis levels[215]. The real driving force behind this second investment fund boom is the arrival of new types of investors: insurance companies, pension funds, non-financial companies and funds themselves. We will see below, however, that despite this development, Belgium remains the European country where households - generally under the influence of their banker’s advice - are the most involved in the investment fund sector, both in terms of share of financial assets and in comparison with institutional investors.

Conclusion on 75 years of investment funds

Figure 30 summarizes the three periods reviewed. The first one, barely visible when the amounts are not related to GDP, is one of very moderate development: investment funds were marginal at the time, and only began to appeal to Belgian households with the tax incentives and reconfiguration of banking strategies in the 1980s. The next two periods are represented by “stacked areas”. The first fund boom was driven mainly by the blue and orange zones, i.e. respectively by investments by Belgian residents in Belgian funds (B-B) and in foreign funds marketed in Belgium (B-Eb). It reached the 200-billion-euro mark on the eve of the financial crisis. The second boom was clearly driven by the expansion of the “gray zone” - investment by Belgian residents in foreign funds not publicly distributed in Belgium (B-Ee), signaling the growing importance of “institutional investors” and, in particular, funds of funds. The latter period is also characterized by the emergence of a yellow zone - investment by foreigners in Belgian funds (E-B) - which probably benefits from the desire of foreign funds of funds to gain exposure to the Belgian market.

[215] NBB, Financial Account, https://stat.nbb.be.

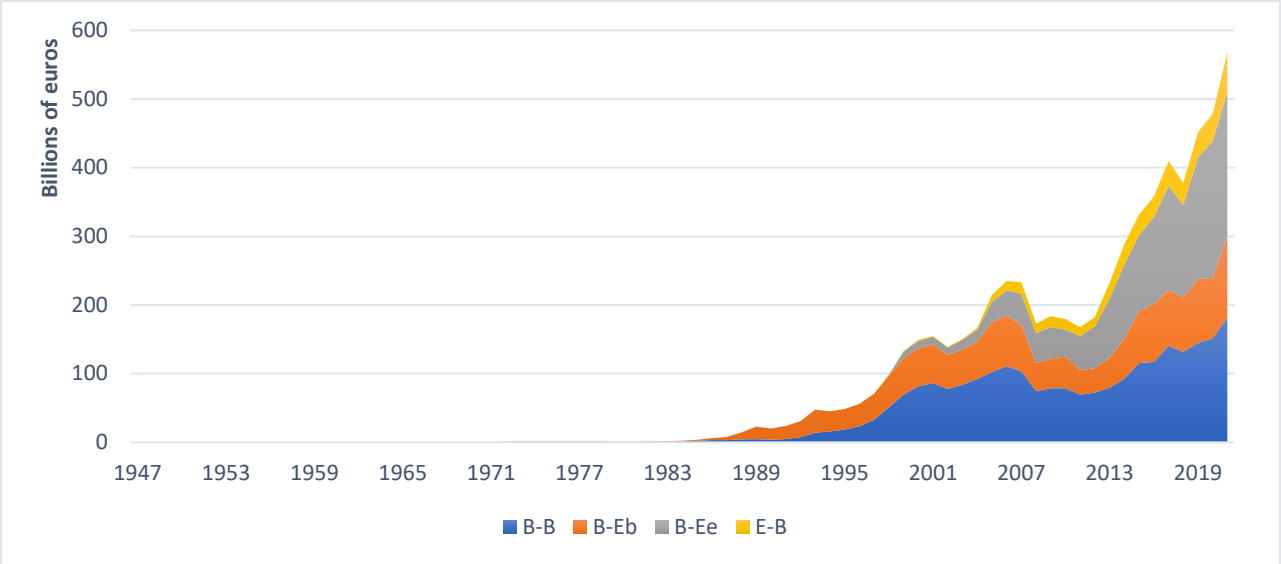


Figure 30 - Investment funds in Belgium (1947-2021)

In the course of this history, we have focused on the determinants of money flows *into* investment funds, at the expense of flows *out* of funds. However, to appreciate the macroeconomic role of investment funds, it is essential to look at the composition of their portfolios. In this respect, it would be ill-advised to rely on the labels defined by the industry's main players, and adopted as semi-official categories by FSMA, such as "equity funds", "bond funds", "mixed funds", etc. Indeed, these labels, conceived as part of commercial strategies, imperfectly and variably reflect the actual composition of investment portfolios. More reliable are the statistics published, for Belgian funds only, by the *Commission Bancaire* in its annual reports from 1957 to 1995: these show the fraction of investment portfolios invested in equities, bonds, cash[216] and shares in other funds (stacked areas in Figure 31), as well as the proportion of Belgian securities in these portfolios (black line in Figure 31). Figures for the period 1996-2021 are taken mainly from the NBB's financial accounts[217].

[216] This category refers to the money that investment funds hold as assets, in order to ensure "rollovers" (redemptions and sales of their own shares) or to temporize in a context of uncertainty.
[217] See the Appendix II for methodological details.

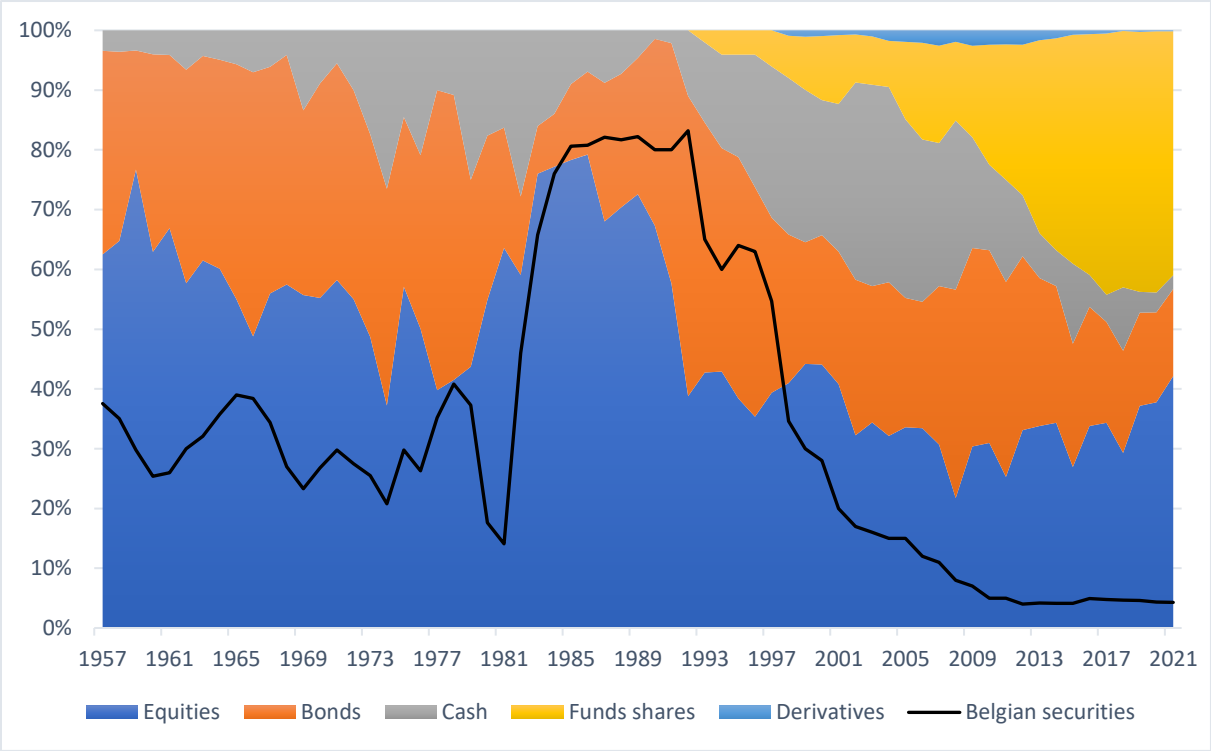


Figure 31 - Allocation of Belgian investment funds (1957-2021)

The key features of the different eras covered in this chapter can thus be found in a new form. At the outset, Belgian investment funds presented themselves as a new, "modern" technique open to the world: the first portfolios were mainly made up of foreign equities (in 1960, barely 25% were Belgian). The tax incentives contained in Royal Decree no. 15 of March 9, 1982[218] then radically redirected fund investments towards Belgian equities, which accounted for over 80% of portfolios in 1986. This did not last: the withdrawal of these incentives, and even more so the advent of the euro zone, encouraged the internationalization of investment policies. In 2021, Belgian equity funds devoted 0.85% of their portfolios to Belgian equities[219]. The different "fashions" of the 1990s and 2000s can also be seen in Figure 30: the "cash SICAVs" of the early 1990s (gray area), structured products in the form of bond funds until the crisis broke in 2007 (orange area), and funds of funds since then (yellow area).

This historical overview reveals the many factors that have affected the role of investment funds in Belgium's economic structure over the past 75 years. The singularities of this investment vehicle – "collective and open" - were present from the outset, and therefore cannot account for the sharp variations in the amounts raised. The strategies of banking groups, the dissemination of ideologies relating to the economic role of the State and tax competition

[218] As a reminder, Belgians can deduct from their tax base their investment in funds investing at least 60% of their portfolio in shares of Belgian companies (see above).
[219] BEAMA, Annual report, 2021.

between member countries of the single European market must, among other things, be added to the picture. These factors reveal the political dimension of the Belgian history of investment funds: the latter are established when the support of certain players overcomes the forces of opposition.

What were these opposing forces? This chapter has done little to "unearth" the controversies that have marked these 75 years of history. In addition to the classic pragmatic reasons (difficulties of access to archives, etc.), two issues explain this position. On the one hand, most of the controversies are confined to legal-technical considerations, such as the percentage of Belgian shares that a pension savings fund must hold to be eligible for tax relief, or the number of investors at which a fund's call for savings is considered "public". While not devoid of political implications, these discussions are "costly" to develop in this historical overview, and do not shake up trends in the amounts raised by funds. This is one of the fund's strengths: in the spirit of its founding father, the strategist M.-L. Gérard, it is generally presented as a "technical subject", and thus manages to avoid public debate.

On the other hand, the main resistance encountered by investment funds stems from certain conceptions of the financial system that then dominate the political arena. When they dominate, these conceptions are, by definition, little debated and contested. Such is the case with the post-war financing circuit: the investor-state mobilizes Belgian household savings, with the complicity of the country's major banks, to fuel growth in production - and hence in household income and savings (and so on). This Keynesian-inspired approach marginalizes private investment. Investment funds only came into being when this concept was superseded by the "neoliberal turn" mentioned in this chapter. The importance of private capital is becoming increasingly obvious, and is no longer a matter of debate: Deputy Prime Minister and Budget Minister G. Verhofstadt, then a fervent supporter of financial liberalization (hence his nickname "Baby Thatcher"), was able to move ahead with the privatization of social security without too much difficulty, by introducing a pension savings scheme[220]. This neoliberal approach, which marked the golden age of investment funds in Belgium, was overturned by the financial crisis of 2007. It then became questionable, paving the way for a re-regulation of the sector and a restriction of tax incentives. At this stage, however, it is difficult to identify the

[220] Symptomatic are the criticisms of this privatization, which arose after this neoliberal conception was challenged by the financial crisis and thus became contestable. Cf., among others, Cravatte (2013) and Provost (2017).

"new" conception of the financial system. The following chapter, which sheds light on the current state of the investment fund industry, may provide some insights in this respect.

While it does not do sufficient justice, for the two reasons outlined, to the opposition forces, this history does make visible - and therefore vulnerable - the forces that supported the emergence and growth of investment funds in Belgium. It is up to readers to assess the merits and weaknesses of these partisan forces, in order to imagine what the country's financial system could have been, and what it could become.

c. The Belgian fund market in 2021

To better understand the current situation - and possible future - of investment funds in Belgium, a more in-depth analysis of the "forces at play" is required. To what extent is the growing importance of institutional investors affecting the hold of banking groups on the fund market? How does the influence of the industry's trade association – the BEAMA – play out in practice, against a backdrop of internationalization of regulatory authorities and investment policies? What impact does the success of funds have on the management of Belgian companies whose shares they hold, and on social inequalities between households? How do the funds position themselves in relation to the "sustainable finance" movement in general, and the European green deal in particular? All these questions need to be addressed in order to establish a complete diagnosis and envisage future scenarios. They are the subject of the rest of this chapter.

This third section takes a closer look at the current situation of investment funds in Belgium. In particular, it draws on an international comparison to identify the specific features of the Belgian market as of December 31, 2021. The market appears highly concentrated, on both the demand and supply sides. The wealthiest households feed the funds offered by the handful of banking groups that dominate the country's financial landscape. Either "directly", that is generally on the advice of their banker. Or indirectly, via a supplementary pension or insurance contract.

A demand dominated by households, but on the way to institutionalization

We now propose to look at the origin of amounts invested by Belgian residents in investment funds, as at December 31, 2021. Households remain the main providers, which distinguishes Belgium from several of its European neighbors. More specifically, these are mainly households with the highest incomes and assets. At the same time, as we pointed out in

our historical overview, “institutional investors” account for a growing share of the amounts invested in funds by Belgians. Via the life insurance policies they offer, insurance companies are redirecting several billion euros (again from the wealthiest households) into investment funds. Via their supplementary pension plans, institutions for occupational retirement provision - known as “pension funds” - are doing the same, while being less attached to traditional banking groups. A number of non-financial companies also feed the funds through their tax optimization strategies, by investing their cash in them. In the final analysis, demand appears to be in a paradoxical position: both highly concentrated and under the sway of an even more concentrated supply.

In December 2021, for the first time, Belgium invests more than 100% of GDP in investment funds[221]. In this respect, it joins the group of European countries most keen on such funds, including France (81% of GDP), the UK (90%) and Germany (105%)[222]. But where it stands out the most is in the proportion of these investments borne by households (see Figure 32). Along with Spain and Italy, Belgium is the European country where households are responsible for the largest proportion of amounts invested in investment funds. By contrast, in France, only 12% of fund investments are made by households, with the bulk coming from “institutional investors” (mainly pension funds and insurance companies). What’s more, Belgian households devote the largest share of their financial assets to investment funds in Europe[223] . Only their American counterparts rival them. In the case of Luxembourg, and to a lesser extent the Netherlands, the share of households is outweighed by that of institutional investors, who benefit from a favorable regulatory environment (see above).

[221] NBB, Financial Account, https://stat.nbb.be. These figures do not include the adjustments mentioned in this chapter (in particular the fund-of-funds discount).
[222] Percentages calculated from World Bank GDP data and European Fund and Asset Management Association (EFAMA) “Factbook 2022” figures.
[223] Figures from EFAMA, “Factbook 2022”. They differ slightly from those in the NBB’s financial account, presented above, but point to the same trend.

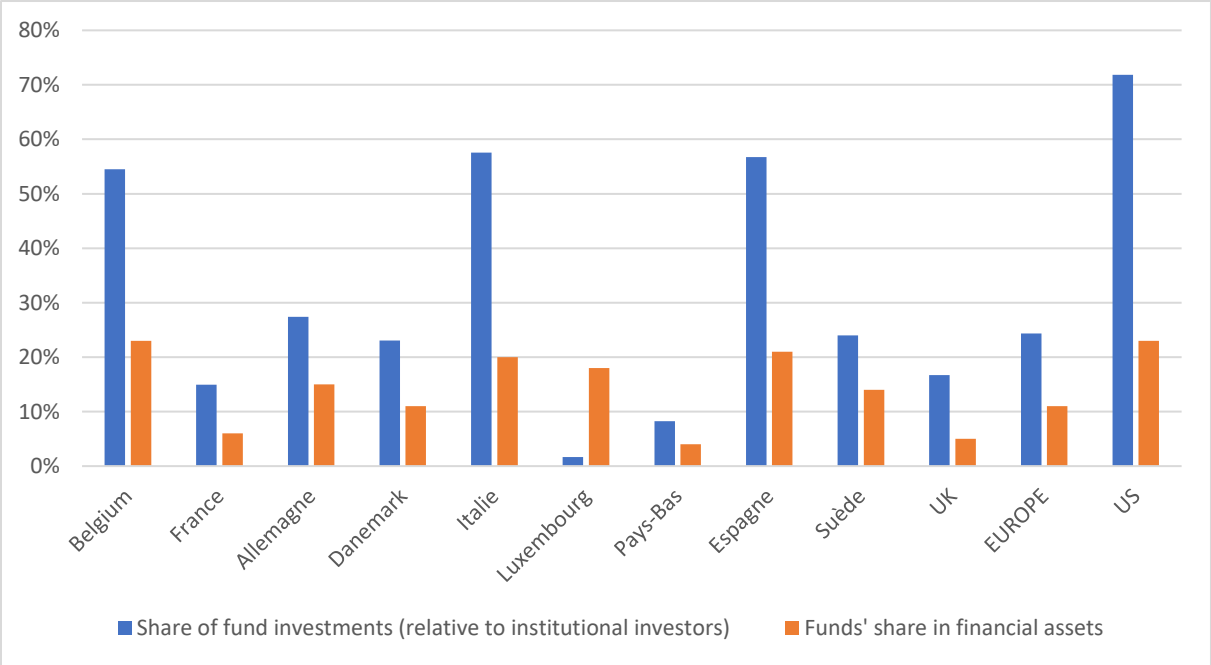


Figure 32 - Household involvement in the funds market (2022)

* Note: the "Europe" section of the chart covers 25 countries whose fund management associations are members of the European Fund and Asset Management Association (EFAMA): Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

What is behind this uniqueness? Is it the Belgians' own confidence in this product? When questioned on the subject, Marc Van de Gucht, Managing Director of the Belgian Asset Managers Association (BEAMA), does not put forward this line of thought, despite the fact that it is often celebrated by industry salespeople. Instead, he points to the supply side, which seems to dictate demand for funds:

This is linked to the major financial institutions, which have long marketed funds rather than direct lines [i.e. individually selected securities]. [...] The Belgian banks realized that it was easier to sell to customers, and then they launched thematic funds, structured funds (but less so now). Every day, they invent new funds with new ideas and so on. And it's easier to market. So, the explanation lies more in supply than demand. Because for the Belgian customer, a fund or direct lines... What does he know? If you ask the average person what the difference is between a fund and a direct line, they won't know how to answer. So it's more a question of supply than demand[224].

We will come back to this supply side later, to put these remarks into perspective.

Incidentally, it is difficult to pinpoint exactly which households are attracted to investment funds. This is because, unlike some of their foreign counterparts, neither FSMA nor

[224] Extract from an interview with Mr. Van de Gucht.

BEAMA publishes statistics in this respect. However, two databases can be used cautiously to identify certain socio-demographic characteristics of this public.

Firstly, the tax statistics published by Statbel: these cover the different types of income that make up the taxable base of Belgian individuals (professional, real estate and financial), according to their income class and place of residence. It thus appears that the proportion of taxpayers who declare - and therefore receive - income from financial assets (interest or dividends) increases with the amount of total income: while 0.91% of Belgians who earned less than 5,000 euros in 2020 declare income from financial assets, they represent 14.24% of those who earned more than 100,000 euros[225] (see Figure 33). Moreover, the share of income from financial assets in total individual income also increases with income. As a result, 72% of income from financial assets is earned by the 10% of the population with the highest income. In the Brussels Region, this rate climbs to 80%.

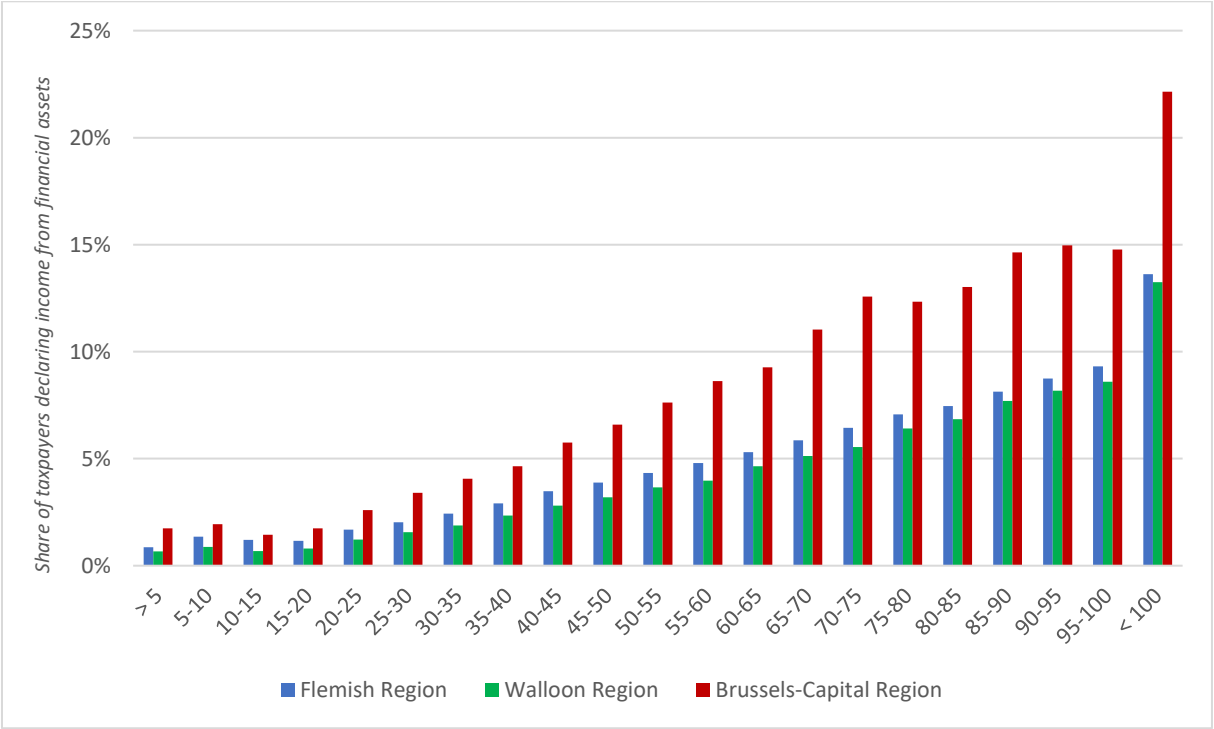


Figure 33 - Personal income of Belgians by income bracket and region (2020)

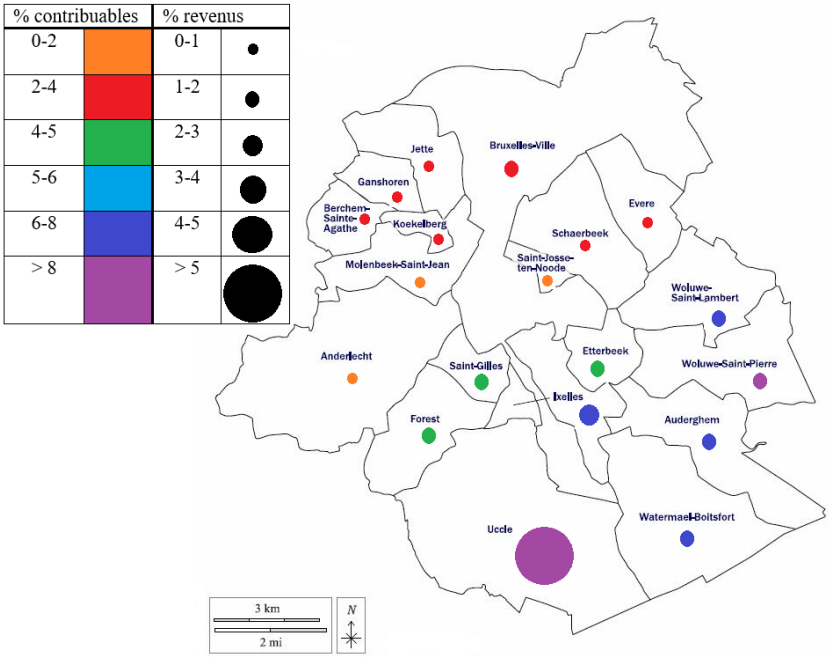
To link these statistics to the investment fund phenomenon, two assumptions are necessary. Firstly, given that all income from financial assets is assimilated here, households investing in investment funds must be socio-demographically close to those purchasing other financial products (e.g., "direct line" stocks and bonds). Although the wealthiest bank customers are offered less standardized solutions than investment funds, this first assumption

[225] Statbel, Tax Statistics, https://statbel.fgov.be.

is probably in line with actual trends[226]. On the other hand, taxed income from financial assets should reflect the investments of different income classes. However, this second assumption is violated: important investments do not generate any taxable income, such as the coveted "capitalization SICAV" (see above). These figures are therefore greatly underestimated, particularly for the highest income classes, who generally benefit from tax advice to minimize their tax base (Alstadsæter et al., 2019). It is therefore highly likely that more than 22% of the wealthiest inhabitants of Brussels receive income from financial assets. Subject to the validity of the first hypothesis, we can nevertheless deduce certain lessons: the households that feed the funds would be the wealthiest and would be over-represented in the Brussels Region. A breakdown of these tax statistics by municipality reveals marked inequalities: while the inhabitants of Saint-Josse-ten-Noode and Anderlecht receive very little in the way of income from financial assets, 8.5% of those in Uccle do (see Map 1).

[226] The second database used supports this hypothesis (see below).

Map 1. Income from financial assets in the Brussels Region (2020)



Secondly, the results of the Household Finance and Consumption Survey (HFCS) can be mobilized. While they are based on questionnaires distributed to a sample of households, and are therefore not free from the biases associated with this methodology (in particular, the under-representation of the wealthiest), they focus on Belgians' wealth (stock), rather than their income (flow), and therefore provide a more accurate picture of the scale of fund investment across social strata. Indeed, many investment funds do not distribute any income for several years, and therefore do not appear in Statbel's tax statistics. The HFCS survey involved four waves of questionnaires, between 2010 and 2023. When it comes to investment funds, the results consistently reveal that the wealthiest 20% hold a far greater proportion of their wealth in the form of funds than the rest of the population[227]. For example, in 2017, while the most disadvantaged social stratum invested virtually nothing in funds, the wealthiest 20% placed 28% of their financial assets in them (see Figure 34). This trend has since been reinforced: in 2022, they invested over a third of their financial assets in funds (De Sola Perea & Van Belle, 2022). It also appears that other financial products - bonds and equities - are following the same logic, which supports the hypothesis posed above.

[227] The survey results for Belgium are presented in a series of publications (Du Caju, 2013, 2016; De Sola Perea, 2020; De Sola Perea & Van Belle, 2022).

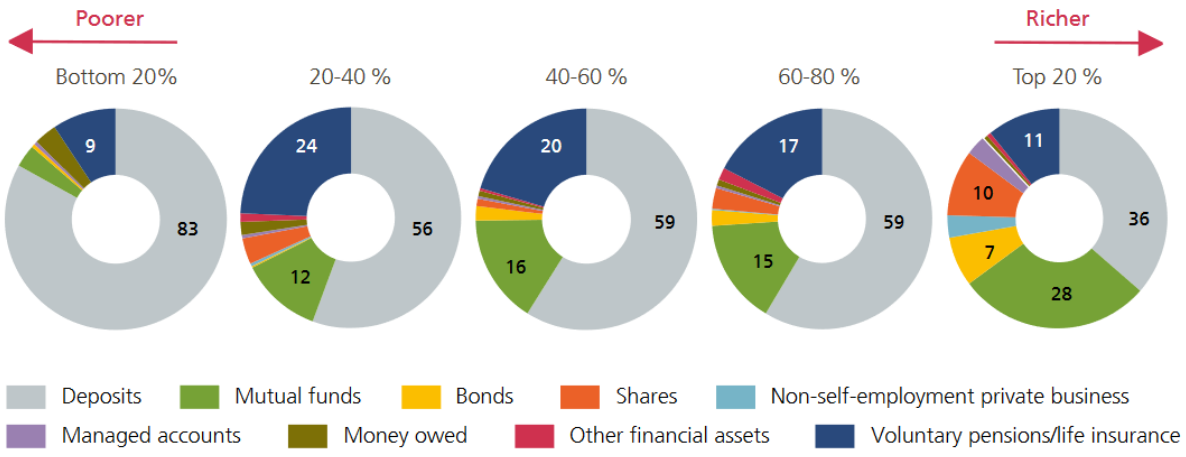


Figure 34 - Financial asset ownership by wealth quintile (2017)

Despite this exceptional involvement of (some) households, Belgium is not immune to the global trend towards the institutionalization of investment funds, i.e. the growing importance of "institutional investors". As we saw above, the share of fund investments originating from households fell from 87.6% to 54.7% between 1998 and 2021. Among these institutional investors, insurance companies were the first to assume a significant role in the demand for investment funds, thanks to the success of branch 23 at the turn of the 2000s. In December 2021, they invested 68.6 billion euros in funds[228]. The bulk of these investments come from "life insurance": as opposed to non-life insurance (health, motor, fire, civil liability, etc.), these products function as investment vehicles, with the premiums paid constituting capital to be invested. At the policy's maturity (triggered by reaching a certain age or by death), the return is paid out to the saver (or her heirs). Unlike non-life insurance products, which are mainly distributed by brokers, life insurance products are massively sold via bank branches: in 2021, "bancassurance" accounted for 53.4% of premium income from "branch 23" contracts[229]. Beyond the distribution network, the life insurance sector is dominated by four banking groups, which have together held over 50% of market share since the late 1990s: AG Insurance (formerly Fortis), KBC, NN Investment Partners (associated with ING) and Belfius (formerly Dexia and Les AP)[230]. This situation is the result of a development strategy identified at the outset by the NBB:

The expansion of bancassurance, following on from the marketing of shares [in investment funds], clearly reflects a strategic rationale on the part of financial intermediaries. While the fabric of Belgian companies, made up mainly of SMEs, makes it more difficult for credit institutions to develop large-scale investment banking operations, the high savings rate of Belgian households and the demand for

[228] NBB, Financial Account, https://stat.nbb.be.
[229] Assuralia, "Canaux de distribution de l'assurance. Figures for 2021", www.assuralia.be.
[230] Assuralia, "Key figures and main results for the Belgian insurance industry in 2021", www.assuralia.be.

diversification expressed by investors have provided favorable anchor points for deploying financial asset management and wealth management activities[231].

This is why banks have invested much more in life insurance than in non-life insurance. As far as the investment fund market is concerned, the importance of bancassurance means that institutionalization does not necessarily rhyme with deconcentration: money invested in funds by insurance companies largely benefits the management companies of banking groups. Thus, for example, AG Insurance, the leading life insurer (27.2% market share in 2021), promotes three branch 23 "formulas" – "AG Fund+ Dynamic", "Neutral" and "Stability" - which are linked to three funds labeled "AG Life Portfolio", but the latter redirect 100% of the amounts (around 1.5 billion euros) to the Luxembourg fund Agalux Pension Fund managed by BNP Paribas[232]. Other bancassurance companies often adopt a similar strategy: they sell an insurance contract linked to an "in-house fund", which turns out to be a fund of funds benefiting the group's management company. However, more open formulas also exist, where the saver can choose the funds that make up the in-house fund, from a pre-selection. In all cases, the bancassurance company benefits from a share of the management fees, if only to remunerate this preselection.

Compared with other European countries, Belgian insurance companies devote relatively little of their assets to investment funds: 18% of their balance sheet, compared with a European average of 32%[233]. However, this singularity could soon come to an end. Indeed, the proportion of funds in insurance company assets fell in the wake of the crisis, from 14.7% to 8% between 2006 and 2012[234] - as the restructuring of ailing banking groups orchestrated and supported by public authorities involved cleaning up balance sheets (Vincent, 2013). Since then, however, the proportion of funds has risen steadily. Investment in funds is even encouraged by recent regulations, which prefer this standardized product to more exotic instruments (Gouden & de Thysebaert, 2014).

To conclude this section on insurance, we can look at the profile of the individuals who take out these insurance policies, and who indirectly hold many investment fund shares. No precise and current statistics are published on this subject. That said, until 2013, Statbel published some figures on the tax benefits granted to Belgians investing in "long-term savings" life insurance. While they do not reflect the total volume invested in life insurance, these data -

[231] NBB, Annual Report, 2000.
[232] Annual accounts of the funds concerned.
[233] Figures from EFAMA, "Factbook 2022".
[234] NBB, Financial Account, https://stat.nbb.be.

when compared with population statistics - do reveal certain characteristics of the Belgians whose savings feed life insurance companies: Flemish men in their final years of life (aged 48-67) are the target audience (see Figure 35). The Brussels region is much less important here than in the distribution of income from financial assets (cf. Figure 33); this is because the amounts of long-term savings eligible for tax benefits are capped, which prevents the Brussels economic elite from significantly raising the regional average. This reasoning is supported by the results of the HFCS presented earlier: while the participation rate increases with wealth[235], the share of life insurance in financial assets is lower for the wealthiest 20% than for the middle classes (see Figure 34).

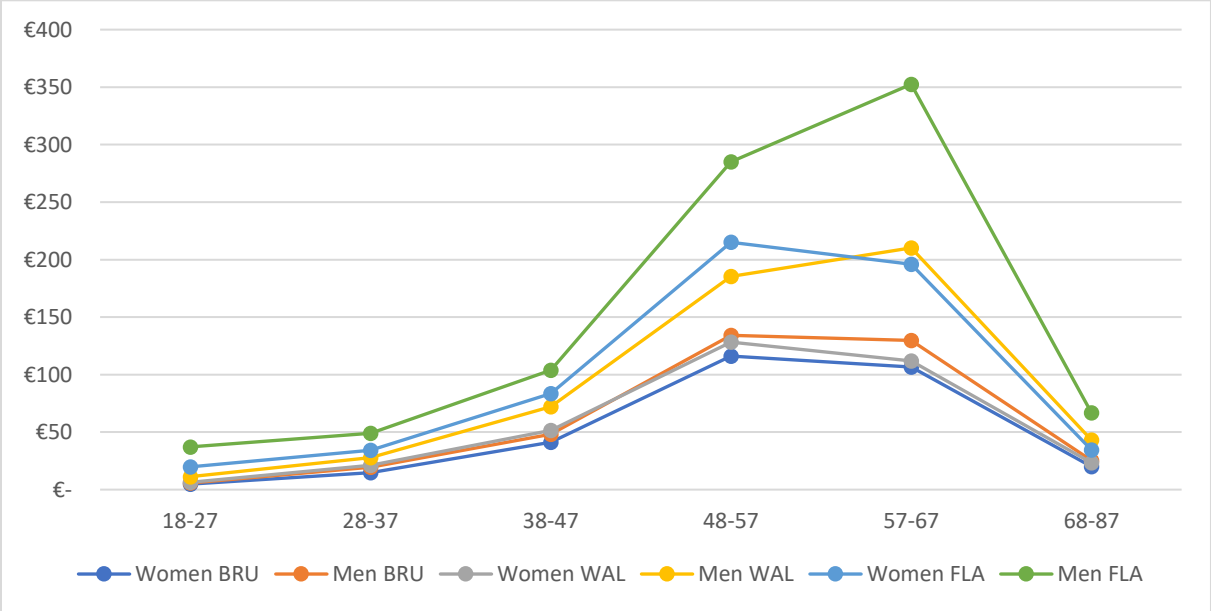


Figure 35 - Average annual investment in "long-term savings" life insurance by Belgians (2013)

After insurance companies, pension funds are the main institutional investors on the Belgian investment fund market. As mentioned above, these funds - officially known as "Institutions for Occupational Retirement Provision" (IORPs) - are fed by contributions paid in the course of employment (at sector or company level), with a view to providing employees with a supplementary pension. In 2021, IORPs accounted for just 19% of the total volume of these contributions[236], because most pension plans prefer the security of the "Branche 21" contract, through which an insurance company guarantees a minimum rate of return (Ghailani & Peña-Casas, 2018). What further limits the weight of IORPs in the economy is the structure of these supplementary pensions in Belgium. In contrast to the Dutch case, this "second pillar"

[235] In 2010, less than 20% of the poorest people took out life insurance, compared with 60% of the richest (Du Caju, 2013: 50).
[236] FSMA, "Sector overview: 'The second pension pillar in pictures'", 2021.

is mainly fed by the better-off (De Deken, 2018). While the majority of workers are involved, the amounts paid out differ greatly according to the employee's hierarchical position and gender. The "acquired reserve" at the end of a career, i.e. the capital to which an employee is entitled, averages 218 euros for the lowest income bracket, compared with 376,520 for the highest; in parallel, it averages 36,429 euros for a woman, compared with 73,716 for a man[237].

The majority of Belgians are therefore only marginally involved in this supplementary pension system, let alone in the IORPs. As a result, in 2021, the latter managed "barely" 46 billion euros in assets, or around 9% of GDP, compared with 13.5% in Spain, 19.5% in Germany and over 230% in the Netherlands, the birthplace of pension funds[238]. Despite this relative marginality in the national economic landscape, Belgian IORPs are of interest to us because they redirect the bulk of these 46 billion euros into investment funds. In fact, the country is unique in this respect: IORPs invest 79% of their assets in investment funds, compared with a European average of 44%[239]. The main reason for this Belgian uniqueness lies in the way IORPs are governed: even more so since the adoption of the "Vandenbroucke Law" of April 28, 2003 (named after the then Minister of Employment and Pensions, the Flemish socialist Frank Vandenbroucke)[240], trade unions and employers' organizations are in the driving seat. *De facto,* the latter have more influence upstream in the investment chain than downstream: they negotiate the contribution rates granted by the employer, but delegate investment decisions to a financial company (De Deken, 2011). This delegation generally takes the form of purchases of investment fund shares. Thus, for example, in December 2021, the Solvay pension fund will invest its 380 million euros of assets in investment funds offered by the bank Degroof Petercam, recently absorbed by the Crédit Agricole group (257 million euros), by the management company Candriam, formerly Dexia Asset Management (70 million euros), and by Crédit Agricole's main management company, Amundi (50 million euros)[241].

We have seen that the "second pillar" of the Belgian pension system is characterized by a high degree of concentration downstream, at the level of the beneficiaries of the invested capital. The same is true upstream, at the level of the IORPs and investment funds collecting the contributions. Of the 169 IORPs registered with FSMA, 11 hold 50% of the assets (see

[237] FSMA, "Sector overview: 'The second pension pillar in pictures'", 2021. For an analysis of these inequalities, see Cour des Comptes (2020) and Peeters and De Tavernier (2014).
[238] Figures from the European Central Bank (ECB), compared with national GDPs published by the World Bank.
[239] Figures from EFAMA, "Factbook 2022". See above for details of countries included in the European average.
[240] Loi du 28 avril 2003 relative aux pensions complémentaires et au régime fiscal de celles-ci et de certains avantages complémentaires en matière de sécurité sociale (*Moniteur belge*, May 15, 2003).
[241] Fonds de pension Solvay Belgique, Annual account, 2021.

Table 6)[242]. These behemoths include four multinationals that have recently merged their European pension funds: Johnson & Johnson (2015), BP (2016), ExxonMobil (2017) and Aon (2018). These major groups were prompted to do so by the European "IORP I and II" directives[243] which, like the UCITS directives, aim to encourage the Europeanization of pension funds. Above all, they have succumbed to the seductive efforts of the public authorities: exemption from withholding tax for foreign beneficiaries, minimal regulation by the FSMA and streamlined administrative procedures. The Flemish government body "Flanders Investment & Trade" regularly highlights these advantages, which have enabled it to attract a number of pension funds from the Netherlands, including those of the four multinationals mentioned above (now based in Beerse, Ghent and Diegem respectively). "The Belgian framework is unique in its flexibility. Rather than focusing on compliance to the letter, the Belgian regulator takes a more pragmatic approach that focuses on results: if you put regulations into practice consistently and prudently, you're good to go", writes Flanders Investment & Trade[244].

	IORP	**Assets under management**	**Proportion of assets invested in funds**	**Effective management company(ies)**
1	ExxonMobil OFP	4.000.861.518,24 €	99,21 %	BlackRock, ExxonMobil IM, Horsley Bridge
2	J & J Pension Fund	3.892.493.541,00 €	68,42 %	J & J IM, [unknown]
3	ENGIE (Elgabel, PensioBel, Powerbel, Enerbel and Caisse de pensions Tractebel)	3.744.747.307,68 €	97,01 %	Contassur→ SICAV Esperides (Lux)→ [unknown]
4	KBC Pension Fund	2.920.071.086,44 €	96,05 %	KBC AM
5	BP Pensioenfonds	2.026.400.546,00 €	47,12 %	BlackRock, BNP AM, Towers Watson
6	Metal OFP pension fund (CP metal, mechanical and electrical engineering)	1.852.981.885,00 €	21,55 %	DWS, Degroof Petercam AM (DP AM), AXA, Cohen & Steers, Northern Trust, PMV, Invest for Jobs
7	Nokia Bell Pensioenfonds	1.340.310.693,00 €	70,27 %	Capital Group, Robeco, BlackRock

[242] FSMA, "The institutions for occupational retirement provision sector. Reporting for the 2021 financial year".
[243] Directive 2003/41/EC of the European Parliament and of the Council of June 3, 2003 on the activities and supervision of institutions for occupational retirement provision (*Official Journal of the European Union*, L 235/10, September 23, 2003); Directive 2016/2341 of the European Parliament and of the Council of December 14, 2016 on the activities and supervision of institutions for occupational retirement provision (IORPs) (*Official Journal of the European Union*, L 354/37, December 23, 2016).
[244] Flanders Investment & Trade, "Aon (UK) Moves Dutch Pension Funds to Belgium", www.flandersinvestmentandtrade.com). See also Flanders Investment & Trade, "Finding a Home for your Pension Plan in Flanders", www.flandersinvestmentandtrade.com.

8	Ogeo Fund (1er pillar of public institutions)	1.294.659.152,00 €	72,50 %	Candriam, DPAM, KBC AM, BNP AM
9	United Pensions (Aon, Dow Corning, Saint-Gobain, etc.)	1.096.000.000,00 €	96,09 %	Aon Investments Limited
10	Pensioenfonds UZ Gent - UGent (1er and 3e pillars)	1.081.686.357,00 €	97,78 %	Vanguard, DPAM, Goldman Sachs Asset Management, PIMCO, KBC AM
11	ING Belgium supplementary pensions	910.995.952,55 €	93,22 %	NN Investment Partners (now Goldman Sachs Asset Management), BlackRock, Schroders
12	Proximus	908.600.000,00 €	95,32 %	Alliance Bernstein, Vanguard, DPAM
13	Pensio B (construction workers)	881.791.252,00 €	52,73 %	KBC AM, DP AM, Candriam, DG Infra Yield, PMV, Pertinea, AXA IM, State Street Global Advisors, Groupama AM, DNCA, Natixis/H2O, Pimco, BNP IP, Allianz Belgium, Schelcher, Schroders, Tikehau, Quaero en Patrizia
14	Hydralis (Vivaqua)	877.989.613,00 €	21,71 %	Candriam, Aviva Investors, Groupama AM, NN Investment Partners (now Goldman Sachs Asset Management), BNP AM, DPAM, JP Morgan
15	Sanofi European Pension Fund	834.318.207,00 €	49,53 %	Vanguard, Oddo AM, TT International, Lazard AM

Table 6 - Main occupational pension institutions under Belgian law (2021)

Unlike the other IORPs that make up the "top 15", the pension funds of these multinationals have internalized (part of) their asset management, and therefore make less use of traditional asset management companies. They do, however, invest massively in investment funds, but their balance sheets do not always specify the details of these investments (this is one of the side-effects of the administrative simplification touted by the public authorities). What's more, it is clear that the money generated by IORPs systematically passes into the hands of investment fund managers, either directly, through a management mandate awarded by the IORP, or indirectly, through the purchase of shares in these funds (cf. Table 6). Compared to the other components of demand on the Belgian market, IORPs are less captive to the country's banking groups: unlike households and insurance companies, they enjoy the market power and autonomy to put Belgian investment funds in competition with foreign giants (BlackRock, Vanguard, Goldman Sachs, etc.). They are thus a vector for the globalization of the Belgian

investment fund market, but - as the source of 7.10% of the amounts invested in funds by Belgium[245] - this leverage remains limited.

Finally, the last player to make a significant contribution to investment funds in Belgium is non-financial companies. This contribution is recent (cf. above), but in December 2021 it represented 23 billion euros, or 4.5% of the amounts invested in funds by Belgian residents[246]. The attractiveness of investment funds for non-financial companies is largely dependent on a special tax regime - which Vincent Van Peteghem, Minister of Finance in the De Croo government, threatened to undermine (see below)[247]. This scheme allows Belgian companies to benefit from a complete exemption on income generated by a special investment fund known as the "SICAV RDT". If this tax niche eventually disappears, the contribution of Belgian non-financial companies could shrink considerably. According to BEAMA - which is actively lobbying for the extension of this regime (see below) - of the 23 billion euros invested by non-financial companies, 8 are invested in a SICAV RDT and therefore threatened by the proposed reform[248]. Although NBB data are not detailed enough to confirm this with certainty, historical data suggests that the remaining 15 billion euros are mainly invested in "private investment funds", i.e. funds that are not accessible to everyone (but only to institutional investors, for example).

There is no publicly available data on the profile of these non-financial fund feeder companies. Neither RDT SICAVs nor "private funds" are required to publish the list of members of their general meetings (i.e. the fund's shareholders). However, an industry professional recently interviewed by *L'Écho* about a substitute for RDT SICAVs stated that "requests come mainly from management companies, consultants, holders of liberal professions (doctors, lawyers, etc.) and SMEs"[249]. In any case, unlike IORPs, these non-financial companies do not shake the concentration of the Belgian investment fund market: advised by their banker, they are directed towards "in-house products", as illustrated by the case of RDT SICAVs, dominated by funds from KBC, BNP, Belfius and Degroof Petercam[250].

[245] NBB, Financial Account, https://stat.nbb.be.
[246] *Ibid*.
[247] *L'Écho*, January 20, 2023.
[248] *L'Écho*, March 8, 2023.
[249] *L'Écho*, March 10, 2023.
[250] Taking only those funds whose label includes the words "RDT", KBC funds raised 965 million euros, Degroof 594, BNP 515 and Belfius 407. By way of comparison, using the same selection criteria, Crelan's funds collected 55 million euros and those of private bank Delen 18.

The NBB's statistics may suggest that we have omitted an essential category of demand for investment funds, namely the funds themselves. Responsible for over 19% of fund investments, "funds of funds" - i.e., funds whose portfolios are mainly made up of shares in other funds - would thus be the main driver of Belgian demand after households (cf. Figure 36). As explained above, this interpretation inflates the importance of the sector through "double counting": certain investments are counted once when they are invested by a Belgian resident - household, insurance company, pension fund or non-financial company - in a Belgian "fund of funds", and a second time when they are invested by the latter in another fund. Rather than a component of demand, these funds of funds should therefore be seen as a feature of Belgian supply. It is to this second aspect of the Belgian market that the rest of this section is devoted.

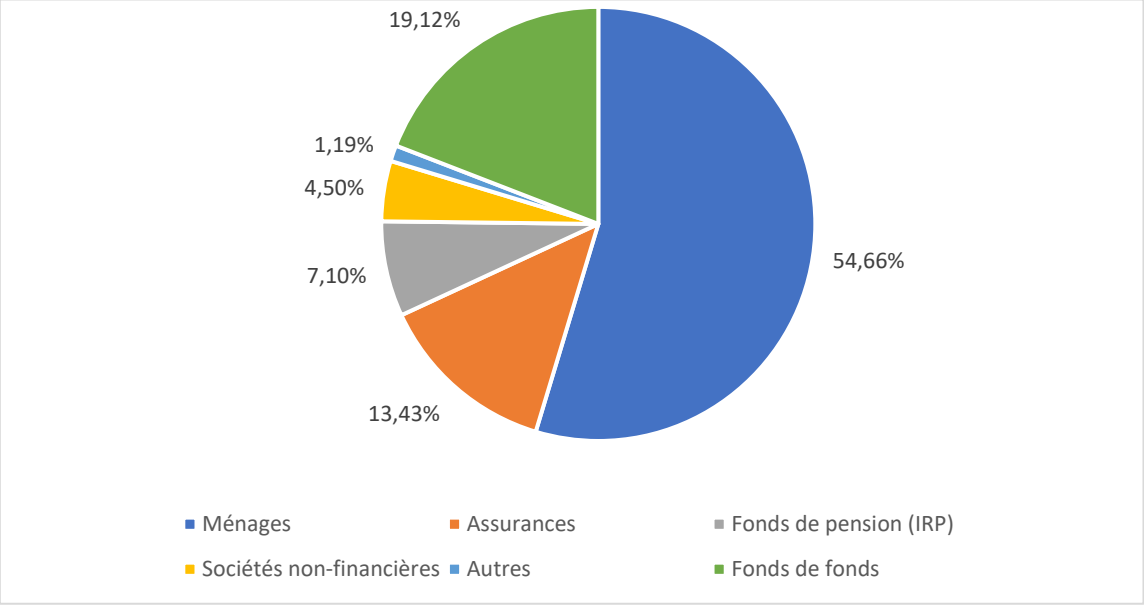


Figure 36 - Belgian demand for investment funds (2021)

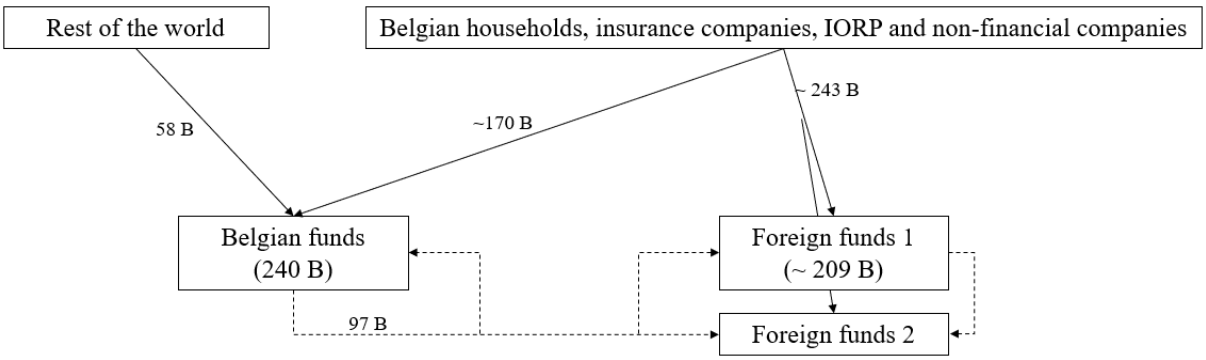
A supply in the hands of major groups

In this second part, we take a look at the beneficiary funds of these Belgian investments. Who are they? And what do they do with this money? Answer: there aren't many, and they're all doing the same thing. The overwhelming majority of Belgian and foreign funds that collect the billions of euros invested by Belgian households and companies are managed by a handful of major banking groups: KBC, BNP, Belfius, ING, Crédit Agricole (since its acquisition of Degroof Petercam) and Ackermans & van Haaren (via its control of Bank Delen). Their fund management is broadly similar: the acquisition of a portfolio of securities, which is globally diversified and follows "market trends". The penetration of the Belgian market by the world's leading fund managers - BlackRock, Vanguard, JP Morgan, etc. - remains very limited, with

only a few million euros coming from the IORPs and "funds of funds" of the groups that dominate Belgium.

Data and comments on the Belgian supply of investment funds are rarer than those on demand. BEAMA's reports merely celebrate the funds that are in vogue, such as "mixed funds" (composed of equities and bonds) or "sustainable funds" (see below). As for the statistics published by the NBB and FSMA, they provide information on the nationality of the funds, but are silent on the identity of their distributors and managers. From a methodological point of view, this section is therefore based more on interviews with industry professionals, as well as on analysis of the annual accounts of numerous funds. To clarify the situation, Diagram 3 traces the movement of money invested in the Belgian investment fund market. In December 2021, Belgian demand (top right) is investing 413 billion euros in funds[251], of which around 170 billion euros in Belgian funds and 243 billion euros in foreign funds. Together with the 58 billion euros from foreign investors, Belgian funds account for 240 billion euros. Although it is careful to preserve the confidentiality of fund managers, FSMA recently reported that, during the Covid crisis, it had "maintained a daily dialogue with the six main management companies, which manage almost 90% of the assets of Belgian public [funds]"[252], suggesting a highly concentrated supply of Belgian funds.

Diagram 3. Structure of the Belgian investment fund market (2021)



Based on the list of Belgian public funds maintained by the FSMA and the annual reports of these investment funds, it is possible to put names to this "top 6" (see Table 7). Four companies stand out, together holding three quarters of the Belgian fund market. The first two, KBC AM and BNP AM, are part of major banking groups. The third, Candriam, was spun off from the Dexia group in the wake of the financial crisis (Vincent, 2012), but its role on the

[251] This amount does not include the share from funds of funds, in order to avoid the double counting mentioned above.
[252] FSMA, Annual Report, 2020: 40. 88.5% of Belgian funds are public funds.

Belgian market remains largely dependent on the Belfius distribution networks, which account for 98% of amounts raised. Moreover, it could be threatened by the Belfius group's in-house management company, Belfius Investment Partners, which was set up in 2016 to regain control over this lucrative business. Thus, for example, since February 1st 2022, the €3 billion "Belfius Sustainable" fund is no longer managed by Candriam, but by Belfius Investment Partners. In fourth place is the management company of Belgium's leading "private bank", Degroof Petercam, which was recently absorbed by the Crédit Agricole group[253]. It is ahead of another private bank, Delen Private Bank, which operates mainly in Flanders and is owned by the Ackermans & van Haaren holding. Finally, in December 2021, NN Investment Partners gains a foothold in the Belgian market through the management of ING's "Star Fund" pension savings fund, worth 4.9 billion euros alone. In April 2022, it was acquired by Goldman Sachs Asset Management, leading ING to bring the management of this fund "in-house"; NN Investment Partners thus disappeared from the 2022 edition of the "top 6" in favor of ING Solutions Investment Management[254].

	Management company	**Assets under management**	**Proportion of total**	**Cumulative proportion**
1	KBC Asset Management	75.245.662.344,44 €	35,42 %	35,42 %
2	BNP Asset Management	37.287.313.695,70 €	17,55 %	52,97 %
3	Candriam	25.604.153.164,73 €	12,05 %	65,02 %
4	Degroof Petercam Asset Management (including Arvestar)	19.659.325.090,97 €	9,25 %	74,27 %
5	Capfi Delen Asset Management	7.551.336.426,18 €	3,55 %	77,82 %
6	NN Investment Partners (now Goldman Sachs Asset Management)	5.023.198.609,95 €	2,36 %	80,19 %

Table 7 - Leading fund management companies under Belgian law (2021)

The 240 billion euros invested in Belgian investment funds are largely managed by a handful of companies. What then determines the assets in which these billions are invested? In the opinion of the BEAMA director quoted above, banks have a great deal of leeway in constructing funds, as customers are generally unable to distinguish between types of financial products. A portfolio manager interviewed as part of this research agrees: "All our studies show

[253] *L'Écho*, August 4, 2023.
[254] By taking over management of the "Star Fund", ING Solutions Investment Management has now exceeded 8 billion euros in assets under management, which is likely to relegate Capfi Delen AM to sixth place.

that the variable most correlated with the amounts invested in a fund is not its historical performance, but the marketing effort deployed"[255]. In other words, fund investment policy is determined more by the choice of asset managers than by "consumer" preferences. It therefore generally follows "market trends": in the face of low interest rates, it has massively favored equities, which in December 2021 will account for over 40% of Belgian fund portfolios (see Figure 37). Among these equities, Belgian stocks enjoy far less preferential treatment than they used to: they account for just 0.85% of equity fund portfolios[256]. As a recent report by the European Central Bank (ECB) welcomes, investment fund managers are less and less victims of "home bias" (Molestina Vivar et al., 2020); in their quest for diversification, they reason on a global scale.

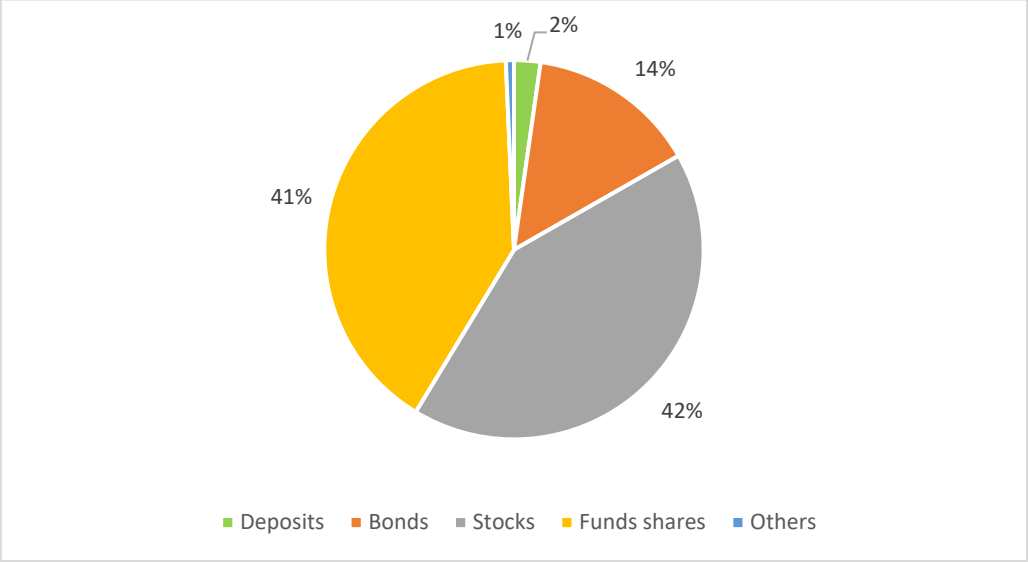


Figure 37 - Portfolio of Belgian investment funds (2021)

Along with stocks, investment funds receive the bulk of the money invested in funds. As mentioned above, this "fund of funds" structure offers several advantages, including lower costs for management companies (Sokołowska, 2016). It permeates the Belgian market, as Belgian funds redirect 97 of the 240 billion euros entrusted to them to other funds (see Diagram 3). To identify the main beneficiaries of this 97 billion, let's look at three of Belgium's leading funds of funds: BNPPF Private (19.2 billion invested in funds), KBC's Sivek (2.9 billion) and Belfius Fullinvest (2.2 billion). Above all, it appears that the bulk of the resources are destined for funds within the same group (see Table 8). Several billion euros remain in Belgian funds, while others are destined for the banks' Luxembourg funds (labeled "Foreign funds 1" in Diagram 3). In this way, the money remains under control and does not feed into the results of

[255] Extract from an interview with an investment fund manager.
[256] BEAMA, Annual report, 2021.

competing companies. The remaining balance is invested with some of the world's leading investment fund managers: BlackRock, Amundi, Robeco and Schroders.

Fund of funds	**1st destination**	**2nd destination**	**3rd destination**	**4th destination**
BNPPF Private	BNP (54.5%)	Robeco (10%)	BlackRock (3.9%)	Amundi (3.2%)
Sivek (KBC)	KBC (99.2%)	JP Morgan (0.9%)	BlackRock (0.4%)	BNP (0.4%)
Belfius Fullinvest	Candriam (94.1%)	BlackRock (2.3%)	Schroders (2.2%)	Amundi (1%)

Table 8 - Examples of investments from Belgian funds of funds

It is now time to analyze the second component of the Belgian investment fund market, namely foreign funds. In December 2021, Belgian households and companies were investing 328 billion euros in foreign funds. We have seen that part of this amount comes from Belgian funds of funds belonging to the country's banking groups (cf. Diagram 3). But what about the remaining billions? How are these funds offered on the Belgian market? For the most part, they are offered via the branch networks of the major banks, in exactly the same way as Belgian funds. In fact, the main players on the Belgian market also offer funds that they have registered in the Grand Duchy of Luxembourg via a subsidiary[257]. These funds, born in Luxembourg but mainly sold in Belgium, are referred to as "Foreign funds 1" in diagram 3: they are similar to their Belgian counterparts and *publicly* distributed on Belgian territory. This latter quality motivates the FSMA to keep a register, which makes it possible to identify them. However, as these foreign funds are often distributed in countries other than Belgium, the amounts they raise exceed the investment of Belgian residents - particularly in the case of BNP funds, which are sold in several European countries. While the figures in Table 9 do not reflect Belgian involvement in these funds, they do illustrate the influence of the "top 6" in this second area of supply.

	Management company	**Assets**
1	BNP Asset Management	98,582,840,709.68 euros
2	Candriam	41,511,533,737.00 euros
3	Capfi Delen Asset Management	23,133,497,316.66 euros
4	KBC Asset Management	13,566,670,861.63 euros
5	ING Solutions Investment Management	10,980,198,292.98 euros
6	Degroof Petercam Asset Management	8,874,562,679.83 euros

Table 9 - Assets of foreign funds distributed in Belgium (2021)

[257] Recently, they no longer even need to mobilize a subsidiary: the recent European "UCITS" directives allow a Belgian management company to set up and manage a Luxembourg fund - and *vice versa* (see above).

Of the 209 billion euros that this type of foreign fund collects from Belgian residents, a large proportion passes through the hands of the same banking groups. They sell them via their branch network and manage the bulk of their portfolios from the same offices in Brussels as Belgian funds. This is why BEAMA boasts on its website that the amount "managed from Belgium" is higher than that invested in Belgian funds[258]. Moreover, its Director does not consider these Luxembourg funds to be "truly foreign": "When I say 'Belgian funds', for me it's 'Belgian-Luxembourgish'. For me, it's just the registration that's Luxembourgish, but it may even be managed here at Belgian level. A lot of Luxembourg funds are managed here, because it's KBC Asset Management, BNP and so on. It's just the 'Luxembourg' label because, tax-wise, it's easier"[259]. This quote from a representative of Belgian industry interests reveals the "naturalness" acquired by the strategies of the country's major banks: it is accepted that they take advantage of Luxembourg's accommodations to build up the Belgian market supply[260].

Admittedly, these Luxembourg funds, like their Belgian counterparts, are sometimes funds of funds; they therefore redirect part of the amounts collected to other foreign funds that are managed by market leaders and that are also fed by the "institutional" component of Belgian demand (cf. "Foreign funds 2" in Diagram 3). But these transfers remain limited, and are mainly destined for funds within the same group. For example, the 223.4-million-euro portfolio of the Luxembourg fund "Multi-Asset Thematic" sold by BNP in Belgium is almost exclusively made up of shares in other funds, but 89.4% of these are BNP funds. The internationalization of the Belgian supply is therefore relative: the overwhelming majority of funds marketed in the country are sold and managed by a handful of institutions. However long the chain linking the fund distributor to its actual manager, the money mostly stays with the same groups. In this respect, the Director of BEAMA is explicit:

> Most Belgian financial institutions offer *their* products, *their* funds, etc. Because they have *their* management company, they set up the products and they manage the products. It's a machinery. They sell these funds all the time, and it's easy for them [...]. Why would they be inclined to promote direct-line investing or open architecture [i.e., distributing funds from other management companies]? Once it's set up, it's easier: it remains intra-group[261].

The grip of this machinery is certainly put to the test by the growing importance in Belgian demand of insurance and IORPs, which are in a better position to put the "top 6" funds in competition with their foreign rivals. All the more so as the UCITS directives are working to

[258] BEAMA, "Key figures in asset management", www.beama.be.
[259] Extract from an interview with Mr. Van de Gucht.
[260] On the current state of these accommodations, see above.
[261] Extract from an interview with Mr. Van de Gucht.

intensify this competition between funds on a European scale (see above). So far, however, these counter-movements have not fundamentally shaken the concentrated structure of the Belgian investment fund market. Similarly, recent tax incentives for funds investing in unlisted shares (private equity) do not seem likely to change the situation, as the asset managers of the country's leading banks already offer this type of product. As long as Belgian residents turn mainly to their banks to manage their savings, the major groups seem untouchable. The main threat to their dominance could be a purchase, agreed or not, of the group's management company by another, even larger group. The acquisition of NN Investment Partners, the asset management company associated with the ING Group, in April 2022 by the Goldman Sachs Group, and that of the private bank Degroof Petercam in August 2023 by the Crédit Agricole Group, are part of this trend towards greater concentration in the sector, albeit on a global scale.

d. Investment funds in Belgian society

This fourth and final section aims to report on the main socio-economic impacts of investment funds beyond the strictly defined sector. Without claiming to exhaust these impacts, it targets four areas of social life often addressed in socio-economic literature. Firstly, by identifying the main beneficiaries of investment fund income, the aim is to draw some conclusions about the relationship between this investment vehicle and wealth inequalities between Belgians. Given the complexity of the subject and the paucity of available data, no definitive conclusions can be drawn, but there are indications that funds have a regressive effect, increasing inequality. Secondly, the power of funds on capital allocation is studied through an analysis of their orientation of Belgian savings towards certain listed companies. More specifically, the integration of ecological issues in this allocation of capital is assessed and found to be largely insufficient. Thirdly, we discuss the role of funds in the governance of the companies whose shares they hold. While the fund management companies at the head of the Belgian market are increasingly exercising the voting rights attached to these shares, they do not seem keen to mobilize their power of influence to redirect corporate policy (towards sustainable activities, for example). Fourthly and finally, we look at relations between private players in the fund sector and regulatory authorities. These relationships, which are plural and dynamic, provide information on the interdependencies between public authorities and financial institutions. These four sections testify to the importance of investment funds, not only within the national financial system, but also with regard to numerous societal issues.

Do funds feed inequality?

The impact of the success of investment funds in Belgium on inequalities between households can be understood in many different ways, depending on how inequalities are defined (income or wealth, relative or absolute, etc.). However, the data available limits the range of possibilities. To address this issue in a succinct and accessible way, we propose to follow the money raised by funds. The sums collected by the funds are invested in various financial securities that generate three types of income: interest (on debt securities), dividends (on equities) and capital gains (when resold at a higher price than the purchase price). Part of this income is paid to the fund management company, and the other part to the Belgians who have invested their money in the fund (see Diagram 1). In addition, the share of income distributed to investors is boosted by certain tax measures adopted to stimulate the investment fund sector. By attempting to identify the individuals who benefit from these income flows, this section provides some insights into the distributional impact of investment funds in Belgium. At first glance, it appears to be regressive: it seems to feed wealth inequalities between households (though not necessarily to a greater extent than other financial investments).

First and foremost, it is clear from the statistics already presented (Statbel and HFCS) that, contrary to the hopes of their early Belgian supporters (see above) and the promotional discourse still in force, investment funds have done little to "democratize" stock market investing. Admittedly, they are more widespread among the less privileged social strata than are stocks and bonds (cf. Figure 34). But they are still held mainly by the country's wealthiest citizens. Thus, in 2010, just 17.6% of Belgians invested in funds; this rate was around 5% for the bottom 20% and around 25% for the top 20% (Du Caju, 2013). While the participation rate of the total population has since climbed to 22.8%, the amounts invested still come largely from the wealthiest. One indicator that captures this inequality is the gap between the median and average amounts invested in funds (among the 22.8% of the population who place money in funds): in 2022, the median is worth 36,462 euros, while the average is 135,760 euros (De Sola Perea & Van Belle, 2022). In other words, while half of Belgians who invest in funds invest less than 36,462 euros, the country's wealthiest invest so much that they push the average amount up to more than 135,000 euros. Conversely, the less affluent hold most of their assets in the form of bank deposits, which is not the case for the wealthiest (see Figure 34). Thus, among Belgians who receive income distributed by funds, high net worth households are over-represented.

Moreover, as we have pointed out, these revenues are boosted by certain tax measures. While the tax exemption enjoyed by management companies benefits all funds, other measures are more targeted and therefore likely to qualify our first conclusion if they favor funds in which households with less wealth invest their money.

On the one hand, there are the tax reductions associated with investing in a "pension savings" investment fund. These allow every Belgian to reclaim a certain amount of tax paid: if 800 euros are invested in a pension savings fund, 240 euros (800 x 30%) are deducted from tax. These reductions are less unequal than the *deductions* that preceded them: until 2012, the amounts invested in funds were deducted from the tax base, so that the gain was determined by the rate applying to the highest income bracket and was therefore proportional to income. What's more, the amount currently eligible for this reduction is capped at 1,270 euros per person per year. As a result, even though the country's wealthiest households have the highest participation rate of this scheme (almost 70% in 2010), they invest only 11% of their financial assets in it, the second lowest rate after households with the lowest wealth (see Figure 34). The difference between the mean and the median, an indicator already used earlier, is much smaller than for other investment funds: in 2020, half of Belgians participating in this scheme invested less than 14,060 euros, while the average amount invested was 29,351 euros.

While their beneficiaries are less concentrated at the top of the wealth distribution, these reductions nevertheless exclude the fraction of the population that does not earn enough income to pay taxes. Unlike the tax credit, the reduction does not allow for a negative amount, which would imply a net payment by the State. In 2010, among the 20% with the lowest incomes, less than one out of five put money into a pension savings fund (Du Caju, 2013). In absolute terms, the scheme mainly benefits the country's wealthiest, who invest the most money in it. But in relative terms, the ceiling on the amounts eligible for the tax reduction means that it is the middle classes who invest the largest share of their financial assets. The available data do not allow us to be more precise about the distributional impact. They do, however, help to qualify the first finding, by highlighting the special nature of the pension savings fund.

On the other hand, tax measures aim to promote the financing of Belgian companies, most of which are not listed on the stock exchange, via specialized investment funds. Thus, for example, in 2018, one of the statuses offered to this type of fund - that of the "private pricaf"[262]

[262] This type of fund can only acquire securities issued by unlisted companies ("private equity"). Founded in 2003 to stimulate financing for Belgian SMEs, private equity funds initially raised very limited amounts. From 2013

- was gratified with a special regime: exemption from withholding tax on distributed dividends (if they are derived from capital gains or from a Belgian company) and lifting of the main conditions for applying the "RDT" advantage (see above). This tax privilege has led to the emergence of new private pricafs[263]. However, this investment vehicle is generally offered through the wealth management service, to which the access threshold is generally 5 million euros. Admittedly, some banks pride themselves on democratizing access to these funds by lowering the threshold to 250,000 euros, or even 100,000 euros[264]. But the fact remains that this type of investment, and the associated tax benefits, are only available to the country's wealthiest individuals.

These statistics are insufficient to rigorously establish the impact of investment funds on household inequality in Belgium. More data, systematically broken down by wealth distribution, should be available. In addition, the annual return generated by the income streams mentioned above should be compared with the return on other investments, such as real estate or bank deposits[265]. That said, these indications are not useless, and seem to point towards an anti-redistributive effect of investment funds: most of the income distributed is received by households located at the "upper end" of the wealth distribution. This cautious conclusion is corroborated by the cross-sectional analysis carried out by sociologist Olivier Godechot (2016b) on the countries of the Organization for Economic Co-operation and Development (OECD): the share of funds in household wealth is found to be strongly correlated with the growth of inequality in general, and with the gap between social strata at the extremes of the distribution in particular.

Next, we need to look at the other beneficiaries of the fund's income: the players who receive the commissions retained by the fund management company (entry fees, management fees, etc.: see Diagram 1). Data on this subject rarely leaves the company, and is therefore even rarer. However, given the scale of the amounts collected[266], it is worthwhile identifying the

onwards, the contribution of non-financial companies, motivated by a number of tax incentives, enabled this type of fund to raise around €15 billion (figures taken from NBB, Financial Account, https://stat.nbb.be).

[263] *L'Écho*, 1er June 2019.

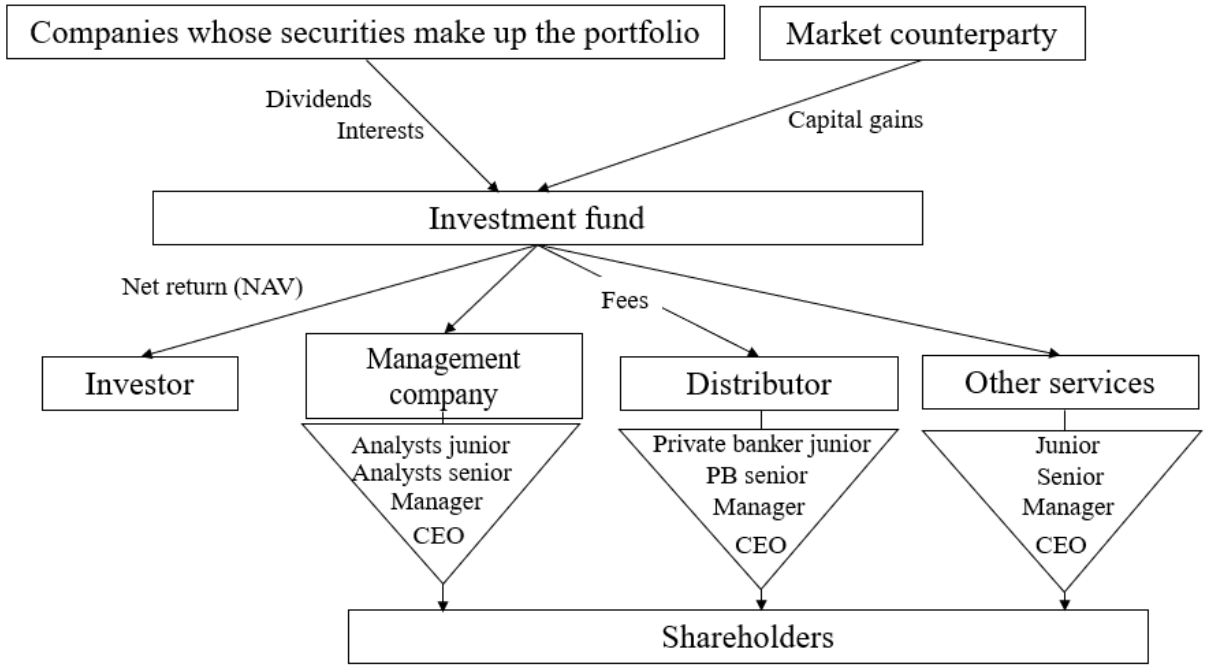
[264] *L'Écho*, October 21, 2021.

[265] At first glance, it would appear that bank deposits - which account for 83% of the wealth of the least affluent households - offer a lower return than investment funds. For example, over the 2011-2020 period, Belgian "UCITS mixed" funds - which have accounted for almost 50% of funds sold in Belgium in recent years - posted a net annual return (i.e., after deduction of various fees) of around 3% on average. Meanwhile, since 2012, interest rates on bank deposits have fluctuated between 0.11% and 1.5%. For more data on this subject, see BEAMA, Annual Reports, 2018-2021; ESMA, 2022c.

[266] For example, in 2021, commissions from the KBC group's wealth management services (which include fund management) is worth over 1.2 billion euros.

many actors involved. This is structured along two dimensions: the company involved and the hierarchical level of the actor. On the first dimension, three types of company benefit from commissions: the management company (KBC AM, BNP AM, Candriam, etc.), the fund distributor (KBC Banque, BNP, Belfius, etc.) and other companies offering "support" services (custodian bank, audit, accounting, etc.). The second dimension is revealed within each company: commissions take the form of employee remuneration. The activity of the management company is mainly supported by "analysts", who study and select securities to buy and sell, while that of the distributing company is supported by fund salespeople, who populate the branch network (generally called "private bankers"). Managers and managers' managers (CEOs) also receive a portion of these commissions. Finally, the balance is paid in the form of dividends to the shareholders of the various companies. When these companies are part of a group, as is the case with KBC or BNP, the shareholders of the management company are the same as those of the distributor. This procedure, slightly simplified[267], is summarized in diagram 4.

Diagram 4. Income transfers within the investment fund industry



Sources: Compiled by the author, based on fund annual reports and interviews with industry professionals.

To assess the distributional impact of this chain of payments, we need to know the amounts associated with each level, as well as the position of each worker in the Belgian wealth

[267] For example, circularities are ignored (the fund often holds shares in the management company and distributor, as does the investor).

distribution. However, these data are not publicly available. Once again, therefore, further exploration is required to establish robust conclusions. That said, given the average position of financial sector workers in the distribution of income and wealth, it would appear that this second part of the income collected via investment funds is also received by relatively well-off individuals[268]. The findings concerning the destination of the income collected by the fund therefore seem similar for both types of beneficiary - savers who invest in the fund and employees in the sector. To draw a definitive conclusion on the impact of investment funds on wealth inequalities between Belgian households, a more complete perspective is required. In any case, the result obtained is not independent of the angle adopted to assess wealth transfers: should tax incentives be counted as a reduction in social benefits? Do commissions come from the companies whose securities (shares or bonds) the fund holds, or from the investor who pays the management fees? These delicate questions should not, however, discourage us from exploring these issues, which are both central and often ignored by commentaries on the state of the industry.

Do funds finance the transition?

This second section looks at another "extra-financial" impact of investment funds. Indeed, the success of investment funds is likely to affect non-financial companies' access to Belgian savings. By selecting the securities that make up their portfolios, funds contribute to the financing of certain companies, at the expense of others. This decision-making power places investment funds at the heart of today's economic system. It is also attracting the attention of regulators and citizens' organizations, who are keen to see environmental concerns integrated into fund decision-making. This is why many funds are marketed in Belgium as "sustainable funds". Based on an analysis of the capital allocation of Belgium's leading sustainable funds, this section highlights some of the reasons why this "green shift" is proving insufficient.

As already mentioned, the funds that collect Belgian savings follow market trends and adopt a global investment perspective that does not favor Belgian securities. This shortcoming in the supply of capital is combined with a shortcoming in the demand for it: in Belgium, companies rarely finance themselves by issuing traditional financial securities (listed shares or

[268] According to our estimates (based on interviews and a number of websites providing information on working conditions), the income of an employee in the fund sector exceeds the Belgian average established by Statbel, right from the start of his career. A "junior" - analyst or private banker - can earn 4,500 euros gross per month, higher than 83% of Belgians. This figure rises to 8,000 euros for a "senior" (more than 96% of Belgians). Cf. Statbel, Tax Statistics, https://statbel.fgov.be. In the Belgian case, this distribution of overall income (professional, real estate, financial and other) is a good indicator of wealth distribution (De Sola Perea, 2022).

bonds). They prefer other means, such as selling shares over the counter and intra-group loans (see Figure 38). At first glance, therefore, the financing of Belgian companies appears to be little affected by the fund phenomenon. However, two issues qualify this observation. On the one hand, the few large Belgian companies that finance themselves by issuing listed shares have several funds within their general meeting. In 2017, 17% of BEL 20 shares were held by investment funds (Gelin, 2017). On the other hand, funds are also present in the shareholding of groups that participate in the financing of Belgian companies via intra-group loans (21% of their financial liabilities). We will discuss below how funds are involved in corporate governance.

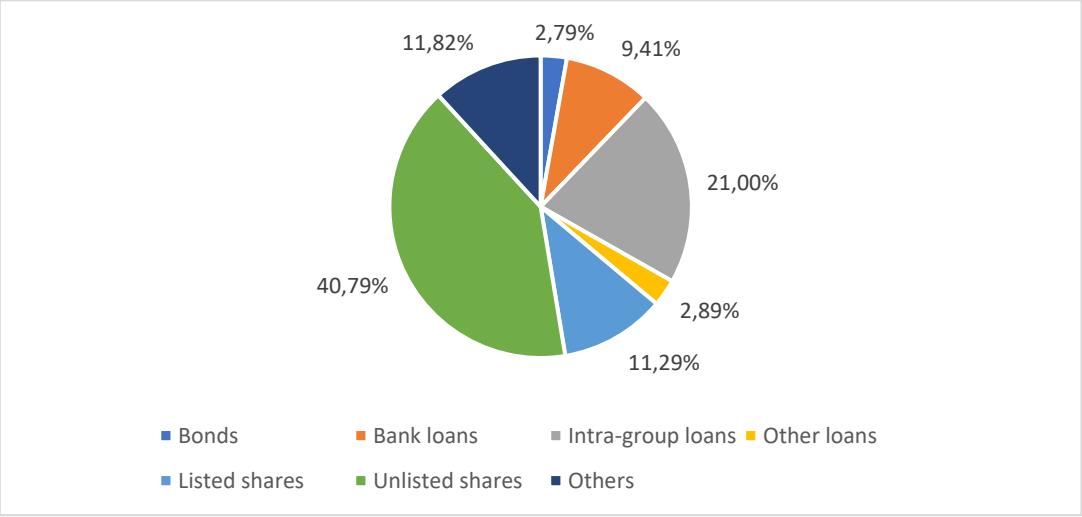


Figure 38 - Financing of Belgian non-financial companies (2021)

Consequently, it makes sense to look at how fund managers allocate capital, even in the case of Belgium. Two trends are currently running through this allocation. In addition to the globalization of the investment portfolio already mentioned, there is a "new" criterion for the orientation of capital flows: sustainable investment. According to the latest BEAMA report, in 2021, sustainable funds will capture 98.67 billion euros, or 35.86% of the market for publicly distributed funds in Belgium[269]. Barely four years earlier, sustainable funds accounted for just 19.28 billion euros (5.73%). Of course, the challenge lies in defining the scope of sustainability. In the 1990s and 2000s, the Belgian market for sustainable funds - then called "SRI funds" (for "socially responsible investment") - was unofficially structured around the labels and certifications of the non-profit organization Ethibel (Demoustiez & Bayot, 2005a, 2005b). These labels and certifications are based on an "investment register" listing the shares and bonds of companies that meet criteria "related to human rights, climate-damaging activities such as

[269] BEAMA, Annual report, 2021.

fossil fuels, nuclear energy and arms and war" (Financité, 2021: 21). In 2019, the financial sector's trade association, Febelfin (see below), changed the game by introducing the "Towards Sustainability" (TS) label, which then became the standard. It is on the basis of this new label that BEAMA produces the figure of 98.67 billion euros.

How does an investment fund obtain the TS label? It must comply with the "quality standard" that Febelfin has placed under the supervision of a non-profit association, the *Agence Centrale de Labellisation* (CLA)[270], which is partly administered by members from outside the financial sector. As soon as it was published, this standard was criticized for its laxity, notably by Thomas Van Craen, Director of Triodos Bank Belgium:

> The label excludes neither oil nor gas. A company that derives 60% of its revenues from oil can still benefit from a fund bearing the new label. Even companies exploiting shale gas and tar sand deposits can, albeit with certain restrictions, qualify for a sustainable fund[271].

The non-profit organization Financité, in its annual report on the socially responsible investment market in Belgium, also criticizes the permissiveness of the TS label:

> Our analysis reveals that 91% of the funds identified as SRI by Financité and awarded the Towards Sustainability label have invested in companies and/or states that do not respect the principles contained in the conventions ratified by Belgium relating to humanitarian, civil, environmental, social and governance law (Financité, 2021: 21).

In June 2021, the requirements were tightened to bring them into line with European standards, but the TS still tolerated 5% of the fund's revenues coming from the unconventional coal, oil and gas sector. Despite these criticisms, obtaining the label seems to enable the funds concerned to raise larger amounts (Fox et al., 2023).

Believing that TS is unlikely to redirect the flow of capital managed by funds, Financité calls for public intervention to legally define the perimeter of sustainable investment. Despite several declarations of intent along these lines (Financité, 2021), the Belgian authorities have not taken any decisive action. As is often the case in the investment fund sector, regulation has come from the European level. In March 2021, the Sustainable Finance Disclosure Regulation (SFDR) came into force[272] and instituted a distinction that now divides sustainable funds into "Article 8" and "Article 9" funds. The former promotes environmental or social investment criteria, while the latter pursue a sustainable investment objective. Until now, funds have been

[270] Cf. the website dedicated to the TS label: https://towardssustainability.be.
[271] *L'Écho*, February 7, 2019.
[272] Regulation (EU) 2019/2088 of the European Parliament and of the Council of November 27, 2019 on sustainability disclosure in the financial services sector (*Official Journal of the European Union*, L 317/1, December 9, 2019).

self-defining via these new labels, but according to the marketing manager of one management company, portfolio composition has changed little, due to a lack of control[273]. Despite this freedom of self-determination, few funds on the Belgian market have opted for the most demanding category: in December 2021, 53.1% of funds were labeled "article 8" (more than for the TS label), while 7.2% were "article 9"[274]. Although FSMA recommends that funds that are not labeled "article 9" "avoid using the word 'sustainable' in their advertising as much as possible"[275], Financité has identified over a hundred funds "classified as 'article 8' that still contain the term '*sustainable*' in their name" (Financité, 2021: 106)[276].

What can we learn from this confusing situation? That "we are halfway there, [because around] 50% of Belgian investment funds are sustainable", as Ethibel's director states (Forum Ethibel, 2021: 4), or - conversely - that greenwashing prevails? Recent research by institutional economists, entitled "Mind the ESG Gaps", provides a nuanced answer by shedding light on the decision-making process of fund managers (Fichtner et al., 2023). It reveals the role of benchmarks in the choice of securities that make up sustainable funds. Since the advent of "passive management" in the 1990s[277], the majority of managers of all funds - sustainable or otherwise - announce a benchmark to the client, which they will either try to replicate ("passive management") or attempt to outperform ("active management"). In all cases, their stock selection does not deviate much from that of the index, so that today's managers delegate a large part of their decision-making power to the companies that construct these indices (Petry et al., 2021). So, to assess the sustainability of investment fund portfolios, it is essential to look at their benchmarks. Yet researchers reveal that, worldwide,

> 87.9% of active ESG funds [i.e. sustainable funds] use non-ESG indices as their investment benchmark, while only 3.7% use ESG indices [...]. This means that the benchmark against which they assess their performance is decidedly unsustainable, and that they would have to deviate substantially from it to have a lasting impact on capital allocation. But as a closer analysis of the active ESG funds in our database shows, they barely deviate from their non-ESG benchmarks (Fichtner et al., 2023: 17).

As for the funds associated with an "ESG" (for "Environment, Social and Governance") benchmark, 88% mobilize the least demanding type of index. This is why the authors of this

[273] *Les Echos*, March 7, 2022.
[274] BEAMA, Annual report, 2021.
[275] FSMA, "Sustainability disclosure in the financial services sector", March 2021.
[276] See also the critical report by the European Securities and Markets Authority (ESMA, 2023).
[277] This investment strategy aims to achieve a "market return" by replicating the performance of a stock market index. This topic is developed at length in the chapters 4 and 5 of this thesis.

study advocate the regulation of benchmark indices, which they consider at least as important as the regulation of sustainability labels.

What about Belgium? In 2021, the market for sustainable funds is even more concentrated than that for traditional funds: the "top 4" accounts for 60% of the total[278]. To assess the dependence of these funds' portfolios on stock market indices (ESG or non-ESG), we analyzed one sustainable fund from each member of the "top 4". It appears that most of the funds compare their performance with a traditional, i.e. non-ESG, stock market index (see Table 10). Only KBC's sustainable funds allocate 95% of the amount raised without comparing their performance to an index; it is also significant that the 5% backed by an index is invested in stocks of companies less involved in the transition but included in the benchmark index (L'Oréal, Carlsberg, Nissan, Coca-Cola, JP Morgan, etc.). Sometimes, a margin of error is even announced to the customer, which links investment decisions even more closely to the composition of the benchmark index (such is the case with Belfius). Thus, independence from an unsustainable benchmark seems to be a necessary (but not sufficient[279]) condition for a real reorientation of the capital managed via funds. However, this condition is rarely met in the Belgian market. In this context, it is not surprising to find controversial companies in most sustainable funds.

	Example of a sustainable fund (assets)	**Benchmark index**	**Deviations**
1	KBC Eco Fund (€2,268,237,605.03)	- None for 95% of the fund - Non ESG (MSCI) for 5 %	3 %
2	Cadelam C + F (€6,086,855,269.00)	- Non ESG (Solactive) for 93% of the fund - None for 7%	n.a.
3	Belfius Sustainable (€3,112,962,501.17)	Non ESG (Bloomberg, MSCI)	0,5 - 3 %
4	BNP B Strategy Global Sustainable (€4,416,949,613.05)	Non ESG (Euro Stoxx, S&P 500, etc.)	n.a.

Table 10 - Investment logic of Belgian sustainable funds

To conclude this section on the power of investment funds to finance certain companies rather than others, it is worth pointing out the singularity of the Belgian market's position vis-à-vis stock market indices. While, as we have seen, the definition of a benchmark index constrains the composition of funds' portfolios (sustainable in particular), these funds do not claim to do "passive management" (see above), but "active management" backed by a

[278] According to the ranking in the Financité report and by merging the shares of Belfius and Candriam (Financité, 2022).

[279] In fact, there's nothing to suggest that this independence automatically translates into more sustainable investing. For example, the "independent" section of Cadelam's C + F fund includes shares in Volkswagen, Total, Alibaba and others.

benchmark index. According to BEAMA's Director, this attitude can be explained by the higher management fees that "actively" managed funds can charge, and by the structure of the Belgian market: "Passive funds [...] represent only 3% in Belgium, whereas the percentage at European level must be much higher. [Because] on the Belgian market, the big institutions are still predominant, trying to sell *their* funds and influence the client a little. They earn more on an active fund than on a passive one"[280]. The fact remains that active funds on the Belgian market communicate a benchmark index to reassure customers. As a result, their capital allocation generally differs little from that of passive funds: it is global, focused on the stocks of the largest companies, and not very involved in transition.

Do funds have an impact on corporate governance?

This section examines the role played by investment fund managers in the governance of the companies whose shares they hold. Indeed, the success of funds implies that the main management companies inherit voting rights at the general meetings of many companies, both on a global (Fichtner et al., 2017) and European (Rosati et al., 2020) scale. Given the scale of the fund phenomenon in Belgium, it is worth discussing this "political" dimension of this form of investment.

In the Belgian market, the five main management companies are increasingly exercising this voting right. The number of general meetings at which BNP AM, Candriam, KBC AM, Degroof Petercam and Capfi Delen vote has risen sharply, especially in the case of the first two[281]. Until recently, they had little incentive to do so[282] : the costs of such participation are numerous (information, personnel, transport, etc.) and the potential gains are quite small, especially when the commissions received are set independently of the dividends and interest transferred to investors (Çelik & Isaksson, 2014). This is why the mobilization of these rights to put pressure on corporate governance, also known as "shareholder activism", was mainly associated with hedge funds and private equity funds, which have little presence in Belgium (Simons & Van Tongelen, 2007). What has changed this situation is a greater demand for transparency, due both to the growing weight of management companies within the financial system and to the centrality acquired by the ecological issue. In 2017, the adoption of a

[280] Extract from an interview with Mr. Van de Gucht.
[281] Management companies' non-financial reports. BNP AM took part in 1,464 general meetings in 2018 and 2,098 in 2021, while Candriam went from 775 general meetings to 1,856 over the same period.
[282] When funds were first created in Belgium, voting rights were restricted for fear that "an investment fund, an instrument of collective savings, would degenerate into a 'holding' company, an instrument of control of one company by another" (see above).

European directive designed to "promote long-term shareholder engagement"[283] supports this trend. Since then, fund management companies, particularly the more visible ones, have been required to publish their voting policies, as well as annual reports of their positions taken at general meetings.

The voting policies of Belgium's leading asset management companies are broadly in line with the same ambitions: to support companies in "value creation", and to encourage them to develop sustainable practices and inclusive devices[284]. The same is true when these companies are asked about the reasons for their "active shareholding"[285] (i.e., voting, but also private and public questioning of managers). To grasp the actual impact of investment funds on corporate governance, however, we need to go beyond these declarations of intent. While the scientific literature on this issue over the past twenty years has been prolific, no unambiguous conclusion has emerged: the shareholder power of fund management companies is sometimes associated with better corporate performance (Yuan et al., 2008) and greater transparency (Boone & White, 2015), sometimes with a boost to short-term indicators at the expense of investments (Auvray et al., 2016). In recent years, it is above all the impact of funds on corporate sustainability that has been discussed: a number of critical research studies have uncovered the inaction of management companies, or even the energy deployed - contrary to their declarations of intent - to slow down progress (Baines & Hager, 2022).

As far as Belgian market players are concerned, it is the votes of multinationals BNP and Candriam in particular that have been the focus of researchers' attention. According to the latest "Voting Matters" report by the non-governmental organization (NGO) ShareAction, these two management companies are among the top performers: in 2021, BNP voted in favor of corporate environmental resolutions 98% of the time (versus 72% a year earlier), and Candriam 91% of the time[286]. However, this indicator can be misleading. In 2022, this percentage fell to 19% for Candriam, which justifies this by raising its climate requirements, which were generally not met by the minimalist proposals of the company's management[287]. As for the other main management companies on the Belgian market, their impact on company management is

[283] Directive (EU) 2017/828 of the European Parliament and of the Council of May 17, 2017 amending Directive 2007/36/EC with a view to promoting long-term shareholder engagement (*Official Journal of the European Union*, L 132/1, May 20, 2017).
[284] These documents are available on company websites: www.bnpparibas-am.be, www.kbcbrussels.be, etc.
[285] Cf. Ethibel's survey of fifteen Belgian fund managers (Forum Ethibel, 2022).
[286] ShareAction, "Voting Matters 2021 Are Asset Managers Using their Proxy Votes for Action on Environmental and Social Issues?", December 2021, https://shareaction.org, p. 14-15.
[287] Candriam, "Voting Annual Review 2022", p. 91.

not easily identifiable. As Céline Louche, Luc Van Liedekerke and Herwig Peeters note for the Belgian case:

there is a relative lack of transparency in reporting on engagement processes. The investor is often unclear about how the engagement process was developed and how much energy was devoted to it (Louche et al., 2015: 294).

Ultimately, therefore, it is difficult to draw an unequivocal conclusion about the impact of investment funds on corporate management. According to some authors, the shareholder rights carried by the shares in fund portfolios represent more of a burden than a benefit for management companies (Braun, 2022)[288]. Their objective is to maximize the amounts invested in their funds, rather than to influence corporate governance. What's more, given the ensuing transparency requirements, the exercise of shareholder power would expose them to the attention of the public, of the researchers and, above all, of the regulator. For this reason, the leading management companies would move backwards along this path, investing sufficient energy to minimize the "political risk". This hypothesis leads us into the field of relations between investment funds and regulators, to which the rest of this section is devoted.

Do funds weigh on their own regulation?

The relationship between public authorities and investment funds is not confined to the former imposing a regulatory framework on the latter. On the one hand, the state acts not only as a regulator, but also as a promoter of the sector. On the other hand, financial companies contribute to the development of the regulatory framework, through consultations initiated by the public authorities or on the initiative of the association representing the sector's interests (BEAMA). This section looks at the issue of regulation from these two angles.

The State's role in the investment fund sector has always been ambivalent, vacillating between the objectives of stability (the regulator's approach) and growth (the promoter's approach). From its first intervention in the investment fund sector in 1957 (see above), the Belgian state decided to delegate most of its regulatory powers to a para-public agency with a high degree of autonomy: the *Commission bancaire*, which became the Financial Services and Markets Authority (FSMA) in 2011. Today, the FSMA is primarily responsible for ensuring compliance with the legislative framework, mainly inherited from the European level (Moloney, 2014). To this end, it intervenes at three levels. Firstly, before launching an investment fund, any management company must obtain approval from the FSMA, informing

[288] In support of his argument, this author takes as an example the scheme recently proposed by BlackRock to enable clients (i.e. fund investors) to exercise their own voting rights on the shares making up the fund portfolio.

it of its compliance with procedures (minimum capital, custodian bank, rules of governance and risk control, etc.). Secondly, once the fund has been launched, FSMA checks the rules of conduct, particularly with regard to commercial information (prospectus describing the fund, advertising, posted yield, etc.). Thirdly, in the event of alarming events, the FSMA may undertake investigations to ensure that funds are not in danger of defaulting on their obligation to redeem any shares at their net asset value on demand. For example, in February 2022, the FSMA investigated the exposure of Belgian investment funds to Russian, Belarusian and Ukrainian assets[289].

Alongside this "monitoring" role, FSMA sometimes assumes a "regulatory production" function. As a number of episodes in this chapter illustrate, FSMA has taken a cautious approach to this second aspect, preferring to submit adjustment proposals to industry players rather than impose predefined standards. Recently, at the conclusion of its report on shadow banking co-authored with the NBB, FSMA suggested to the Federal Public Service (FPS) Finance that the liquidity risks of funds should be addressed by offering them greater flexibility, rather than by subjecting them to binding ratios[290]. This attitude reveals the other "face" of the public authorities' actions vis-à-vis investment funds: the FSMA, through the mandate entrusted to it by the Belgian State, intends to encourage the dynamism of this sector, which provides income and jobs[291]. The case of institutions for occupational retirement provision (IORPs), already mentioned, is in line with this logic: FSMA is relaxing its requirements in order to attract capital managed by multinational pension funds to Belgium, and Flanders in particular. The balance of this compromise between stability and dynamism has varied since 1957, according to the parties in power, FSMA directors, fashionable ideas and financial crises.

As for the influence – in the "other direction" – of the investment fund industry on the regulatory framework, it runs through Belgian history. From the outset, Belgian regulation of investment funds has been imbued with the influence of private financial actors. The introduction of a flexible legislative framework and the first tax incentives in 1957 bore the imprint of the *Comité national pour le développement de l'épargne mobilière* (CNEM, see above). The voice of the investment fund sector was then carried by a specific body: the Belgian Association of Investment Funds. This de facto association has been able to influence a number of important decisions. For example, it was represented by Etienne Van Campenhout (co-

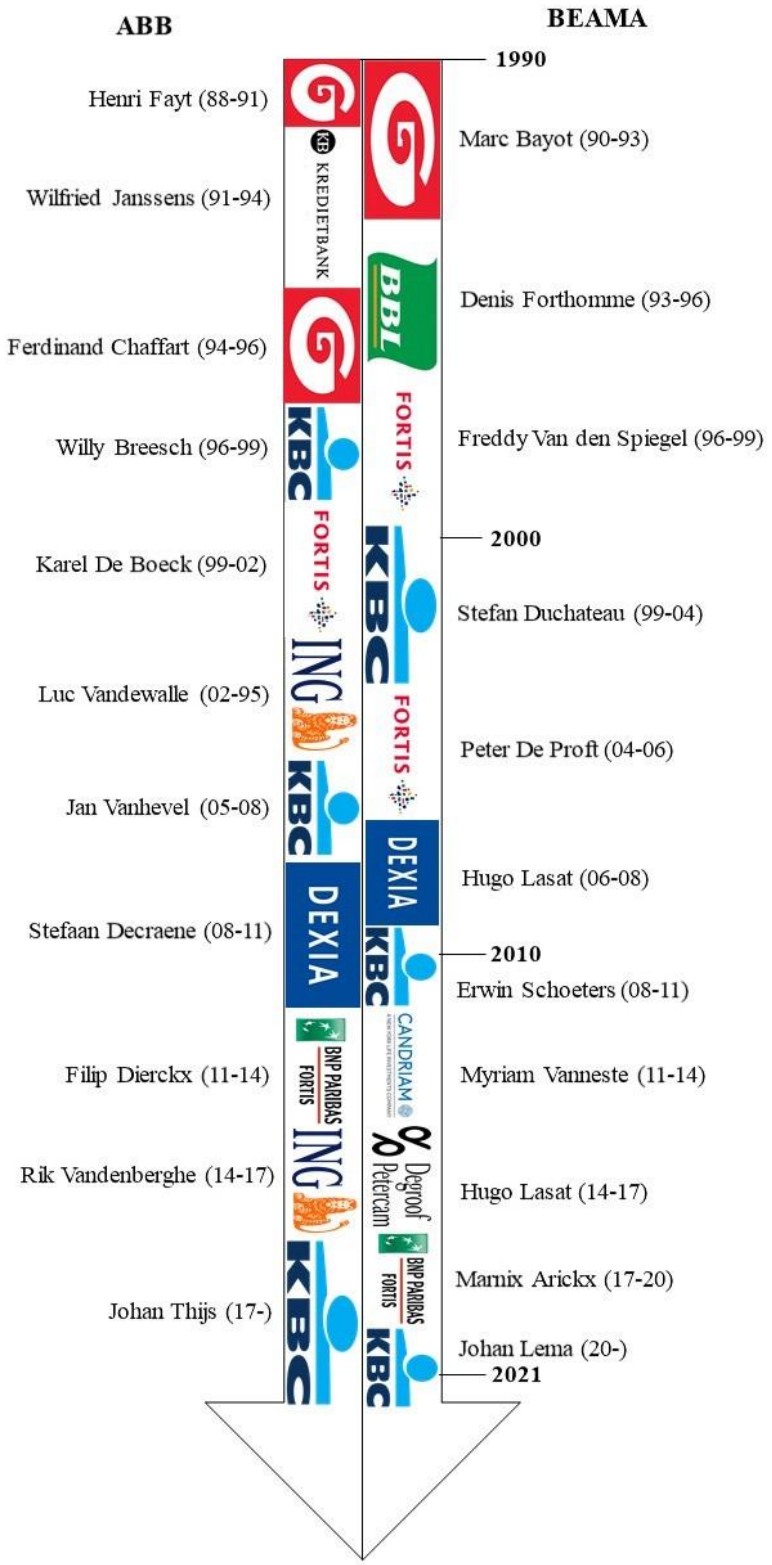
[289] FSMA and NBB, "Update on Asset Management and Non-bank Financial Intermediation in Belgium", 2022: 5-6.
[290] FSMA and NBB, "Report on Asset Management and Shadow Banking", *op. cit.* 2017: 88.
[291] For a similar finding in France, see Auvray et al. (2022).

founder of Petercam) on the "working group on the future of the Brussels financial center" set up in 1989 by Finance Minister P. Maystadt, which led to tax exemption for Belgian SICAVs[292]. In 2004, the Belgian Association of Investment Funds formed the Belgian Asset Managers Association (BEAMA) by merging with the Belgian Association of Asset Managers and Investment Advisors, in order to avoid a dispersal of claims. In the same spirit, it is now a member of the European Fund and Asset Management Association (EFAMA), as well as of the Belgian Federation of the Financial Sector (Febelfin), alongside the Belgian Bankers' Association (ABB).

Unlike other Febelfin constituent organizations, known as employers' associations[293], BEAMA's sole function is to represent the interests of the sector. This mandate translates into action in two stages. On the one hand, the aim is to define a common direction that transcends the specific interests of management companies. Secondly, this direction must be conveyed in such a way as to be heard by the regulatory authority, as well as by public opinion. Since its creation, BEAMA has experienced no major difficulties in overcoming the first stage. This is because the sector is dominated by a handful of players with converging interests: the banks. Admittedly, BEAMA's lobbying generally focuses on considerations that are advantageous to all market players, including the "small" ones (for example, the issue of tax relief). The fact remains, however, that it does not go so far as to take up the criticisms leveled by certain marginal players regarding market concentration and the resulting costs for customers. This stranglehold of the banks is no secret: it is evident in the composition of BEAMA's Board of Directors. It appears that those in power come from the same companies as those at the head of the ABB (Arcq, 1989). The identity of the presidents of the two organizations over the last thirty years is a striking illustration of this (see Diagram 5).

[292] For an analysis of this reform of the Belgian institutional framework, see chapter I.
[293] These employers' organizations notably take part in negotiations within joint committees. For a detailed description of their functions, see Arcq and Blaise (2007).

Diagram 5: Presidents of ABB and BEAMA (1990-2021)



With the (relative) exception of Candriam and Degroof Petercam, all BEAMA presidents have come from banking groups[294]. Since 1988, the president of the ABB has been a Flemish man. As for BEAMA, since 1996, only one woman - who was also the only Walloon - has been appointed president (Myriam Vanneste). Such homogeneous continuity makes it much easier to build consensus within BEAMA. In concrete terms, when it wishes to take a stand on a given issue, BEAMA - via its Board of Directors - sets up a "working group" to harmonize the different points of view and draw up a report. This report crystallizes the "investment funds' opinion" on the issue, paving the way for the second stage of BEAMA's action, which is primarily the responsibility of the managing Director. Unlike the president, who usually occupies a managerial position within a bank, the managing Director is employed full-time by BEAMA to represent the voice of investment funds. In other words, he is the industry's main lobbyist. In June 2021, Marc Van de Gucht succeeded Josette Leenders, who had been managing Director since 2003. Mr. Van de Gucht had previously worked at FSMA for 24 years. He feels that this experience played a part in his appointment and is an advantage in his current job[295]. He is probably right in this respect, judging by the extent of the phenomenon of "revolving doors" in the sector[296].

As some passages in this chapter illustrate, FSMA frequently consults the industry - via BEAMA - during the process of drafting a regulation, so that proactive lobbying is not always necessary to influence the final decision[297]. In other cases, where the Belgian State - rather than FSMA - intends to intervene without first assessing BEAMA's arguments, the job of the Director is more demanding. He has to convey the conclusions of a report that no one has requested. This is often the case when it comes to tax issues, which are so crucial to the success of investment funds. For example, the proposed tax reform announced by the Federal Minister of Finance, Vincent Van Peteghem, concerned the SICAV RDT regime, the scope of which he

[294] Degroof Petercam is no longer one of the exceptions, since its takeover by the Crédit Agricole banking group in August 2023.
[295] "I have contacts everywhere, with the supervisory authority. I was a supervisor myself at the time, I did it for 24 years; now, I'm on the other side of the table, so I know almost everyone at the supervisory authority. So that helps. Because I know people a little more personally, their weaknesses, their strengths and so on. I imagine that must have played a part [in my appointment]" (extract from an interview with Mr. Van de Gucht).
[296] This phenomenon refers to the recruitment of former regulators to represent the interests of the industry (and vice versa). Like BEAMA, EFAMA (its European equivalent) is made up of several former regulators, such as Federico Cupelli (former head of the asset management sector at France's Autorité des marchés financiers) and Bernard Delbecque (advisor to P. Maystadt's cabinet from 1992 to 1999). For details of the organization chart, see www.efama.org . In the "opposite direction", FSMA, like ESMA (its European counterpart), recruits from among former finance professionals, such as Karel De Bondt (former advisor to Degroof Petercam and current director of asset management company Citadel Finance) and Vincent De Bock (former auditor at KPMG). For details of the organization chart, see www.fsma.be.
[297] See, for example, the moratorium on particularly complex derivatives (see above).

intended to reduce[298]. BEAMA set up a working group on this issue, whose report underlined the economic weight of these SICAVs threatened by the bill (estimated at 8 billion euros) and their importance for the competitiveness of Belgian funds. Since then, Mr. Van de Gucht has been actively disseminating this argument in the press[299], but also and above all within the ministerial cabinet.

Relations between investment funds and regulators are therefore complex and dynamic: they vary in particular according to the weight of interdependencies. The main dependency of funds on the State is aggregation: this is still the case, but it has been relativized by the territorial flexibility offered by the European UCITS directives (see above). As the above-mentioned reform project illustrates, another dependency of funds is fiscal: by influencing tax rates, the State is able to redirect savings flows, for example towards insurance products (branch 23). BEAMA, on the other hand, is well aware of the Belgian government's dependence on its sector, and puts it at stake in every negotiation: as a source of income, employment and capital, as a symbol of successful economic development ("the financial center of Brussels"), and even as a pillar of stability for the financial system. While these interdependencies thus constitute the conditions of possibility for fund regulation, they are not unshakeable, and are in particular impacted by regulation itself. Analysis of the relationship between investment funds and public authorities must therefore take into account the interplay of these different factors.

Perspectives

Investment funds first appeared in Belgium in 1947, and were regulated by Belgian legislation ten years later. However, it was not until the early 1980s that they enjoyed success in the country, largely thanks to tax incentives and a reorientation of banking strategies. Indeed, the structure of the Belgian financial industry, concentrated around a few banking groups, favored the growth of this investment vehicle, which was massively sold to retail investors in order to compensate for lower intermediation margins through commissions (entry fees, management fees, etc.). Since the financial crisis of 2007, investment funds have also been coveted by insurance companies, pension funds and even non-financial companies. By 2021, they attract 510 billion euros in savings from Belgian residents, equivalent to over 100% of the country's GDP. In tracing the rise of investment funds in Belgium, this chapter's historical section addressed a number of issues that extend beyond this sector, such as tax competition

[298] *L'Écho*, March 7, 2023. On the RDT regime, see above.
[299] Reported in *L'Écho*, March 8, 2023.

between states, the Belgian legislative process and the Europeanization of the capital market. The next two sections focused on today's fund market, looking at its key players and its impact on four societal issues: social inequality, ecological transition, corporate governance and sector regulation. It emerged that this market - where supply dominates demand - is not a force for transforming the social order. On the contrary, it tends to favor the status quo, both in terms of wealth inequalities and the orientation of the financed companies. In conclusion, we propose to outline some potential developments for investment funds in Belgium.

The banking groups' hold on the Belgian market was shaken by the financial crisis of 2007. The Dexia group was forced to give up its management company, which became Candriam, while ING also decided to refocus on its core business by abandoning part of its fund management activity. That said, the rest of the top 6 remains. Thanks to its integration into the BNP Paribas group, Fortis has been able to maintain its power in the Belgian investment fund market. In addition, the recent development of an internal management company within the Belfius group, and ING's takeover of the management of its pension savings fund, point to a re-concentration of the sector around the traditional groups. However, this situation is not set in stone. On the one hand, the growing importance of "institutional investors", who are more mobile and powerful than individual investors, tends to favor US giants such as Vanguard, State Street and BlackRock. This threat may be amplified by the current growth strategy of other foreign groups, such as Goldman Sachs, which has acquired NN Investment Partners, and Crédit Agricole, which has absorbed Degroof Petercam. On the other hand, the transformation of the investment relationship, which is becoming increasingly digitalized, could further extend the scope of activities of large companies specializing in communication technologies (such as the GAFAMs[300]). As the latter have already entered the financial industry by developing payment methods, some authors believe they could extend the range of services they offer (Auvray et al., 2022).

What's more, even if the traditional banking groups maintain their dominance of the Belgian investment fund market, their offering can be radically altered, as has been the case on several occasions since 1957. Two factors in particular are likely to affect the funds sold by banks in Belgium. On the one hand, funds investing in unlisted companies (private equity) are no longer confined to the United States: they are increasingly popular in Europe and could affect

[300] The acronym GAFAM refers to the five largest digital platforms: Google, Apple, Facebook, Amazon and Microsoft.

the Belgian market[301]. Indeed, at both national and European level, public authorities intend to stimulate this way of financing companies, notably through tax incentives[302]. In an economy mainly populated by unlisted small and medium-sized enterprises, these funds - which are also used to being actively involved in the governance of the companies whose shares they hold - could transform the Belgian landscape. On the other hand, investment in sustainable funds is likely to be further encouraged, through bank marketing or tax incentives. It is to be hoped that this movement will be accompanied by a clarification of the scope of "green securities". Failing this, sustainable funds will remain a fad, similar to structured products before the 2007 crisis, with no impact on the ecological transition.

Finally, the fate of funds in Belgium is linked to that of the social disparities that structure society. In this study, we have highlighted the impact of funds on wealth inequalities. But the causality is reciprocal: the enrichment of the country's wealthiest benefits the sector. The creation of a social stratum with abundant savings is a condition of existence for the banks' wealth management departments. For reasons that are primarily material, but also "cognitive" (access to information, specialized advice, etc.), it is this privileged segment of the population that contributes massively to investment funds. In 2020, the top 10% of the income ladder will receive over 70% of interest and dividends[303]. In short, maintaining significant social disparities is vital to the success of investment funds. From this point of view, this sector does not appear to be under threat in Belgium, since the country has not embarked on a radical project to reduce inequalities: every year since 2005, more than 30% of income is received by 10% of Belgians. But if such a project were to be implemented, the growth in the amounts invested in funds would certainly be affected. Beyond its direct socio-economic impact, the investment fund sector also deserves attention as a barometer of the country's social disparities. It lies at the heart of contemporary capitalism. It highlights its trends and tensions.

[301] Invest Europe Research, "Investing in Europe: Private Equity activity 2022".
[302] Cf. the case of the "private pricaf" in Belgium (see above, 4.1).
[303] Statbel, Tax Statistics, https://statbel.fgov.be.

The new “milieu” of financial valuation

At the end of this first part, the institutional environment of the financial markets becomes clearer. It organizes interaction between the members of a globalized community (albeit concentrated in a dozen or so megacities[304]), brought together by IT platforms such as trading platforms (NASDAQ or Euronext style) and information platforms (Bloomberg or Reuters style), and highly hierarchical (the leaders in asset management now being the main players). This portrait of the financial community needs further refinement, however, to do justice to the plurality of financial markets: the Forex traders we met in Brussels interacted little with the hedge fund managers who shorted GameStop stocks. This partitioning of markets according to the nature of the products traded, frequently invoked to disassociate oneself from blamed behavior[305], must not prevent us from identifying transversal characteristics and trends. The reconfiguration analyzed in the previous two chapters concerns all market segments, albeit in different ways: stock, bond, money and commodity markets are more computerized and globalized than they were in the aftermath of the Second World War, and fund managers occupy a central role everywhere.

Among the various market participants, traders were the first to benefit from this institutional reconfiguration. Computerization and deregulation led to the emergence of new, more complex and potentially more profitable financial products, making the work of traders both highly lucrative and exciting:

> You had traders who earned more than the managers. You’re not 40, you’re making a great living, you’re having a blast at work... We arrived in the morning and our boss told us: “Come on, today we’re going to buy volatility, and as long as it doesn’t move, we’ll buy it!” It certainly made a lot of people want to do it! Today, it’s harder to attract young people in the trading room (extract from an interview with a 50-year-old trader).

The financial crisis of 2007-2008, along with the development of automated trading, dealt a serious blow to most traders. With the exception of the minority working in alternative funds (such as hedge funds) and still free to “have a blast”, traders have seen their activity more closely supervised (restriction of proprietary trading), and even threatened by the automation software developed by their companies. Moreover, the crisis has completed the rise of asset managers, which began in the aftermath of the Second World War. As we have seen, asset

[304] Cf. the famous “GFCI” (Global Financial Centres Index) ranking, published by two London and Chinese think tanks (Z/Yen & China Development Institute, 2023).
[305] Of the hundred or so financial market professionals I met, all told me they didn’t feel targeted by the condemnations that followed the 2007-2008 crisis, as they “had nothing to do with these toxic products”.

management involves a number of different professions. Private bankers are little threatened by institutional reconfiguration: the bond of trust required to capture savings limits the risks of automation. As a private banking department manager explained to me:

> Below 250,000 euros, the bank wants to encourage the use of the mobile application. But for private banking [> 250,000 euros] and wealth management [> 4,000,000 euros], the relationship is essential. When we meet a customer, we talk a little about the product and investments, but mostly about his life plans, his family... it quickly spills over into more personal questions (interview extract).

As for analysts, and in particular members of investment committees, they are today the main decision-makers on the financial markets. Power which, as we shall see, they in turn delegate to other players at the heart of this work. Finally, even more than their sell-side counterparts, traders at asset management companies are reduced to the role of executing orders from the investment committee. They are therefore highly threatened - and in some cases already replaced - by trading automation.

These are the institutional conditions facing participants in the various financial markets. In order to shed light on how they fit in and manage the uncertainty of the buying and selling they do, it is necessary to examine the valuation situation and the various objects that populate it. This is the ambition of the second part of this thesis.

Part II. Financial valuation supports

The reconfiguration of financial markets analyzed in the first part of this thesis does not eliminate uncertainty from the decision-making of market participants. It even deprives financial players of many of the markers that once enabled them to stabilize their interpretations: co-presence in a single place, hand movements by stockbrokers, familiarity between market participants... Members of the new, larger and more dispersed financial community can no longer rely on these signs, which have been swept away by the computerization of markets. At the same time, the value of financial securities has not been stabilized by institutional reconfiguration: Keynes's wish to "harden" financial commitments has not been fulfilled[306]. On the contrary, reforms have often been aimed at increasing market liquidity, that is precisely the ease with which investors can withdraw from the market by reselling a purchased security. This liquidity feeds uncertainty about the number of buyers and sellers, and therefore about the future value of a security. The metamorphosis of the financial community further fuels this uncertainty: it is now even more perilous to predict who will be present on this market, at this time and on this side (buying or selling). In short, today's participants are still faced with a high degree of uncertainty in their valuation practices, but can no longer manage it using the benchmarks mobilized by their predecessors.

So they had to innovate. In the computerized world, often described as "ethereal", they had to identify signs capable of polarizing the attention of their peers. They were well supported in this ordeal by several "financial information companies" who sniffed out the bargain. Little considered in André Orléan's conventions model, where the focus is on passive salience[307], the role of the sign's sender needs to be integrated into the analysis of financial conventions. In an environment where employees of wealthy financial companies need to reduce uncertainty in order to boost their company's profits, providing them with information that becomes a reference is a promising business model. In any case, this project has been pursued by many individuals, including the founders of the famous rating agencies already mentioned[308]. By making themselves indispensable to the valuation practices of members of the financial community on the bond market, these agencies ensure themselves a stable and generous remuneration.

[306] Cf. the discussion of Keynes's financial market reform proposal, p. 96 of this work.
[307] For a discussion of this model, see p. 49 of this work.
[308] Cf. p. 96 of this work.

The lucrative business of financial conventions has attracted many candidates, with only the victors surviving. This work focuses on some of the main winners. In order to avoid succumbing to "survivor bias" and naturalizing their success, it traces their emergence and highlights their singularity: these conventions could have been different and allowed market participants to reduce uncertainty in another way. And, given the intensive and extensive mobilization of these main valuation tools, this singularity weighs on capital movements on a global scale. It therefore confers quasi-regulatory power on the few companies that own, produce and sell them. Four of these new financial conventions are the focus of this second part: the Bloomberg Terminal (chapter III), stock market indices (chapters IV and V), central bank announcements (chapters VI and VII) and oil benchmarks (chapter VIII).

Chapter III: The Bloomberg Terminal

This chapter is divided into two subsections. In the first and main part, we will focus on the uniqueness of the semiotic shaping operated by a valuation support at the heart of contemporary financial markets: the Bloomberg Terminal. In order to "denaturalize" this infrastructural component, whose use has become established in all segments of the financial markets[309], we place it in perspective with another shaping that made a resounding appearance in January 2021 on the occasion of the GameStop saga: the Reddit WallStreetBets forum. This saga has shaken up the financial sector and fascinated far beyond, as evidenced by the event's on-screen staging[310]. Based on an ethnographic experience of the "two camps" and an analysis of the Terminal inspired by Desrosières' sociology of quantification, we draw out the characteristics of the two rival framings, as well as their effects on the interpretation of market participants. This first subsection consists of an article published in the journal *Economy and Society* in May 2023[311].

In the second subsection, we take a closer look at the conflict between institutional investors and retail traders, using Ervin Goffman's *Frame Analysis.* This conceptual tool sheds new light on the reasons for the divergence of opinion between these two audiences, regarding "what was going on here". In return, this case study allows us to discuss some contributions and limitations of *Frame Analysis*. This second subsection is based on a communication presented at the conference "Penser l'action sociale avec Goffman" in Liège in November 2022[312].

[309] See p. 98 of this work for a brief presentation of the Terminal.
[310] In 2022, two documentaries on the saga were released: *GameStop: Rise of the Players* and the three-part Netflix mini-series *Eat the Rich: The GameStop Saga*. The following year, the film *Dumb Money* was released.
[311] Bloomberg and the GameStop saga: The fear of stock market democracy, *Economy and Society*, 52(3), 373-398, https://doi.org/10.1080/03085147.2023.2189819.
[312] "Tous les traders voient-ils le même marché ? Enquête sur le conflit de cadres au cœur de 'l'affaire GameStop'".

1. Bloomberg and the GameStop saga: The fear of stock market democracy

At the end of January 2021, retail investors coordinated via a discussion forum to drive up the price of GameStop stock, which several Wall Street giants had predicted would fall. This resulted in heavy losses for these large institutions and substantial gains for some individuals. This event – often presented (and probably rightly so) as totally unprecedented – caused consternation among most financial commentators: this mass of 'unsophisticated punters', fueled by contagion via social networks ('mania'), caused absurd movements, disconnected from fundamentals ('bubble'), and fostered the gamification of investment (e.g. Greifeld & Ballentine, 2021; Li, 2021; Sindreu, 2021). With hindsight, however, this reaction may seem surprising, as the trading technique used by retail investors – the short squeeze (see below) – is not so uncommon. This paper proposes to analyze the GameStop episode as a large-scale 'breaching experiment': we will try to understand, through the shocked reactions that it generated, the norms that this event undermined. It will appear that these norms concern in particular the way of understanding the market and are crystallized in a central market device, the Bloomberg Terminal. By resorting to an alternative way of reading the stock market via a discussion forum, retail investors have challenged this device and disrupted its promoters and users.

Our contribution is thus in line with the work that has rapidly documented the GameStop episode, while clearly distinguishing itself from the three perspectives dominating this young literature. First, several researchers have sought to establish the causal relationship between the discussions of retail investors and the GameStop stock price surge: through textual analysis of the volume and tone of forum posts or Google searches, this relationship has been systematically attested (Allen *et al*., 2021; Anand & Pathak, 2021; Long *et al*., 2021; Lyócsa *et al*., 2021; Umar *et al.*, 2021). Second, economists have tried to assess the impact of this coordination of retail investors on market quality (as measured by liquidity and volatility): no clear-cut results emerge, with models by behavioral economists predicting a deterioration following this influx of 'noise traders' (Aharon *et al*., 2021; Eaton *et al*., 2021; Pedersen, 2021), while other work shows that advice on these forums can improve market quality (Jarrow & Li, 2021), and even offer higher returns than professional investment funds (Bradley *et al*., 2021; Buz & de Melo, 2021). Third, some social scientists have examined drivers of this collective action, such as the 'design' of the forum that brought these investors together (Boylston *et al*., 2020; Van Kerckhoven & O' Dubhghaill, 2021), the repulsive figure of Wall Street deemed

responsible for the subprime crisis and family dramas shared online (Chohan, 2021; Mendoza-Denton, 2021; Di Muzio, 2021) and the federating role of opinion leaders (Lucchini *et al*., 2021; Semenova & Winkler, 2021).

While focusing on the same object, this paper takes a different, upside-down look. We will not analyze the GameStop saga for its own sake, but for what it tells us about the different ways of perceiving and interpreting the market. We believe that this event, by challenging the universality of the dominant way of reading the market represented by the Bloomberg Terminal, has highlighted its specific characteristics. Therefore, and unlike Glassman and Kuznetcova's (2022) research on the differentiated perceptions *of* the saga induced by 'new' and 'old' media, our analysis starts *from* the saga to identify two rival ways of reading the market. In doing so, this paper contributes to the field of social studies of finance, and in particular to its branch investigating the devices shaping the perception of financial actors (Callon, 1998a; Muniesa *et al*., 2007). Through the first detailed study of Bloomberg's place in this framing role, it concretizes the pioneering intuitions of Knorr Cetina and Bruegger (2002) on the mode of behavior induced by the trader's relationship to 'the screen'. It also follows on from work on the framing operated by block trades (Arnoldi, 2006), securities analysts (Beunza & Garud, 2007) and hedge funds (Hardie & Mackenzie, 2007). All of these investigations provide insight into the decision-making process of professional financial actors, who are forced to make investment decisions in a highly uncertain environment. These framing devices are their beacons. To challenge them, as retail investors did during the GameStop saga or high-frequency algorithms did when they entered the market, is to challenge a deep aspect of their personality (Borch & Lange, 2017). It is a 'breaching experiment' in the sense of Garfinkel (1967), that is an event whose methodological virtue is to reveal, through a breach, what supports the normal course of action[313].

By analyzing this pluralization of the informational bases guiding investors' decisions, this paper finally informs the issue of financial democracy, which has been summarily addressed by two rival approaches. The first is the acritical relay of the observation sold since the 1950s by investment companies of a 'democratization of the stock market'. Thus, as early

[313] As a result of this methodological positioning, the concept of 'framing' is mobilized in a radical sense: it does not only designate a colouring of information that impacts the interpretation of an event, but also and more fundamentally an organization of experience (in the sense of the *Frame Analysis* proposed by Goffman, 1974). The Bloomberg Terminal selects what is part of the market situation; as such, it may be preferable to consider it as an *infrastructure* of financial markets, rather than as a *device* (for a development of this conceptual distinction, see Section I.2a of the general introduction).

as 1952, Lion Oil congratulated itself that 'Stock Ownership is one of the most completely democratic institutions in our democracy' (Lion Oil, 1952, quoted *in* Aitken, 2007: 16). The work of Nocera (2013) and Duca (2001) has globally relayed this perspective in the academic field. According to this view, democratization is defined by the extension of public *representation* in financial markets: like parliamentarians, market professionals are mandated by an ever larger fraction of the population to exercise their power (to decide which entities to finance and, in the case of stocks, to guide the management of companies). The conditions for greater *participation* remain unaddressed. The second approach deals with 'financial democratization' as a legitimizing discourse that has covered the enterprise of financialization of everyday life. Generally Foucauldian in inspiration, this perspective attempts to document the financial education process to which citizens in neoliberal democracies have been subjected, now called upon to behave as 'investors of the self' (Frank, 2000; Martin, 2002; Aitken, 2003; Langley, 2008). Recent technological developments in the financial field, in particular the emergence of brokerage applications, have stimulated new works inscribed in this second trend: they have pointed to the penetration into the intimacy of these instruments of financialization (Bernards, 2019; Gabor & Brooks, 2017) or their complicity with platform capitalism (Tan, 2021). As interesting as these works are, they have never really taken the democratic issue seriously, considering it as an ideological instrument without any real basis.

Erturk et al. (2007) were the first to conceptualize the issue of financial democracy. In their paper, they highlight certain conditions for democratization, defined by greater participation in decision-making power (and not only by the extension of representation). They argue that these conditions are not met: the low financial literacy of the population, the opacity of many financial products and the instability of their value are such that 'disappointing outcomes must fall short of the various hopeful promises' (Erturk et al., 2007: 555). Erturk *et al.* have thus pointed to the *legibility* of the financial market as a condition for its democratization[314]. But this position remains dependent on a very objectivist point of view on the process of financial valuation: as long as the citizen has access to investor knowledge and the products are more stable and transparent, financial democracy would be achieved. However, financial value – like political values – is not that substance that an enlightened eye can adequately grasp: it is the result of judgments formed from certain information. Hence, the

[314] It is also from this perspective that Angel (2021) praises WSB for its role in the financial education of young people: 'we need investors who are willing to take risks. We are all better off if we manage to draw the gamers away from lottery tickets and into the market' (Angel, 2021: 32).

importance of devices like the Bloomberg Terminal. The GameStop saga has highlighted its central political role, somewhat as the election of Donald Trump 'revealed' that of Facebook (Pybus, 2019). Based on the results of our comparative analysis and a pragmatist reading of democracy attentive to the conditions of participation, this paper intends to shed light on the role of information pluralism as a vector of democratization of financial markets.

On the methodological level, the position of this paper implies a certain break with the literature that has documented the GameStop saga. The event will not be studied by its effects on prices or on the quality of the market (since we have said that the financial maneuver was not exceptional), but by its formation: on which supports did retail and institutional investors base their transactions? First, we will analyze the exchanges that took place on the discussion forum at key moments of this saga. In the spirit of the ethnomethodologists' breaching experiment, we will then try to understand why the large financial actors did not adopt the same investment strategy, and were even shocked by it. This will lead us to investigate the dominant formation of financial decisions (which is also the formation of the dominants' decisions) and its fundamental differences with that of retail investors. Finally, we will discuss the implication of the findings for the issue of financial democracy. This research is based on an ethnography of the two opposing 'camps' of the GameStop saga. On the one hand, we carried out a three-month internship in a trading room of a large European bank, during which we observed and interviewed 18 traders. These materials were cross-checked by additional interviews with equity traders from other financial institutions and completed by an in-depth exploration of the Bloomberg Terminal. On the other hand, we joined the main discussion forum of retail investors for two months ('WallStreetBets' on the Reddit platform) and analyzed the comments posted since January 2021 via the forum's 'archives'.

a. The GameStop saga and its world

During 2020, several institutional investors felt that GameStop stock was overvalued: generally, the outdated business model (retail stores of video games and electronic equipment) and the poor financial figures (debt, revenues...) were invoked to justify that GameStop stock should be worth less. To bet on the price falling, these large financial institutions could just sell the stock (and possibly buy it back later at a lower price) or 'sell it short' (a more lucrative option usually adopted): they borrow the stock and sell it, hoping that the price will fall to buy it back when the loan expires. So, for example, if they borrow a $100 share at 1 percent at time *t* to sell it outright at that price, and if at the end of the loan period the share has effectively

fallen to $10, they buy it back at that price and make a profit of $89 ($100 - $10 - $1 of interest). However, this is understandably risky: if the price rises rather than falls, the stock must still be bought at the maturity of the loan, regardless of the loss incurred (this is known as a 'short squeeze'). For GameStop's short-sellers, such a worst-case scenario emerged in early January 2021: after hovering around $10 in the second half of 2020, the share price reached $35 on 15 January. On the 19 January, the price rose to $39, which motivated one of the main short-sellers, Citron Research, to tweet:

> Tomorrow am at 11:30 EST Citron will livestream the 5 reasons GameStop $GME buyers at these levels are the suckers at this poker game. Stock back to $20 fast. We understand short interest better than you and will explain.

The retail side

But who are these 'suckers' behind the price rise of this old-fashioned stock? They are retail investors on the WallStreetBets discussion forum (on Reddit). Several factors have already been put forward to account for their coordinated purchases of GameStop stock[315]: attachment to the company that cradled the youth of this generation of gamers, revenge for parents ruined by the subprime crisis (the post 'This is for you dad' went viral), distraction during the COVID-19 lockdown… As we shall see, the generational factor – disenchanted youth versus mainstream boomers – was also central to this 'poker game'. As for the ability of these retail investors to compete with multi-million-dollar institutional investors, it has been explained by the emergence of brokerage applications (Milovidov, 2021; Stiebel, 2021), but also by the rise of passive management which makes institutional investments inelastic and therefore makes those of the retails decisive (van der Beck & Jaunin, 2021). In this section, we will focus on an aspect that is transversal to the exchanges on the WallStreetBets (WSB) forum, but which has not yet been raised in the literature: the issue of expertise. Unsurprisingly, the retail investors who supported the GameStop stock price do not share the assumptions of behavioral economists: they do not see themselves as 'noise traders', irrationally influenced by irrelevant factors. Rather, they are driven by a counter-expertise according to which GameStop stock is worth well over $30.

[315] The challenge was to support the stock price until the short-sellers were forced to 'close out their positions', that is to buy the stock to give it back to their creditor. This could be done by simply buying the stock or by acquiring a call option (a security that entitles its holder to buy the underlying stock from the option seller at a predetermined price and date) – the option seller then being in a position similar to that of the short-seller, forced to buy the stock in order to honour his commitment… regardless of the loss incurred. But this 'forced purchase' also supported the stock price.

On 21 January, Citron Research published its video explaining why the stock price would quickly fall back to $20 (since its Tweet, it had risen to $43). Six days later, on the 27 January, its price reached $483. The short-sellers were forced to close their positions with very heavy losses: Melvin Capital, another hedge fund involved, lost more than half its value and was forced to accept the bail-out of two competing funds. Explicitly intended to convince investors to join his position, Citron's analysis was a textbook case of counter-performativity. Let us analyze why his argument failed against another register of expertise. Apart from the disdainful form of Citron's video which fueled the hatred of WSB's investors, the essence of the message focused on the company's fundamentals (debt, turnover, etc.). But if it is easy to interpret the evolution of results as positive or negative signals, it is notoriously more perilous to deduce a fair price from them: valuation conventions are not sufficiently stabilized for GameStop's $5 billion revenues not to evoke a fair price of $50 to WSB's investors where they evoke $20 to Citron's analyst. This was the hardly contestable line of defence of Keith Gill, one of the main retail investors of the GameStop episode, in his hearing before the US House Committee on Financial Services:

> Early June of 2019, the price of GameStop stock declined below what I thought was its fair value. I invested in GameStop in 2019 and 2020 because, as I studied the company, I became more confident in my analysis[316].

But there is more. The WSB forum community is mainly made up of young traders who think in terms of positions, rather than investments[317]. Initiators of 'YOLO trading' (You Only Live Once), they often take risky positions involving derivatives (typically options). Certainly, in the case of GameStop, there was also a more enduring attachment to a company, but Hasso *et al*. (2021) are right to temper the praise of a popular insurrection relayed by some authors: 'the GameStop frenzy was not a pure digital protest against Wall Street but speculative trading by a group of retail investors, in line with their prior high-risk trading behavior' (Hasso *et al*., 2021: 2). This attitude implies a particular attention to market forces: WSB investors are less interested in the fundamentals than in the intentions and resources of the players who move prices. During the GameStop saga, they tracked signals indicating where the other side was, the short-sellers. A particularly commented indicator on WSB was the 'short interest', that is the

[316] Hearing retrieved from https://www.c-span.org/video/?508545-2/gamestop-hearing-part-2.
[317] While the age category is easy to identify through an immersion in the forum (vocabulary, cultural references...), a quantified estimate is more delicate, notably because of the explosion of the membership during and after the GameStop saga. A post before the saga (31 January 2020) polling members on their age gave the following results: out of 46 respondents, the average age was 25.8 (with a minimum of 17 and a maximum of 39).

share of stocks (or floating stocks) that have been sold short (borrowed and then sold).[318] The evolution of this rate indicates whether the short-sellers have already compensated their position (decrease of the rate) or 'whether the pressure should be maintained'. This was the focus of the counter-argument posted following the Citron video:

> The fact that a similar level of % short/float exists today means that the EXACT SAME potential for a short squeeze is present [...] shorts are still in significant danger. If they weren't, we wouldn't be seeing this huge pushback from media.

This quote brings us to the heart of the struggle for expertise between WSB and 'media'. WSB actors have risky, almost negligent positions (losses are glorified), based on a dynamic analysis of opposing players – the analogy with video games is not innocent. Mainstream investors are richer, more powerful (the media relay them) and older: they make more stable investments, based on fundamentals. As early as 13 January, this divide became apparent when a retail investor was surprised that Bloomberg had not covered the GameStop affair earlier.

- Why was there no news coverage in the past few months? Wall Street bets is more informed than any media outlet or analyst.
- Because Bloomberg and the rest are boomer channels. They only care about ETFs and interest rate bond yield. To have such amazing gains as the one experienced on WSB is unlikely.

Testimonies gathered during the ethnographic study by Boylston *et al.* (2020) also pointed in this direction: '(WSB) is the "front page" of what is going on that affects the market. Not CNBC, not CNN, it's here' (*Ibid*: 9). Not what explains the value of a company, but what 'affects the market'. Another interviewee said: 'I'm getting a more accurate picture of the reality on wsb than on mainstream media' (Boylston *et al.*, 2020: 11). This conflict of reference points ran through the whole GameStop saga. On 1 February, when the stock was worth $225 (it will fall back to $40 at the end of the short squeeze), two Bloomberg articles were posted on the forum and received an avalanche of challenges and insults, including several highlighting the generational dimension: 'they literally can't understand how many people in GenX and below that find them absolutely worthless. They have no authority remaining, but they still act like they do'. After the stock fell back to $40, several institutional investors shorted GameStop again and… another short squeeze occurred: WSB's retail investors pushed the price back up to $265 on 10 March. Shortly before that, a Bloomberg article again raised the hackles of young traders:

[318] This rate exceeded 100 percent during the saga – this is possible because a shorted stock can be lent a second time by its new buyer to another short-seller, etc.

'this Bloomberg article actually makes me like the stock even more. If there really was no chance of a second squeeze, they wouldn't write this article. The only reason they're attacking us is that we're over the target' (again, the video game lexicon is worth noting). A powerful post summarized the attitude of retail investors, embracing generational disdain ('Ok boomer') and distrust of the mainstream media (Bloomberg):

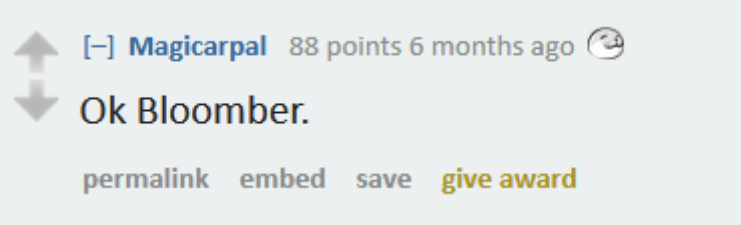


Figure 39: Post on WSB (21 February 2021)

The institutional side

The WSB community is in opposition to Bloomberg, which it identifies as the mainstream source, preferring other informational supports to base its investment decisions on. But is Bloomberg really the dominant provider of financial information? According to the latest report by Burton-Taylor International Consulting, a company specialized in the study of the financial information market, it is: the Bloomberg Terminal covers 325,000 users, while Reuter's equivalent platform (Eikon) does not exceed 190,000. The Terminal, which costs about $20,000 per year, provides access to an impressive amount of financial information – from opinion pieces by Bloomberg journalists to historical securities prices in all markets. It appeared in December 1982, only one year after the creation of Bloomberg LP, and has become so popular that it has dethroned the historic Reuters agency. Some media studies authors have pointed to Michael Bloomberg's autocratic management[319] and gruelling working conditions as explanatory factors, as opposed to Reuters' conservatism (Bartram, 2003; Matloff, 2003). This literature has not, however, provided a transversal insight into 'Bloomberg communication', preferring to study traditional financial presses – a fact that Lee (2014) regretted in his review of the literature: 'investigation of the non-print media industry's structure and relations to trading technologies and trading firms is lacking in the study of the financial news industry' (*Ibid*: 717). This is what the rest of this paper proposes.

[319] His autobiography gives a good insight into this megalomaniacal dimension (Bloomberg & Winkler, 2019).

Another proof of the centrality of Bloomberg products is its impact on stock market events. Davis (2006) recently questioned the famous 'media effect' on the basis of interviews with London fund managers: however, his analysis was targeted – in accordance with the tradition of media studies – at the print media (the *Financial Times* in particular). The effect of platforms such as Bloomberg is undoubtedly delicate to grasp, as they shape as much as they produce information. The influence of this framing therefore often goes unnoticed… even by researchers: several economists have attested to the causal effect of certain news on prices by mobilizing Bloomberg data, but without integrating the possible impact of this filter (e.g. Vähämaa *et al*., 2005). Fortunately, other researchers have recently sought to isolate the impact of Bloomberg framing through a comparative approach: 'the findings suggest that market seems to pay more attention to unexpected information shocks based on the Bloomberg forecasts' (Chen *et al*., 2013: 958). Furthermore, Lumsdaine (2010) showed that a bank whose news was often read on Bloomberg had lower returns during the crisis, all else being equal.

But the best way to convince yourself of the importance of Bloomberg is to go to a trading room and talk to traders. Without being in a monopoly position, the Bloomberg Terminal has become the reference for financial market participants.[320] All the traders we met during our internship filled their six screens with Bloomberg windows allowing them to follow their market segment and to chat with brokers and colleagues active abroad. The Terminal is their gateway to the market. An illustration of the power of this centrality appeared during the debates on the integration of environmental issues; it was even highlighted by two Bloomberg's engineers: 'Bloomberg has positioned itself to be a catalyst in the development of financial language for ESG (…). Bloomberg's unique position *vis-à-vis* the global financial community enhances this endeavour' (Park & Ravanel, 2013: 62).[321] In short, the WSB community is not wrong to consider Bloomberg as the mainstream source. And since this is the case, the information disseminated by Bloomberg during the GameStop saga may provide a better understanding of the flabbergasting of institutional investors. It is indeed via the Terminal that traders learn about events and build their interpretation:

> It starts with news that you read on the Bloomberg Terminal (…), the first thing is reading. That was very irrational… Usually, when these things happen, it's retail investor who'll suffer most from

[320] A famous financial analyst interviewed in the recent Netflix series devoted to the GameStop saga declared: 'I don't think you can be a member of the financial community without it (Bloomberg Terminal)'.
[321] This communication campaign also served to re-legitimize the firm, whose image had been tarnished by a case in which confidential company information was transferred from the 'data department' to the 'journalism department' (Campbell-Verduyn, 2017).

irrationality. (…) So, 'sorry for whoever is involved, but (you short it)'. It was certainly the feeling at the beginning (of the saga). You short, it's gonna crash and you think that people are gonna lose a lot of money. (…) We didn't think it'd last for a long time. In a normal market circumstances, hedge funds (would win) and the price would normalize. (Extract from an interview with an equity options trader)

Several elements of the Terminal favor such a reading. When a financial actor inquiries about a stock via the Terminal, he has access to the recommendations of a panel of analysts relayed by Bloomberg. Each analyst recommends an action (buy, sell or hold), as well as a target price that he believes to be the fair price. Figure 40 below shows the evolution of these recommendations for GameStop stock from late 2019 to September 2021. The yellow line represents the actual price, the white line an average of the analysts' target prices, and the green, beige and red bars respectively buy, hold and sell recommendations. It appears that analysts very rarely advised to buy GameStop shares, with half even advising to sell on the eve of the second squeeze at the end of February. Above all, the target price has always been and remains significantly below the actual price. It can therefore be said that the explosion of the share price was a big surprise for the analysts relayed by Bloomberg, and therefore for the community of large investors. Allen *et al.* (2021) reaches a similar conclusion from another database (Institutional Brokers' Estimate System).

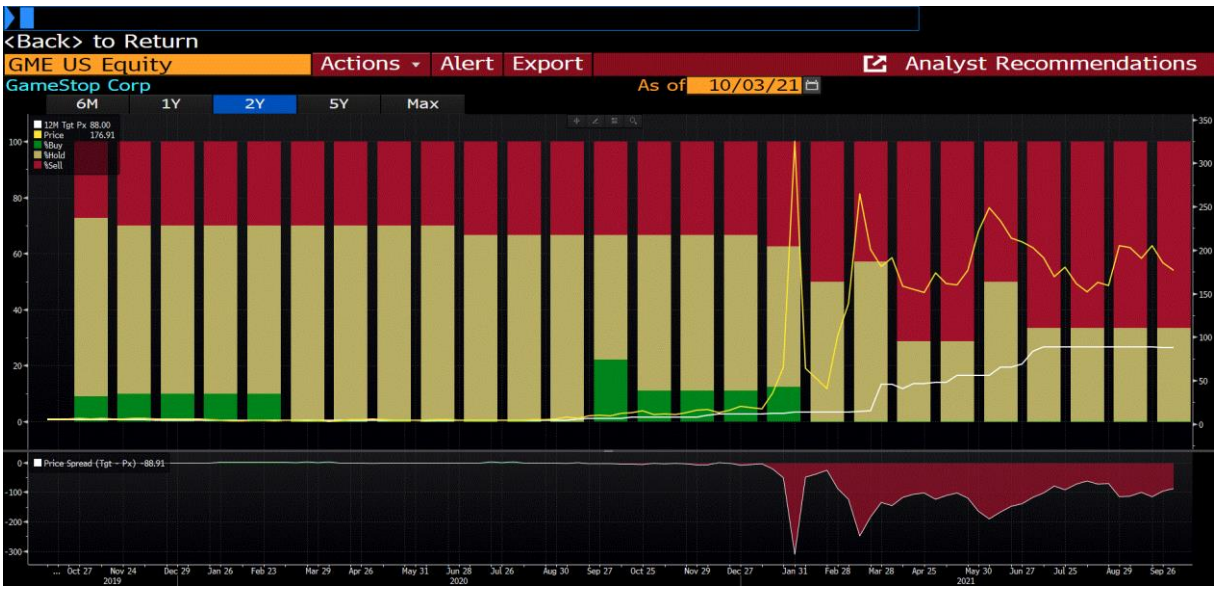


Figure 40: Screenshot from Bloomberg Terminal (5 October 2021)

As we will see more clearly in the next section, the Bloomberg frame often operates by hierarchy. Thus, the investor inquiring about the Terminal does not only have access to analysts' recommendations, but to a ranking of analysts and to the 'consensus' that emerges. In the case

of GameStop, the top-ranked analyst is Edward Woo: an investor who had followed his advice would have pocketed a return of -8.21 percent. Nevertheless, Woo hardly adjusted his target price: he remains convinced that GameStop is worth $24 and recommends selling. This is also the consensus of analysts relayed by Bloomberg (see top of Figure 41 below).

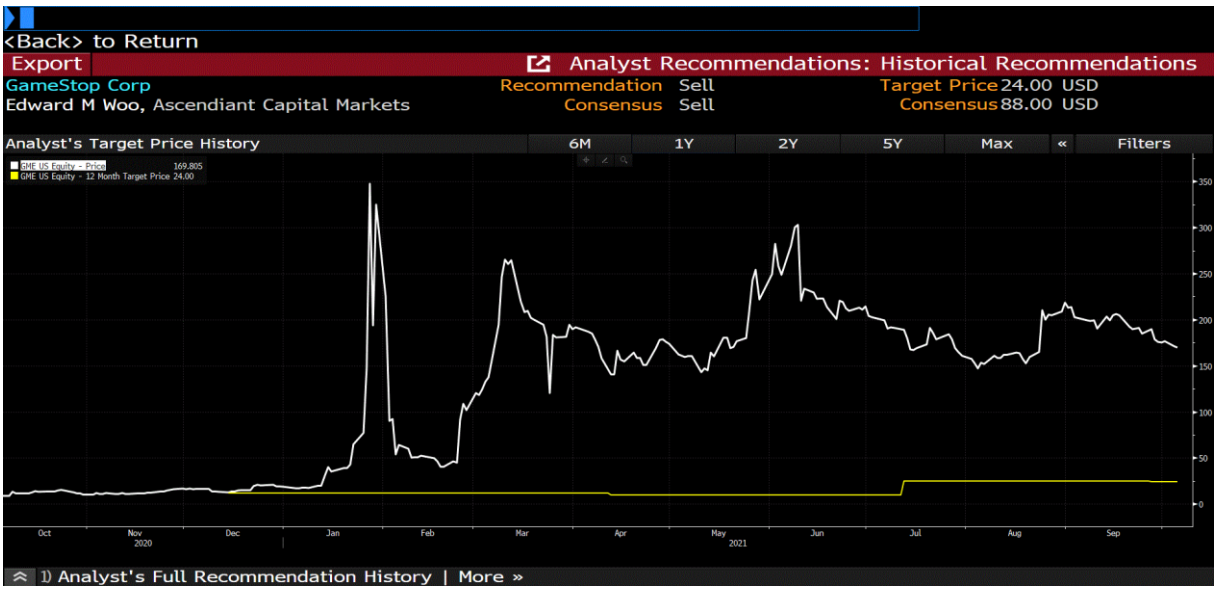


Figure 41: Screenshot from Bloomberg Terminal (5 October 2021)

If the institutional investor was not yet convinced by the absurdity of the current stock price and decides to learn more about GameStop's business, he will come across the firm's news, already prioritized by Bloomberg which selects the key insights (see Figure 42 below). Moreover, each news item is already pre-interpreted as good, neutral or bad news (green arrow up, transparent diamond, red arrow down). Here again, he will find good reasons to be offended by GameStop's soaring. It is clear: the information from the Bloomberg Terminal – unlike the posts from the WSB forum – has led throughout the saga (and still leads today) to the judgment that GameStop stock is overvalued, that its fair price is lower. The uncertainty inherent in the stock market movement is tempered by the various tools of the Terminal… in a certain way.

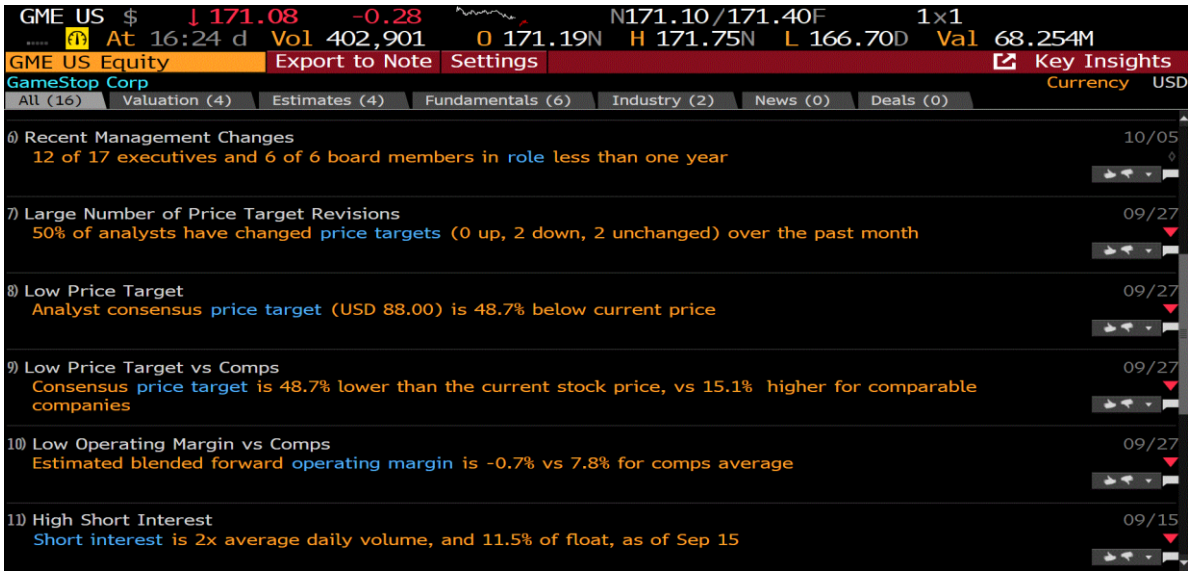


Figure 42: Screenshot from Bloomberg Terminal (5 October 2021)

b. The Bloomberg frame

From the account of events offered in the previous section, it appears that the GameStop saga constituted a conflict of frames: retail investors criticized the mainstream media and preferred the WSB forum, while institutional investors resorted to the Bloomberg Terminal. By defining differently what was happening, these frames were the source of the mutual misunderstanding. In this section, we propose to deepen the comparison by generalizing these findings. After having identified the elements that supported two antagonistic interpretations, the aim is to draw out the characteristics of these frames: beyond the GameStop case, how does the Bloomberg Terminal organize the experience of market professionals? And how do its features differ from those of the WSB forum? This second moment of analysis will allow us to identify the deeper roots of the opposition between institutional and retail investors, and thus to address questions that go beyond the GameStop saga, such as the conditions of financial democracy. Given its hold on all markets (not just equities) and events, we have focused this section on the Bloomberg Terminal and are using the WSB forum mainly for comparison.

The only researcher active in the social studies of finance to have taken Bloomberg as an object of study is Claudine Carluer. In two papers, Carluer (2001, 2005) studies the extension of Bloomberg's products and how this extension challenges the national boundaries of information. However, her analysis remains brief and focused on the Bloomberg TV channel, rather than on the Terminal. To account for the type of framing operated by Bloomberg in the trading rooms, we had to complete our interviews and observations with an immersion in this Terminal (fortunately accessible to the business department of our university) and in the

methodological notes that are published. Indeed, the traders we met mobilize different tools of the Terminal without taking time to examine their production conditions: their testimony did not allow us to grasp the characteristics of the Bloomberg frame. Conversely, our analysis of the device 'from the inside' reveals three framing effects allowing institutional investors to reduce uncertainty in their valuation work: selecting, weighting and ranking.

Selecting

The analysts whose recommendations are relayed on the Terminal, as well as the news that stand out as 'key insights' have been selected by Bloomberg. This operation divides the signals emitted on the markets, distributed on one side or the other of the 'visibility border'. It carries significant power – and we saw with Park and Ravanel's (2013) comments on ESG data that the company was aware of this. However, this power is conditional on the support of the financial community; this selection is therefore not entirely arbitrary and must respond to a coherent line of conduct that is in conformity with the expectations of the target audience. In the case of the selected news, the manual *The Bloomberg Way* has precisely the task of maintaining this line of conduct, beyond national borders and the rotation of exhausted editors. Not all selection operations are spelled out (Bloomberg keeps the right to discretion by publishing its methods very partially), but the spirit that must guide the employees in charge of these selections is meticulously explained.

The first 11 editions of this 278-page manual were exclusively for Bloomberg employees – the twelfth was published in 2014. In 20 chapters, *The Bloomberg Way* teaches the codes for producing good information, that is the art of selecting 'everything worth knowing on a real-time basis' (Winkler, 2014: xiii). We will not dwell on the very strict instructions of pure form, intended to make the information integrable in the Terminal and 'digestible' by the financial community: four-paragraph article with standardized content (theme, details, quotation, perspective), no adverbs, past tense and active voice, 64-character headline, etc. Instead, we will develop three axes that are transversal to the logic of information selection at Bloomberg: the personification, the dramatization and the fundamentals-oriented rationalization. If these three points concern above all the 'news' window of the Bloomberg Terminal, they inform more broadly on the spirit guiding the selection of relevant signals (opinion articles, but also analysts' recommendations, company balance sheets, etc.) – these windows frequently overlapping (an article being written for each release for example).

‘Put Bill Gates at the beginning, and the story will get the attention of Microsoft Corp’s managers, employees, customers, suppliers, competitors and investors, as well as people who want to know what one of the world’s richest men is doing’ (Winkler, 2014: 14). In keeping with its motto ‘names make news’, Bloomberg focuses on the news of the stars of the stock market. The information spread via the Terminal consecrates the opinion leaders. Bloomberg employees are in fact asked to become close to their ‘top 10’, that is ‘the most important people and institutions’ of the sector they cover:

> Find out what makes them influential; visit and talk to them regularly (…). Establishing just a handful of contacts on a beat can take hundreds of phone calls and multiple visits to industry conferences. From there, reporters need equal amounts of persistence and patience to deepen the relationships and build trust. (Winkler, 2014: 42)

Not only the importance of the information lies in the personality covered, but also the importance of the reporter: ‘We are only as good as the people we know. The best reporters recognize this and always go to the top. Their stories quote people who are in a position to know something and influence events’ (Winkler, 2014: 108). In sum, those already established in the financial world will find in Bloomberg a spokesperson, perhaps a bit pushy, but generally docile.

This self-interested proximity to the big financial actors undoubtedly allows Bloomberg to broadcast on its Terminal some breaking news about the latest house bought by Elon Musk. But it also has the effect of aligning what institutional investors see with what these stars think. According to Manning (2013), this type of relationship is at the root of the media’s – and the financial community’s – inability to foresee and therefore prevent the last financial crisis: ‘exchange relationships between financial journalists and their sources were important because they rarely prompted journalists to develop more holistic and critical perspectives on the financial system’ (Manning, 2013: 186). But this personification of information is difficult to reverse, as its performativity confirms its necessity: the more a person is relayed, the more influential she will be and therefore the more important it will be to relay her, etc.

The second main logic of information selection is dramatization. In his investigation of the ‘eventalization’ of the 2010 Flash Crash, Borch (2016) has already underlined the importance of its mediatization: the latter allowed to give a meaning to the event (high-frequency trading is the culprit), an attractive nickname (Flash Crash) and more generally a magnitude… despite its very moderate economic impact. The same is true with most real-time

news. To attract the eye, Bloomberg has to create an event; and to do that, it has to dramatize: 'Explains why the news matters. Providing a superlative, such as the biggest, the most, the least or the smallest, is an essential revelation of what's news' (Winkler, 2014: 8). For Bloomberg's employees, it is a matter of selecting the best-selling themes: 'Select words that tantalize the reader and advertise the story's theme, such as nuclear, terror, China, salary, cancer, billionaire, Harvard and hedge fund' (Winkler, 2014: 50). This second aspect is of course not unique to the Bloomberg frame: many traditional press titles also use these marketing techniques. But these do not have (or no longer have) the power of the Terminal. As a result of this power, institutional investors will tend to base their investment policy on dramatized information relating to stereotyped themes. And as Chen, Jiang and Wang (2013) have attested, this can be seen in stock prices – and arguably also in their volatility.

Finally, the information relayed on the Terminal generally provides a rationalization of a stock market movement based on what financial theory calls the 'fundamentals', that is the economic situation of the company issuing the share or bond in question. This system of explanation, which is dominant but not hegemonic at Bloomberg[322], is not self-evident: in particular, it appears very different from the rationalization by the 'state of the forces at work' which prevailed on the WSB forum. It conveys a conception of the market as a 'machine' whose function is the integration of information in the valuation of companies. In the spirit of Bloomberg, by disseminating this information quickly and clearly, the Terminal's task is to help financial actors react quickly in order to take advantage of future market adjustments. It is therefore a matter of systematically associating information with its impact on a price, while maintaining an ideal of neutrality. Thus, while prescribing to 'leave the interpretation of the facts to the reader' (Winkler, 2014: 29), the Bloomberg manual states that 'our job is to find at least one plausible reason, and preferably several, for any price change' (Winkler, 2014: 14). This interpretation is explicitly intended to guide investment decisions: 'A story about companies, stocks, bonds, commodities or currencies should tell investors whether to buy, sell or hold' (Winkler, 2014: 82). And as the market's 'adjustment' to new information is almost immediate, speed is key: 'When we become aware of possible market-moving information, the first thought must be: Have we told our audience about this?' (Winkler, 2014: 56).

[322] Some windows are devoted to technical analysis (rationalization by patterns identified from the price history).

At Bloomberg, this 'market-moving' information is most often linked to fundamentals: 'Identify what's behind the changes in supply and demand that cause share prices to move. If the story focuses on specific companies and industries, provide the reasons for their gains or losses' (Winkler, 2014: 151). The Terminal therefore tends to direct investors' attention to the news of listed companies (rather than to other investors in the same market segment, for example): 'What are the key pieces of information that anyone needs to know about a company right now? (…) Show how analysts perceive the company by saying whether they rate the stock a buy, a sell or a hold' (Winkler, 2014: 167). As we saw in the first part, this focus on fundamentals is largely responsible for the stupefaction of institutional investors with the GameStop saga.

Weighting

How do we obtain the consensus target price of the GameStop stock (represented by the white line in Figure 2) from the predictions of the different analysts? We need an aggregation. But there are many ways to aggregate and the simple arithmetic average is seldom the solution: should we not give more weight to the predictions of the best analysts? Should we keep in the panel an analyst who has not updated his predictions for four months? All these methodological choices – without being sensational (and perhaps because they are not sensational) – have profound consequences on the shaping of the signals reaching investors. Bloomberg is rarely satisfied with relaying indicators produced by other agencies: it also builds its own, and knows where to position them so that they are seen. Yet, most indicators involve an aggregation and weighting operation. It is this weighting – understood here as a hierarchical ranking of information at the source of a synthetic indicator – that constitutes the second framing effect of the Bloomberg Terminal. To illustrate its significance beyond the GameStop case, we will briefly develop the case of the BVAL Score.

Bloomberg LP's stated goal is to make the Terminal an indispensable device. To this end, the Terminal cannot be content with being an information support. It has been equipped with a messaging system allowing financial actors to interact. But for some financial products, this connection function took on an even broader dimension: the Terminal became the market. This is the case for products for which organized markets (such as Euronext, the Frankfurt Stock Exchange or the NYSE) are not the main medium: bonds in particular have historically been traded over the counter. The matching of buyer and seller and the publication of the official price are not *a priori* assured by a regulated market. Bloomberg has therefore applied (in

competition with others) to fulfil these indispensable functions with two products that it hopes will be just as indispensable: Instant Bloomberg (messaging service presented as 'the leading chat tool used by the global financial community') and the BVAL Price. We will focus on the latter and the weighting operation it secretes.

The Bloomberg BVAL Price is intended to be the reference price for the bond market. When a bond is liquid, the BVAL Price simply provides the price at which market makers covering this security are willing to buy/sell it on Bloomberg (which then acts as a trading platform). But when this is not the case, the prices of 'comparable' securities[323] are mobilized and mixed with available market data:

> To derive a Final BVAL Price, the results are then appropriately weighted and aggregated based on the relative strength of each (method). In this way, BVAL produces a high-quality price for every Target Bond regardless of the quantity of market data available. (Bloomberg, 2021a: 2)

In the only methodological document available (via the Terminal), no technical details are provided to better understand how the two methods are 'appropriately weighted'. A 'Price Transparency' window does reveal the contribution of the different sources to the Final BVAL Price, but not the formula dictating the weighting rate adopted (see Figure 43 below). This methodological decision, with its heavy framing effects, is part of Bloomberg's internal kitchen.

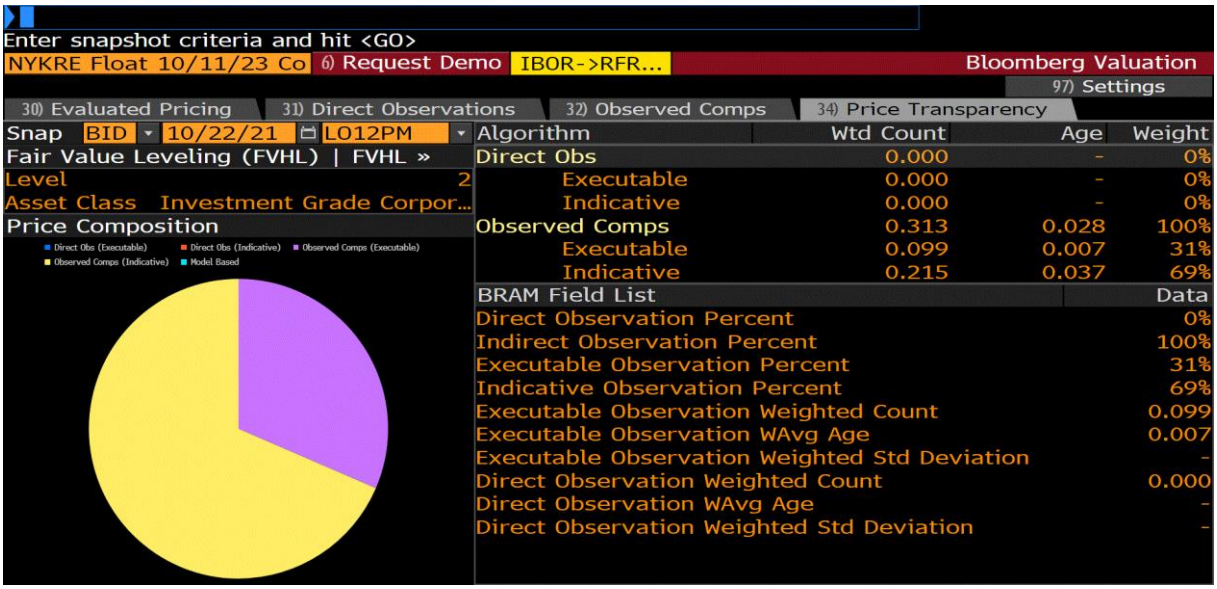


Figure 43: Screenshot from Bloomberg Terminal (22 October 2021)

[323] These are other bonds issued by the same issuer or bonds that are issued by companies in the same industry and have the same 'credit quality' and 'seniority rank' (order of priority for reimbursement).

Instead, the investor must assess the quality of the data mobilized using the BVAL Score, 'a proprietary and innovative metric [...] measured on a scale of 1 (the lowest) to 10 (the highest)' (Bloomberg, 2021a: 6). But for this measure as well, Bloomberg's discretion is expressed through weighting: 'a BVAL Score is calculated for each (method) which are then appropriately weighted to derive a Final BVAL Score' (Bloomberg, 2021a: 6). The idea here is not so much to condemn the weighting technique adopted by Bloomberg or even its opacity, but to highlight the work of reducing uncertainty that it implicitly carries out: investors are looking for synthetic indicators whose semiotic content depends on the aggregation technique adopted. By claiming the right to decide on this technique, Bloomberg allows collective attention to be focused in one direction – which makes it possible to agree on the definition of the value of a bond, but which also leads to blind spots that resurface in the interpretation conflicts of the GameStop saga.

Ranking

The last fundamental feature of the Bloomberg frame is the ranking. Often backed by selection and weighting, ranking creates a competitive space, a fight for investors' attention. In the GameStop saga, the recommendations of Woo – ranked first despite his negative performance – were more highlighted than those of other analysts, who became his competitors. Bloomberg has grasped the effectiveness of this shaping and thus provides Terminal users with rankings of multiple entities: brokers according to the volume of transactions they handle, personalities according to their wealth, economists according to their predictions of major releases, companies included in a stock market index according to their return, national currencies according to their three-month interest rate, etc. Even more often than in the case of weighting, Bloomberg reserves the right to be opaque about the methodology underlying these different rankings. For example, in the case of analyst recommendations, the only document accessible via the Terminal simply states that Bloomberg 'uses a proprietary calculation to rank the analysts relative to each other, based on their entire coverage' (Bloomberg, 2021b: 20).

At the end of this second part, it appears that the Terminal offers more than 'raw data' that it would be up to the investor to interpret. On the one hand, because these 'raw data' do not exist and all information implies a formatting. And on the other hand, because Bloomberg is well aware of the type of formatting that makes the Terminal attractive, even indispensable, so that the 'Bloomberg frame' – through its selection, weighting and ranking – offers a very particular perspective on financial markets. And the peculiarity of this perspective becomes

clear when it clashes with another one, such as the WSB forum. Indeed, much of the shock that institutional investors felt when GameStop stock soared was due to the heterogeneity of their frame of reference. In the same vein, Milovidov (2021) noted – but did not substantiate – that 'the networking (i.e. WSB) contributes to a significant change in the priorities of retail investors' attention to various signals and indicators that other investors usually use for elaborating investment decisions' (Milovidov, 2021: 18).

Table 11 below summarizes the main characteristics of the Bloomberg frame identified in this second part, comparing them with those of WSB. The forum differs in many ways: its members tend to account for price movements through the intentions and resources of the actors involved rather than through the evolution of the activity of listed companies; events are taken lightly, even casually; the sources of authority invoked are more marginal actors than the 'stars' relayed on the Terminal (which tends to shift the focus away from the 'center' of the financial system); the information is freely accessible and debated, contrary to Bloomberg's paid subscription;[324] the points of attention are limited, focusing on certain conjunctural issues (such as the GameStop case). A common thread between the two frames is the real-time dissemination of information.

	Bloomberg	**WSB**
Type of rationalization	Fundamentals-oriented (company balance sheets)	Market-oriented ('forces at play')
Tone	Dramatization, personification	Trivialization, ridicule
Effect	Centripetal	Centrifugal
Transmission	Private, priced	Public, debated
Update	In real time	In real time
Coverage	Extensive	Focused

Table 11 - Comparison of the Bloomberg frame to WSB

c. Information pluralism, democratic threat

The heterogeneity of the frames of reference makes it possible to understand the incomprehension expressed during the GameStop saga and beyond. However, in addition to this astonishment, there was regularly a virulent criticism of the behavior of WSB's traders. Besides the outraged press articles already mentioned, several scientific papers end with a call for stricter regulation of this type of forum:

[324] This subscription corresponds to the 'club model' that has become the norm in the financial information market since the early 2000s (Thivant, 2006). This, of course, raises equality issues, as raised by Freeland (2010).

> The findings of the study have important implications for regulators and policymakers, they should continuously monitor the investing groups on social media platforms as they can create inefficiency in the market, which may lead to a bubble creation or crisis ignition as in the recent episode of the GameStop tussle. (Umar *et al*., 2021: 7)[325]

And the public authorities did not remain deaf, quickly expressing their concern – albeit ambiguously. The European supervisory authority reacted on 23 February 2021: 'An increased participation of retail investors in stock markets is welcome (…). Nonetheless, ESMA urges retail investors to be careful when taking investment decisions based exclusively on information from social media and other unregulated online platforms' (ESMA, 2021: 1). In his inaugural speech, the SEC chairman was similarly ambivalent about the GameStop saga (Gensler, 2021). Why do those who have supported the democratization of finance for years resent a popular takeover?

According to Macey (2021), the answer lies in class struggle: while 'there is no substantive difference between what short-selling hedge funds were doing and what the Reddit users were doing' (Macey, 2021: 12), regulators leave the former untouched because they both belong to the dominant class. This agonistic reading is also present, in a more worrying way, in the conclusion of Lyócsa *et al.* (2021): 'WSB-like people-powered initiatives might dramatically increase the polarization of our societies, providing additional ammunition to both Alt-Right and Alt-Left movements. We should all keep this in mind' (Lyócsa *et al.*, 2021: 12). However, this first answer does not stand up to a more detailed investigation that reveals the heterogeneity of the two 'camps' – for example, several institutional investors supported the price increase, while some retails shorted the GameStop stock (Hasso *et al*., 2021). In conclusion, we propose an alternative explanation, based on our analysis of the frames: what scandalized the financial professionals was not that the poor took power, but that their interpretation of financial reality was attacked. This is what appears, for example, in the commentary proposed *a posteriori* by the head of Citron Research, one of the most emblematic short-sellers in the GameStop saga:

> This story is the story of when information doesn't make a difference. [...] Stocks used to follow the truth [...] It's how the market's always worked. If you find the truth, you can find the stock

[325] For similar policy recommendations, see Allen *et al*. (2021) and Eaton *et al*. (2021).

price. The reason why we're here right now is because what happens when they become detached, the truth and the stock.[326]

What has outraged most commentators is the emergence of information pluralism. This pluralism is understood here as the possibility of contesting the criteria of validity on the basis of alternative information. This is what retail investors have sought to do by using the forum as a critical alternative to the Terminal. Now, despite the concerns that it has stimulated, this pluralism can be considered a condition for the democratization of the financial markets (understood in the sense advanced in the introduction of an extension of participation, and not only of representation). Several theorists have indeed placed pluralism – rather than legibility – at the foundation of democratic functioning: a democratic decision must be the result of a contradictory exchange. Hence, also the emphasis on media pluralism shared by several schools of democracy (Raeijmaekers & Maeseele, 2015). Sen's (1985) concept of 'informational basis' – and the less discussed concept of 'information pluralism' – support this position. Since a judgment about the world depends on the data considered, the information pluralism can be considered as the epistemological extension of the democratic requirement. This was obvious to Sen:

> There is no argument in all this for expecting that moral goodness must be ultimately decidable by counting the units of some homogeneous nonmoral quantity [...], rather than having to balance the relative importance of different considerations that conflict. It is not so much that information pluralism can be defended, as that there is no special need for a defense. (Sen, 1985: 178)

Several social scientists have taken up and elaborated this requirement to 'formulate an agreement on the facts to be taken into account in describing reality in all its diversity' (Salais, 2009; see also Bonvin *et al*., 2018). In the field of financial markets, this translates into a broadening of the sources mobilized by investors to guide their decisions. From this point of view, the rise of WSB appears to be a democratization – the first – of the stock exchange.[327] But this challenge to the validity criteria underlying the Bloomberg frame does not lead to a discussion in the Habermasian sense: given the absence of a 'public space' where the different conceptions of reality could dialogue and agree on a compromise, this epistemological clash is condemned to produce erratic price behavior, as in the GameStop saga. This allows us to explain

[326] Interview excerpt from the Netflix series devoted to the GameStop saga.
[327] This reading seems to us to be more faithful to the critical perspective of WSB than the warning of the advent of a 'memocracy' that would threaten the 'shareholder democracy' by subjecting corporate governance to ideological and frivolous criteria (Goetzmann, 2022). As Massoc and Lubda (2021) have shown, the WSB forum is not characterized by a univocal ideological orientation.

the concern of regulators mentioned above. More concerned with the stabilization of financial markets than with their democratization, they are more worried than enthusiastic about the emergence of alternative expertise.

The project of a public space confronting WSB to Bloomberg may seem anti-pragmatist because it is 'too idealistic', but it could be embodied by taking inspiration from certain experiences of democratization of other financial devices: the Terminal could 'integrate' certain criticisms by modifying its selection, weighting and ranking operations, in the way that the rating agencies integrated (certain) criticisms by modifying their model following the eurozone crisis (Legind & Jensen, 2014). This requires, however, that the arcana of the Terminal be subjected to a public debate similar to the one that had taken the rating agencies as its object. Failing that, financial democratization projects can only take the form of radical institutional change, such as the creation of a network of financial NPOs (Block, 2014), the nationalization of banks (McCarthy, 2019) or the establishment of a public digital platform (Palladino, 2019).

Conclusion

The starting point of this chapter is the ambition to understand a misunderstanding: why were most financial market professionals, even though they are used to tactical maneuvers, stunned by the GameStop saga? And why was this shock coupled with indignation? These two issues – epistemological and moral – were addressed by studying the frames mobilized by the two 'camps' in the saga: the Bloomberg Terminal of institutional investors and the WSB forum of retail investors. During the events of early 2021, these two frames supported antagonistic perceptions of what was happening, to the extent that professional traders did not see the same thing as millions of internet users. To generalize these findings beyond the GameStop case, we have put forward a characterization of the 'Bloomberg frame' and its main divergences from the 'WSB frame'. By challenging the criteria of validity conveyed by the Terminal and accepted in the financial community, retail investors have threatened the organization of the experience of market professionals. In so doing, they have also confronted financial commentators and regulators with the issue of information pluralism. If this pluralism can be considered a condition for the effective democratization of financial markets, it can also, in the absence of a discussion space allowing for the confrontation of different perspectives, be the source of instabilities that regulators fear more than they wish for a financial democracy.

Finally, we think that two lines of research could be explored in the wake of this chapter. On the one hand, the case study at the heart of this chapter has reaffirmed the heuristic potential of 'breaching experiments': these events that break the sense of normality of market actors bring to light certain realities that are usually too deeply rooted to be analyzed. If the Bloomberg Terminal has been the subject of so few studies, it is mainly because it has managed to blend into the financial reality to the point of making its agency forgotten. The latter reappeared when it was challenged by WSB's retail investors. Some previous investigations have already demonstrated this fruitfulness, such as the Flash Crash study conducted by Borch (2016), and it will be important to analyze the upcoming 'breaching experiments' to discover their revelatory power.

On the other hand, this chapter would benefit from being extended by a study of the diversity of uses of the Bloomberg Terminal. In order to clear the field, we have focused on the main and most decisive use: the traders we met mobilize it without taking any particular distance. When they were asked to explain their relationship with the Terminal, they generally emphasized its virtues (completeness, innovation, ergonomics, etc.). That said, as other research has shown about other devices (e.g. Beunza, 2019), it is likely that more reflective, even critical, uses coexist, particularly during moments of doubt. For example, one trader interviewed recognized the impact of the news relayed by Bloomberg on the interpretation of the GameStop saga and suggested that this could be problematic. In order not to adopt an overly mechanistic reading of the behavior of financial market actors, an analysis of the possible plurality of Terminal mobilizations would therefore be welcome.

2. The market according to Bloomberg: a wrong frame?

In this second subpart, we take a closer look at the role of the Bloomberg Terminal in the GameStop saga, based on Erving Goffman's *Frame Analysis* (1974). This theoretical framework sheds light on the event from two angles. On the one hand, contrary to reifying conceptions of the market, it reveals the precariousness of the construction of market reality, which is constantly under construction. The coordination of buyers and sellers is only possible when "the order of interaction" holds, that is when the various stakeholders agree on "what is going on here". However, this agreement on the framework of experience is not spontaneous and, as we shall see, was lacking in the GameStop saga. On the other hand, *Frame Analysis* opens the way to an analysis of actors' interpretations of situations based on the types of information mobilized: this understanding of *framing* as the shaping of signs rather than as a definition of the order of interaction, has been taken up extensively by media studies (Devereux, 2007; Vliegenthart & van Zoonen, 2011). In this instance, it will enable us to understand one source of the opposition between institutional investors and retail traders.

Given that no conceptual application is without empirical resistance, our approach will lead us to critically reflect on the concepts developed by "the last Goffman" (Cefaï & Gardella, 2012). Based on the model of face-to-face interaction, these concepts need to be rethought in order to account for technology-mediated interactions. Their relationship to the process of institutionalization also needs to be questioned, insofar as the latter is loosely integrated into *Frame Analysis* and threatens the empirical validity of certain distinctions (in particular that between "directed action" and "determined action"). The remainder of this subpart is structured as follows. First, we briefly present the concepts of *Frame Analysis*, before mobilizing them to analyze the GameStop saga. Then, we propose a critical discussion of this conceptual edifice, based in particular on the various mobilizations to which it has been subjected since its publication. In conclusion, we review the main findings of this research.

a. The formalist edifice of *Frame Analysis*

Frame analysis: an essay on the organization of experience (Goffman, 1974) proposes a relatively "self-sufficient" conceptual architecture: the notions proposed allow us to analyze the GameStop saga without having to call on other, earlier writings. This being the case, a brief overview of the context in which it was written will enable us to avoid any confusion. *Frame Analysis* is one of Goffman's last writings; it seems now accepted that the work is not so much

a break with the symbolic interactionism that would have characterized his earlier work as an attempt to formalize the kinds of experiences that his earlier investigations had illuminated locally (Manning, 1980; Cefaï & Gardella, 2012; Heinich, 2019). As he would recall in a response to certain critics, Goffman never subscribed to the individualist conception of a social reality permanently reconstructed by actors (Goffman, 1981).

In *Frame Analysis*, he attempts to draw out certain lessons about these "principles of organization which govern events - at least social ones - and our subjective involvement in them; frame is the word I use to refer to such of these basic elements as I am able to identify" (Goffman, 1974: 10). Before unfolding the conceptual architecture of the work, it should be noted that the concept of *frame* embraces both the springs of definition of the situation with which individuals are confronted when they engage in it, *and* the categories mobilized by these individuals to perceive and act "adequately". This conceptualization was intended to overcome a tension that had been the source of criticism: "it was said that he [Goffman] had not fixed upon a set of analytic tools that were consistent and that allowed him to capture both the actor's definition of a situation and the structural, normative, or external constraints under which the actor worked" (Manning, 1980). In many respects, however, the tension remains.

The *frame* is therefore the answer to the question "What's going on here?" that individuals ask themselves, more or less consciously, when they engage in a situation. Most of the time, this question is not made explicit, as it is quickly resolved: the frame that characterizes the situation is correctly identified by the individual[328]. In other words, to reiterate a distinction made at the beginning of the book and then abandoned, the "framework of understanding" corresponds to the frame of the activity in progress. But the cases that interest Goffman are not the obvious ones, precisely because they reveal nothing. To uncover the organizing principles of experience, it is better to look at marginal cases which reveal what is at stake in ordinary situations. Drawing mainly on miscellaneous events randomly selected from the press, Goffman uses situations of misunderstanding or misappropriation to build his conceptual architecture.

The first proposed distinction, often overlooked in reviews, is that between natural and social frames: the former are the physical laws that govern natural phenomena, while the latter - which will be the focus of the book - are the conventional principles defined above. Underlying this distinction is the concept of intention: natural phenomena are determined, while social

[328] From the outset, Goffman declares his divergence from a constructivist reading of social reality: in his eyes, a frame effectively characterizes a situation, and individuals can identify it or make mistakes.

actions are “directed”. This is not to contradict the constraint exerted by the frame: chess players don’t reinvent the rules, but decide to engage in a game. This seemingly common-sense distinction will complicate the mobilization of *Frame Analysis* to the stock market and, more generally, to any interaction mediated by technology and involving a sufficient number of individuals for none to be indispensable. But we will come back to the necessary adjustments in the next section; for now, let’s stay within the Goffmanian context of face-to-face interaction.

The frame is therefore the set of principles that govern an interaction - for example, two chess players in a park - and enable us to identify it as such - two people sitting face to face, separated by a squared-off game board. Now let’s imagine that, in our example, we realize that a third person is filming the two players’ game. Confusion sets in: are we witnessing a game important enough to be televised? Or are the two players, in fact, film actors simulating a game of chess? In the latter case, Goffman would diagnose “keying”: the principles governing the activity of playing chess (the “primary frame”) are taken as a *model* by another activity, referred to as the “secondary frame” - and everyone present is aware of this transformation of the frame. But perhaps one of the two players is unaware of the presence of this camera (which is indeed behind his back) and the other, who turns out to be a chess grandmaster, is trying to trap him via a “hidden camera”? In this case, according to Goffman’s classification, we are no longer dealing with keying, but with fabrication:

> I refer to the intentional effort of one or more individuals to manage activity so that a party of one or more others will be induced to have a false belief about what it is that is going on. A nefarious design is involved, a plot or treacherous plan leading - when realized - to a falsification of some part of the world (Goffman, 1974: 83).

We can then have fun, and Goffman is not above it, thinking up ever more complex imbrications: what if the novice player supposedly tricked turned out to be the puppeteer who had asked a friend to enlist this grandmaster in a fake hidden camera so as to have the opportunity to play against him? The secondary frame would then have undergone a second fabrication. And the use of this story as an illustration of Goffmanian theory can be seen as a third stratum resulting from a keying of an already doubly fabricated frame. While other fruitful notions are then proposed (backstage, out-of-frame, conventional affects...), the bulk of the second part of the book puts this formalism to the test through the study of two particular frames - theater and discussion - and the examination of various cases of destabilization of the frame.

In the next section, we will focus on the operation of establishing a frame (primary or secondary), that is the framing of the situation. Some critics have argued that the book offers too little insight into this sociologically central issue (Gamson, 1975; Brooks, 2007). Goffman does refer to the "meta-language" that enables actors - both human and animal - to signal a transformation of the primary frame (e.g., not pulling out one's claws indicates that the fight has been keyed into a game[329]), but does not provide the basis for a research program. Contrary to these criticisms, Michel Callon (1998) has demonstrated that it is possible to derive from *Frame Analysis*, and in particular from chapter 8 "The Anchoring of Activity", the foundations of an empirical approach to framing operations. In this chapter, Goffman discusses the relationship between the frame and its environment, and in particular the framing effort required to define the situation: "activity framed in a particular way [...] is often marked off from the ongoing flow of surrounding events by a special set of boundary markers or brackets of a conventionalized kind" (Goffman, 1974: 251). He is particularly concerned with the establishment of spatio-temporal boundaries, and therefore discusses various conventionalized signs for marking the beginning, end and perimeter of interaction.

In a more constructivist approach that was to have a lasting influence on the sociology of markets, Callon extended the scope of this framing operation to include everything involved in qualifying the situation and enabling actors to act upon it: "such a framing process, in addition to requiring expensive physical and symbolic devices, is always incomplete" (Callon, 1998b: 252), that is continually "in work". As we have previously seen (see Section I.2a of the general introduction), one of the devices particularly studied in the wake of Callon's proposal is the economic theory model (MacKenzie, 2006a; Svetlova, 2012): through its assumptions and parameters, the model selects what constitutes market reality and, through its results, offers a reading grid to participants. More recently, the concept of infrastructure has enriched this Goffman-inspired sociology of markets by proposing to "decouple" the two dimensions of the frame that Goffman had intended to hold together: infrastructure designates an environmental component that participates in defining "what is happening here" (e.g. computerized price-setting systems on contemporary stock exchanges), while the device equips individuals by reducing the uncertainty of the situation and enabling them to act appropriately (e.g. technical analysis strategies for stock prices). The paper cowritten with David Pinzur attempted to deepen

[329] On the influence of ethology on Goffman's conception of interaction and space, see Berger (2024b).

and clarify this conceptual distinction, based on two meanings of framing: *radical* (relating to the order of interaction) and *instrumental* (relating to the interpretation of individuals).

Without going into the details of the debates that animate the sociology of markets, it is worth noting one consequence of this distinction: it makes a situation of prolonged disagreement about the frame at work conceivable. Two individuals interacting can be equipped with different "frameworks of understanding" and disagree about what's going on for longer than most of Goffman's examples of confusion would suggest. While he acknowledges that "individuals exhibit considerable resistance to changing their framework" (Goffman, 1974: 29), particularly when religious convictions are involved, Goffman does not seem to pave the way for lasting disagreements in situation. For good reason, this would reinforce a distinction that the concept of frame must overcome, namely that between the order of interaction and the grid of interpretation. In its defense, the potential for lasting disagreement was probably more limited before the emergence and expansion of technology-mediated interactions[330]. Finally, let's note that this distinction distinguishes the current uses of the concept of frame: some pragmatist works have mobilized it to identify the rules of the order of interaction experienced by researchers (Cefaï & Gardella, 2012), while the overwhelming majority of uses - mostly localized in media studies and organizational studies (Vliegenthart & van Zoonen, 2011; Cornelissen & Werner, 2014) - have identified it with a more or less strategic coloration of information.

b. The conflict of frames at the heart of the GameStop saga

It became clear from our account of the GameStop saga that there was a conflict of expertise between institutional and retail investors. The former mainly analyzed events using Bloomberg Terminal tools, while the latter discussed them on the WSB forum. Through its operations of selecting relevant information, but also of classifying (notably of relayed analysts) and weighting (in the construction of indicators), the Terminal shapes the information mobilized by traders on the trading floor (cf. Table 11 above).

On this basis, there seems little doubt that the two opposing camps in this saga had different perceptions of what was happening. On the one hand, professional traders saw

[330] However, it is possible to imagine "face-to-face" cases. For example, a believer, a sociologist and a politician taking part in a mass will not have the same conception of what is happening, throughout the entire event. The question of identifying the authentic frame in such cases is a delicate one, even more so, as we shall see, when the interpretive grids are performative.

GameStop's share price evolution as an anomaly destined to be corrected by the basic logic dictating the workings of the financial markets, namely the valuation of future gains attached to the ownership of a stock. This "typical" attitude (which we will qualify) stems from a number of factors. Given the specialization of trading rooms, traders are alone in their market segment. Added to this isolation is the imperative of the professional environment: whether they like it or not, they have to position themselves in the market. The way their relationship with the market is scripted - fixed opening and closing times, low variability of available funds, recurrent customer requests, etc. - also helps to objectify the situation: traders are confronted with the logic of the market. They try to anticipate the value of a company that will eventually be revealed by the market - like friends who bet on the exact time of sunrise.

On the other hand, retail investors saw the evolution of GameStop's stock price as a game of strategy spiced up by political and generational animosity. Their involvement is different: it takes place on their own time and through consultation. As we have seen, this radical difference in perspective is intimately linked to the "informational base" mobilized by the two camps. As Milovidov (2021) notes, "the networking contributes to a significant change in the priorities of retail investors' attention to various signals and indicators that other investors usually use to elaborate investment decisions" (*Ibid*: 18). In short, retail and institutional investors were not equipped with the same "framework of understanding" to apprehend the GameStop event, which helps to account for the mutual incomprehension that characterized the event: the conditions for agreement on the definition of the situation were not met[331].

This conclusion is not without interest, but it draws little from *Frame Analysis*. Like most uses of the concept of framing (particularly in media studies), its only lesson is that the way in which mobilized information is formatted has an impact on interpretation - an observation whose discovery precedes Goffman's work (Manning, 1980). To deepen the mobilization of Goffmanian concepts, we need to question the order of interaction that characterizes the situation under study. In other words, what is the frame *actually* at work in the GameStop saga? One tempting answer is to side with the winners. Retail investors have adopted a correct "framework of understanding", reminding professional traders of the social nature of the stock market, which is, after all, a non-cooperative game. Indoctrinated by their Bloomberg Terminal, market professionals mobilized a "natural framework" that reified the market

[331] Conditions presented as follows by Manning (1980) when he synthesizes the Goffmanian perspective: "one does share the problem of framing experience with others, and one is aware that to make sense one must both be able to see things as others do, and to understand how it is they come to similar working understandings" (*Ibid*: 257).

situation and made them forget the capacity of individuals to modify the stock price. We would thus have been dealing with a "framing error" that cost the duped individuals (who should definitely have read Goffman) several million dollars. This conclusion is undoubtedly not without truth, but it seems too simple, if only to resist the demand for empirical realism: why would professional traders have retained an erroneous and costly frame of perception for so long? And why didn't they all abandon it the day after retail investors won?

In order to put forward a more convincing answer, let's ask ourselves what might have motivated finance professionals to adopt this naturalistic framework. Admittedly, the stock market is a social composition, but doesn't it boast certain remarkable regularities that might suggest the imperiousness of physical laws? For example, the announcement of substantial profits tends, all other things being equal, to increase the share price of the company concerned. However, we know that these regularities only hold because they are based on a price evaluation model shared by most participants; and many traders know this too. During our interviews, references to "self-fulfilling prophecies" were not uncommon, justifying the use of models from which the aim was to distance oneself ("I don't believe in it, but I look at it because everyone else does"). Although he rarely developed these relations of performativity between frames of understanding and frames, Goffman devotes a paragraph of his conclusion to them:

> what people understand to be the organization of their experience, they buttress, and perforce, self-fulfillingly. [...] In countless ways and ceaselessly, social life takes up and freezes into itself the understandings we have of it (Goffman, 1974: 563).

This line of inquiry - which has since been explored in greater depth by research into the "performativity" of valuation tools - opens the way to an alternative answer: professional traders mobilized a naturalistic framework because they overestimated its diffusion among market participants (or underestimated the diffusion of the rival framework). As long as their reading grid was sufficiently shared to perform, they had good reason to use it, reflexively or not. Most of them in fact adopted a social framework in which individuals, recognized as responsible for price determination, mobilized - and thus performed - the naturalistic framework of the Bloomberg Terminal. Conversely, retail investors knew they were enough in adopting their own reading grid to impose it on the hitherto dominant framework of professional traders. Two dimensions of the definition of the order of interaction raised by *Frame Analysis* thus become apparent: its reflexivity and its precariousness. The fact remains, however, that this proposal can lead to an "over-conventionalization" of the order of market interaction, by denying the importance of the "resistances" that limit the arbitrariness of the election of the

victorious interpretation. In other words, we might ask whether all orders of interaction are equally plastic, or whether some are more rigidly defined than others. Furthermore, the errors of professional traders cannot be understood without taking into account the technological dimension, which deprives market participants of precious cognitive resources. Finally, we propose to briefly address these two issues in the last section of this article.

c. Does the Bloomberg Terminal create the market?

If the stock market frame is so permeable to the frames of understanding of its members, this is largely due to the instability of price, understood here as a valuation standard. Many other components of the market frame are less likely to vary according to the reading grid of the participants (which, itself, is less subject to variation): the classification of traded products (stock, bond, commodity...), the technique used to confront supply and demand (order matching software), the periodicity (from 9 am to 5 pm on weekdays), etc. As far as these other components are concerned, there is little doubt as to what is going on, and the frame corresponds to the principles of individual perception. The same cannot be said for price, which remains dependent on valuation conventions that are still in the process of being (de)stabilized. This is no coincidence: financial engineering has considered it desirable to encourage a plurality of opinions, notably through legal means (prohibition of insider trading, market manipulation, etc.).

Frame Analysis sheds little light on this issue of the fixation of certain frame components and the negotiability of others. Perhaps this is because such a discussion takes us down to the institutional level, that is the level of "society" that Goffman declares he wants to leave out:

> This book is about the organization of experience - something that an individual actor can take into his mind - and not the organization of society. I make no claim whatsoever to be talking about the core matters of sociology - social organization and social structure. Those matters have been and can continue to be quite nicely studied without reference to frame at all. I am not addressing the structure of social life but of the structure of experience individuals have at any moment their social lives. I personally hold society to be first in every way and any individual's current involvements to be second; this will report deals only with matters that are second (Goffman, 1974: 13).

Although he is sometimes forced to evoke certain forms - such as that of the law in its role of impeding "fabrications" - Goffman offers few elements for analyzing the institutionalization of

(components of) frames. In the GameStop case, however, this seems essential to grasp the plasticity of the price amount, as well as the rigidity of the "price form".

As for the second, and perhaps even more delicate, question of the relevance of *Frame Analysis* to technology-mediated interactions, we can only touch on certain dimensions here. Brooks (2007) has emphasized the "liberating" aspect of technology in relation to the system of obligations conveyed by face-to-face interaction:

> in virtual interaction, team members usually cannot directly monitor bodily expressions of each other's involvement. [...] An attenuated version of interlocking obligation, contingent on electronic signs of involvement, applies (*Ibid*: 209).

From our case study, we can emphasize the flip side of this liberation, namely the loss it implies in terms of cognitive resources. If, in the Goffmanian perspective, "to make sense one must both be able to see things as others do, and to understand how it is they come to similar working understandings" (Manning, 1980: 257), the impossibility of seeing others constitutes a serious complication to mutual understanding. This condition undoubtedly feeds the self-fulfilling character of anticipations: unable to verify it, market participants assume that Others will react according to a certain logic, and conform to this modality of action.

Moreover, technological mediation considerably expands the perimeter of potential and actual participants. This aspect probably favors the tendency of professional traders to consider this multitude they are confronted with as an objectified unit: "the market" (Knorr Cetina & Bruegger, 2002). The "double inscription" of some participants - both positioned in a globalized market and interacting with their colleagues in a local trading room or with their peers on a global forum - is also worthy of discussion. As sociologist Alex Preda has argued, and then demonstrated (2009, 2012), as well as Donald MacKenzie more recently (2019b), the interactional issue remains a relevant level for the analysis of contemporary financial markets. We add that this requires further investigation, notably by mobilizing and extending Goffman's *Frame Analysis.*

Conclusion

The aim of this second subpart was to demonstrate the contemporary relevance of *Frame Analysis* concepts, based on a case study of the GameStop saga. Three lessons can now be drawn. Firstly, at a fairly superficial level, the concept of framing highlights the importance of

the shaping of information: by selecting and prioritizing stock market events differently, the channels mobilized by institutional investors and retail traders - Bloomberg and WSB - have fostered incompatible interpretations. Secondly, perhaps in spite of himself, “the last Goffman” allows us to think about the interactions between this interpretive framing and the order of interaction. Thus, in the GameStop case, most professional investors were aware that the framework naturalizing the market was not *directly* adequate, but felt that it became so if a majority of players mobilized it as the basis for their decisions - as was the case for a long time. Bloomberg was thus mobilized less as a grid for reading the market, than as a grid for reading the grid of others. Yet, in a situation where this reading grid can influence the definition of the situation itself, it is enough - or, rather, should have been enough - to know “what’s happening here”. Thirdly, through certain blind spots, Goffman challenges us to deepen *Frame Analysis*, integrating processes of institutionalization and technology-mediated interactions.

Chapter IV: Stock market indices in the making

Indices can't claim as much sway as the Bloomberg Terminal: many traders, like the Forex traders we met, pay it little attention. However, they enjoy an authority over certain market participants, such as equity fund managers, that even the Terminal is jealous of. By defining the investment perimeter for passive managers and the benchmark to beat for active managers, the index weighs on contemporary capital flows like few other financial conventions. This influence gives market index providers considerable power. That said, these providers are generally more interested in the revenues generated by the sale of this "data" than in the regulatory power carried by the indices; therefore, they above all try to accommodate their clients' wishes, rather than impose political positions. But how do they do this when two customers have contradictory desiderata as to what the stock market index should be? Drawing on our field experience at *Euronext*, this chapter describes the dilemmas faced by stock index producers. It is based on an article published in the *Journal of Cultural Economy* in October 2022[332].

[332] The engineering of stock market indices: winners and losers, *Journal of Cultural Economy*, 16(1), 17-31, https://doi.org/10.1080/17530350.2022.2098513.

1. The engineering of stock market indices: winners and losers

The Dow Jones, the S&P 500 and a few other stock market indices are among the most visible figures in the world. Some TV channels broadcast their evolutions permanently and many actors – journalists, financial analysts or readers of the press – refer to them to know the 'state of the market'. As is often the case, the inner workings of these indicators remain mostly out of reach of their daily users. More surprising is that, despite their centrality, and unlike other indicators such as GDP, stock market indices have so far been the subject of only a few historical studies[333]. If some sociological analyses have already alerted us to the social anchoring of this type of indicator, we still need to uncover the modalities of this 'social construction': which actors aspire to influence the constitution of stock market indices? Why do they want to do so? And how do they go about it? By providing some answers, this article offers a first insight into the contemporary shaping of stock market indices.

The engineering of stock market indices deserves a sociological investigation because it is not self-evident: there are different statistically valid ways to build these indicators. And several actors aspire to establish one way rather than another. Why are they interested in the shaping of stock market indices? To take advantage of their power. Indeed, rather than mere reflections, these indicators leave their mark on different parts of the social world – in three ways. First, they act as representatives of 'the market': since the advent of 'passive management' (explained below), asset managers seeking a diversified portfolio acquire the stocks in the index – which causes price movements whenever its composition changes (Lynch & Mendenhall, 1997). Second, stock market indices are a 'salience' in the coordination effort of financial actors: they inform of an economic situation, but also of the reaction of their peers to this situation. This explains why they give rise to phenomena that are difficult for a classical economist to understand, such as 'roundophobia': when an important index approaches a symbolic threshold (such as the 30,000 price for the Dow Jones), its growth tends to stagnate, so that the threshold is not crossed (Cyree et al., 1999). Knowing that everyone is watching the index and expecting this phenomenon, the trader has an incentive to sell before the price weakens, thus feeding the 'roundophobia'. Third, they offer the companies that produce and publish them, but also those whose shares are included in them, tremendous visibility in the financial world and beyond. These three effects – which do not, however, as we shall see in the

[333] Stillman (1986) and de Goede (2005) have documented the history of the Dow Jones, Hautcœur (2006) the one of the CAC 40 and Duterme (2021b) of the BEL 20.

conclusion, exhaust the performativity[334] of stock market indices – make these statistics and their methodology of major interest to several actors.

The ambition of this chapter is therefore to grasp the struggles between these actors interested in the performativities of stock market indices: all of them want to orient the engineering of indices in a certain way in order to modify their effects in the direction of their interests. By joining the themes of performativity and indicator construction, our perspective is *de facto* at the crossroads of two research traditions: the sociology of quantification and the Social Studies of Finance. The former, in particular its branch studying the shaping of numbers as conventions (Berman & Hirschman, 2018; Dias-Bone & Didier, 2016), traces the cognitive and political debates around methodological choices, while the latter accounts for the effects, often unforeseen, or even contrary to the intentions of the designers ('counter-performative'), that certain indicators produce throughout their social life – made up of dissemination, contestation, reappropriation… It seems fruitful here to cross these two perspectives because the stock market index has the particularity of being performative without being fully stabilized[335]. Powerful *and* contestable, it opens up a space of struggle between different actors who want to shape it in order to benefit from its effects.

To expose these conflicts at the heart of contemporary stock market indices, we rely on an ethnographic survey conducted in the offices of a company producing such indices. At present, most of stock indices are produced by a handful of financial companies, such as *CME Group* (the largest derivatives exchange) and *S&P Global* (producer of the famous credit ratings), which together own the Dow Jones and the S&P 500. In Europe, *Euronext* dominates this special market. Created by the merger of the Brussels, Paris and Amsterdam Stock Exchanges (to which were added those of Dublin, Oslo and Lisbon, as well as a part of the London Stock Exchange), the company inherited the 'flagship indices' of the different markets: the CAC 40 (Paris), the BEL 20 (Brussels), the AEX (Amsterdam), the PSI 20 (Lisbon) and the ISEQ 20 (Dublin). We conducted our research in the Brussels offices of *Euronext* between

[334] We use this concept here in its broadest sense of 'realization' (as does Muniesa, 2014: 12), thus going beyond the 'Barnesian performativity' that MacKenzie (2006: 17) confines to effects *on the object* of the device (in this case, the stocks included in the index). The concept of 'performance' might therefore have been appropriate if it had not been too closely associated with the returns of a stock market index.

[335] This combination can be linked to Muniesa's approach when he studies the order-matching algorithm of the Paris Stock exchange from two angles: its constitution as a socio-technical compromise between bankers, stockbrokers and reformers (Muniesa, 2005) and its performativity, that is the credit given by the financial community to the prices produced by this device (Muniesa, 2007). The difference is that stock market indices still do not enjoy the 'naturalness' acquired by matching software, which allows us to study these two issues in the present time.

March 2019 and April 2020. The empirical material has been combined with eight semi-structured interviews with staff members and a qualitative analysis of documents. This fieldwork allowed us to identify the main issues at stake in the 'methodological struggle' between the different actors involved: these issues emerged through *tests* during which the index was torn between two incompatible claims. Some discomfort in interviews, for example, pointed to tensions that *Euronext*'s index engineers are currently facing (or have faced in the past). By digging into these tensions, we arrived at the 'dilemmas' presented in the body of the text.

The rest of the chapter is structured by these six dilemmas. Each time, two opinions on what the index should be (and do) clash, a struggle that is reflected – if we pay attention – in the current methodological orientation. This investigation will lead us to denaturalize the shape of contemporary indices: no longer a logical component, but the arbiter between the claims of different financial actors. It will also remind us of the winners who are crowned by the current shape of indices, as well as the losers who are relegated to invisibility. This unequal representation of the various stakeholders constitutes a type of inequality which, veiled by numerical formatting, often passes under the radar of social scientists and which this article allows to problematize again. From this point on, the methodological issue regains its political nature and the shaping of stock market indices can again become a subject of debate. In conclusion, in order to bring some elements of discussion to this debate, we will put the *Euronext* indices into perspective with respect to some of their ancestors and of their American competitors. These alternative shapes will provide points of reference for assessing the 'performance' of stock market indices – no longer in the sense of profitability, but in terms of democratic implications and effects on financial stability.

a. The six tensions at the heart of stock market indices

Barometer vs Instrument

We have argued that indices affect the behavior of asset managers. But where does this performativity come from? Aren't indices simply a weighted average of the prices of a sample of stocks? Formally, yes. In fact, at the beginning of the 20th century, several macroeconomists constructed them for this purpose: for example, the stock market index contributes, as a witness of the evolution of an economic sector, to the famous 'three-curve barometer' of Warren M. Persons (1919). For the stock market players, these indices were only one of many points of attention. In the 1970s, however, their status was about to change. Financial economics is

intimately associated with this evolution: after having established that in view of the Brownian movement of prices, no investor could, on average, obtain a better return than 'the market', financial theorists needed a representative of this poorly defined object that would allow them to test their theory. Indices were therefore set up as official representatives of 'the market', as ultimate benchmarks against which the performance of any fund manager was assessed. A large part of stock market savings was then invested according to the precepts of financial theory, that is by 'passive management' (buy and hold a representative index). Even 'active' managers, eager to showcase their expertise, were encouraged to copy the index:

> If, as was increasingly the case, a manager's performance was judged relative to an index such as the S&P 500, then there was some safety in selecting a portfolio that closely resembled the makeup of the index. [...] it greatly lessened the chances of a career-killing relative underperformance: if one's portfolio did badly, those of other managers would most likely be doing badly too, so the fault would be seen to lie with the market, not the manager (MacKenzie 2006a: 86).

Favored by this popularity, a second turning point reinforced the centrality of indices: the construction, in the 1980s, of derivative products based on these indicators. After an intense formatting process (Millo, 2007), index futures and options were created and became popular investment instruments[336]. The value of the indices became the 'source' of the price of other products. Henceforth, the evolution of the stock market index was no longer a point of attention among others, but constituted at the same time the benchmark of profitability and the underlying of other very active markets. Of course, these new powers favored its advent as an inescapable informational device: no one could ignore their evolution anymore (and everyone knew it!).

But this evolution also introduced a tension at the heart of all contemporary stock market indices, about which the economist Pascal Gobry tried to alert us: 'but when the object of measurement that is the stock market index, which was initially intended to remain perfectly neutral, becomes part of portfolio strategies, anything can happen' (Gobry, 1990: 7). More concretely, can the economic barometer become a financial instrument without 'reinvestment in forms' (Thévenot, 1986)? In other words, was the original methodology of stock market indices already adapted to the requirements of commodification? The answer is negative. This is the first tension at the heart of contemporary stock market indices – the most technical, but also the most fundamental.

[336] The index option gives the holder the right to buy or sell the index at a predetermined price and date, while the index future concludes a transaction at a predetermined price and date. Since indices – unlike the agricultural commodities from which these derivatives originate – are not 'deliverable' at the expiration of the contract, the holder gets from the seller the difference between the predetermined price and the market price at expiration (if it is positive, of course).

All synthetic economic indicators face an unsurpassable trade-off between consistency and up-to-dateness. On the one hand, to make two periods comparable, the index must 'talk about the same thing', that is keep the same sample. On the other hand, to be connected to the present, it must 'move with the times', that is update the sample[337]. Before being used in the construction of derivatives, stock market indices performed this arbitrage by postponing – neither too often nor too little – the base year: from one day to the next, the index fell back to a standard value (e.g. 1000), associated with a new sample. More precisely, it was therefore a matter of adding up the prices of the selected shares (possibly weighted by the number of shares issued) and dividing them to obtain the standard value. Thus, for example, the numerator of the first BEL 20 was worth 7,501,050 Belgian francs and its *ad hoc* denominator was 7501.5, so as to start this new period with the standard value of 1000. Then, throughout this period (i.e. until the next adjournment), this denominator was the guarantor of temporal coherence, and therefore immutable. This secular technique proved to be incompatible with index-based derivatives: options and futures whose value depended on that of the index could not see their price fall overnight, following a decision to update the sample! But at the same time, it is always necessary to periodically modify this sample, if only when a company disappears (following a takeover bid for example). How did *Euronext* resolve this first dilemma between historical consistency and financial formatting?

Unambiguously in favor of the latter. The denominator, symbol of consistency within a period, will be sacrificed: at each revision of the sample (now annual!), 'the divisor is adapted in such a way that the value of the index remains the same after the adjustment' (The Brussels Stock Exchange 1995, p. 41). If, for example, on the Friday evening of the revision, value A leaves the index, while value B enters it, so that BEL 20^{old} = 765, A = 50, B = 350 and the other 19 values are all equal to 400, the divisor (which was therefore 10) will become equal to 10.39 so that BEL 20^{new} = BEL 20^{old} = 765.

$$\frac{19*400+50}{10} = \frac{19*400+350}{x}$$

$$765 = \frac{7950}{x}$$

$$x \approx 10.39$$

[337] When the statistical agency was concerned with maintaining continuity, it published a 'conversion factor' to connect the old and new indices (Duterme, 2021b).

Numerical continuity thus eclipses historical consistency: the barometer lives only one year, but the instrument becomes eternal. To ensure that this change in sample does not disturb investors, *Euronext* also makes it coincide with a 'quadruple witching day' (the third Friday of March, June, September and December when several index and stock futures contracts expire): the revision of the BEL 20 takes place in March, that of the CAC 40 in September. Finally, on the discursive level, the rupture is also smoothed out: one evokes a 'modification of its composition', rather than a 'new index': '*(the CEO of* Euronext Brussels*)* never links the BEL 20 to a precise year. He rather describes it as the 'BEL 20 composition March 2019'' (de Crombrugghe de Picquendaele 2020: 54). Therefore, this first dilemma does not really exist anymore. The financiers have prevailed over the historians: 'the financial community attaches a lot of importance of this stability which increases the credibility of the index' (The Brussels Stock Exchange 1995: 42).

Transparency vs Privacy

Financial actors have not been the only ones attracted by the power acquired by stock market indices. It has also led public authorities to take an interest in them, particularly after the *London Interbank Offered Rate* (Libor) scandal[338]. In order to ensure greater transparency, the European Parliament, for example, decided to establish 'a common framework to ensure the accuracy and integrity of indices used as benchmarks in financial instruments and financial contracts, or to measure the performance of investment funds in the Union' (OJ L 171, 29.6.2016: 12). In this context, *Euronext* published various documents on its decision-making bodies, their respective composition and function. In order to guarantee the neutrality of its stock market indices and 'mitigate potential conflicts of interest' (Euronext 2020a: 5), a certain separation of powers is established between a body that ensures the day-to-day management of the indices ('Operational Governance') and one that independently supervises the activities of the former ('External Committees'). This system is reaffirmed on the first page of the factsheets of the main national indices: 'Transparency. The index rules, that are available on our website, are overseen by the independent BEL Steering committee that acts as Supervisor' – and for the CAC 40: '[...] by the independent Conseil Scientifique that acts as Supervisor'. Our ethnographic survey shows that these claims should be at least qualified. To understand this, let

[338] This index, which is used as a reference for many contracts, indicates the borrowing rate on the interbank market based on the declarations of the main banks. It has been the subject of numerous frauds that have come to light since 2008 (for an analysis of the event based on the economics of conventions, see Dupéret, 2019).

us retrace how this internal control, which guarantees the transparency of the indices, manifests itself in practice.

The governance rules for the indices are above all reflected in a geographical distance: at the time of the annual review, the 'Index team' (part of Operational Governance), based in the *La Défense* district in Paris, sends its figures to the national offices, which are responsible for approving and publishing them. More concretely, the Index team draws up a descending ranking of the companies listed on the *Euronext* market concerned (Brussels for the BEL 20, Paris for the CAC 40, etc.) according to their free float capitalization and velocity[339]. This ranking reaches the supervisors making up the External Committee – called the 'Steering Committee' in the Brussels offices – who are responsible for sanctioning the results: in principle, the first twenty (BEL 20, PSI 20, ISEQ 20), twenty-five (AEX) or forty (CAC 40) companies then make up the new index. This description, although more concrete than the compliance statements, remains rather disembodied… Who makes up these different bodies, in particular this Steering Committee? How is a change in criteria decided? Where can we find the data of the companies involved (free float, velocity, etc.)? It was difficult, and sometimes impossible, to obtain answers to these seemingly inappropriate questions. An employee attending the Steering Committee meetings told me that he 'did not want to go into details', while the CEO of *Euronext Brussels* reminded us of the absurdity of humanizing these automatic processes: 'we receive the results of the calculations and we approve them... There are never any interpretations' (interview). However, as we will discover later, decisions are indeed taken by the humans who make up these bodies.

Thus, contrary to the stated ambitions of transparency, the published methodology is lapidary, the data partial and the composition of the decision-making bodies confidential[340]. Even financial journalists, the main contributors to the popularity of the indices, are deprived of valuable information:

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339 Free float capitalization is equal to the share price multiplied by the number of shares actually tradable (this excludes lots of shares representing more than 5% of the total and held by the same person, as well as shares held by a public body or included in an employee compensation plan). Velocity represents the proportion of tradable shares that are traded during the year (to be eligible, a company must have a velocity exceeding a certain threshold – 20% for the CAC, 40.35% for the BEL 20).

340 The method of calculation is summarized in three lines in the 'Index Rule Book'. It was only through interviews with staff members and consultation of archives (in particular the 1995 brochure *The Indices of the Brussels Stock exchange*) at the University of Antwerp that we were able to understand all the steps involved. As for the Steering Committee, we learned from interviews that it was composed of *Euronext* employees and three 'independent experts' (one member of the investment bank JP Morgan and two academics).

I try to stay ahead of the Brussels Stock Exchange (by predicting incoming and outgoing companies before the official announcement of the revision). But it's getting harder and harder to do that, because I used to get data that I don't get anymore, so... I can find the free float because Bloomberg gives it, but the velocity... I don't have that data anymore... So, it hinders my estimates, it handicaps me (interview with a journalist from *L'Écho*).

Perhaps even more surprisingly, this same journalist has already been gently discouraged from publishing on the BEL 20 methodology:

- Have you ever written an article about the methods of the BEL 20?
- Journalist: Yes yes yes, even several. I must have done some...five, six years ago. And I know I did it two, three times. Even when I phoned (the CEO)... (because it's not always easy to master this), he said to me: 'but... you're still doing an article on the BEL 20 rules?' (annoyed Brussels accent) [...]. He was surprised because he thought that once was enough.

Why these deviations from the transparency requirement? Probably for many reasons: *Euronext* does not want to be pre-empted by a mischievous journalist during the official announcement of the revision, the CEO prefers to avoid too much talk about the internal workings of the BEL 20, the members of the Index Team are too busy to answer questions from a sociologist… The point here is not to suggest a well-crafted plot, but rather to point out the tension between a demand for transparency, recently defined by European law and – at least in principle – supported by the users/clients of the indices, and the discretion allowed by the status of their owner (*CME Group*, *S&P Global* or *Euronext*) as a limited company. Apart from formal compliance with legal requirements, Euronext is not accountable for its internal cooking, and for good reason: 'Euronext owns all intellectual and other property rights to the index, including the name, the composition and the calculation of the index. BEL®, BEL 20®, BEL Mid® and BEL Small® are registered trademarks of Euronext' (Euronext 2020b: 5). But is this so problematic? Why should we ask for reports of the Steering Committee meetings if nothing is decided there? This is the stake of the third dilemma.

Objectivity vs Subjectivity

The limited company *Euronext* indeed does not make any decision. But some humans, acting as its spokesperson, do. And it is sometimes very costly for them to get behind the discourse of impersonal objectivity, because they too – like the financial actors – would like to benefit from the success of stock market indices. Yet this discourse is vital: it is the one that must guarantee the consistency of these statistics, whose impartiality is a condition for their performativity. And many people have understood this, like the head of communications at *Euronext*: 'It is based on very strict rules. There is no 'human' appreciation, in quotation marks,

that makes a person say: "oh, we would prefer to have this company in the BEL 20". The choice is made purely on the basis of figures' (interview). Financial journalists, who never stray far from *Euronext*'s promotional discourse, also make their contribution to the edifice: by abundantly relaying the evolutions of the index (the main Belgian financial newspaper, for example, mentions the BEL 20 in more than 30,000 articles), they stabilize this statistical object in the media landscape. This objectivity, understood as independence from personal judgments, thus renders all the humans who make up the index production chain insignificant; the Steering Committee, like all the teams that preceded it (the Index Team in particular), becomes, at best, a verifier of algorithms, a robot assistant.

This unrewarding status is therefore the cost of this 'investment in forms' (Thévenot 1986) which guarantees the objectivity of the stock market index. While most *Euronext* employees comply, there is resistance, particularly as one moves up the hierarchical ladder. Many managers have invested too much in the shaping of the indices to remain silent. At the same time, they are often too familiar with the events that are not covered by the 'narrative of objectivity' (bad decisions, strategic reversals, impulse, etc.) to forget them. By making the subjectivity of the index reappear, their proud testimonies dissonance with the discourse of objectivity and can even undermine it. Thus, for example, the CEO of *Euronext Brussels* was unable to downplay what the contemporary BEL 20 owes him:

- So, you were the one who initially adapted the weighting to the forward lots[341]?
- CEO: Always. I did everything. I have always adapted everything. I have always managed the BEL 20, since the beginning. I have done everything...

How to reconcile objectivity and paternity? How to ensure arithmetical impartiality of the indices while doing justice to the historical role of their architects? It seems that a temporal differentiation generally allows this *tour de force*: for example, it is permitted to judge *yesterday*'s BEL 20, or even to celebrate or condemn its actors. The consistency of these deceased figures is no longer important; no transaction is based on their reputation. This privilege of historical hindsight is well known: once the tension has been released and the conflicts have subsided, tongues are loosened. But subjectivity often spills over from the past, as architects are unable to stifle their contemporary and even future decision-making power: 'we could, in the coming years, also base the velocity criterion on the BEL 20 (i.e. an indexation

[341] The BEL 20 was born with *Belfox*, the derivatives market based on an electronic trading system. For the sake of liquidity, this system required that securities be traded in lots of 250,000 Belgian francs, called '*quotités*'. The CEO of *Euronext Brussels* then modified the weights of the BEL 20 so that they represented a multiple of these lots.

similar to that of floating capitalisation); I am not saying we will do it, but we could' (interview with the CEO of *Euronext Brussels*). Index engineers are not just verifiers of algorithms. They control the robot and sometimes want to say so – at the risk of undermining the objectivity of their progeny.

Companies vs Traders

The methodological adjustments introduced by the Brussels CEO are undoubtedly astute. But if they were adopted by the majority of the other *Euronext* indices, it is because they corresponded to a logic of action that went beyond the Belgian case. Most often, these amendments had to respond to the desires of a client. Today's stock exchanges have to attract two main types of customers (on which their commissions depend): the listed companies ('the demand for capital') and the traders active on their platform ('the supply'). However, these two players do not see the index in the same way: 'we had a Steering with members... It was difficult because there were conflicts of interest [...] there were some who had clients... and pressure each time from the companies who said: 'why aren't there 25?' and the traders: 'why aren't there 10?'' (interview with the CEO). The interest of the companies is easy to understand: the more permissive the index is (less demanding criteria allowing, for example, more than 20 stocks to be included in the BEL 20), the more likely they are to be included. And a national stock market index is an important calling card: 'When companies go to London, they are asked for their capi(talization), etc. And if they can show that they are in the BEL 20, doors open' (Ibidem).

The interest of traders, these professionals who conclude numerous transactions for their own account and/or that of their clients, is a little more technical: as we have seen, the stock market index is for them a benchmark against which their performance is evaluated (by them and their clients). They therefore generally wish to hedge the securities that make up the benchmark, that is to amortize a potential decline in a given security by buying, for example, a put option (allowing them to sell a security at a predetermined price and date). The more securities in the benchmark, the more expensive it is to hedge the entire index. At the same time, the less liquid the securities in the index are (i.e. the more expensive it is to find a counterparty for these securities), the less easy it is to hedge all the securities. Finally, the trader is in search of stability: 'we should not move too much, because the guy who covers the 20 stocks... at each change, he has to sell and buy, but that does not bring him anything' (*Ibidem*).

'So traders asked us for few securities, liquidity and few changes' (Ibidem); several

characteristics of the *Euronext* indices stem from this demand for stability. Firstly, the stock market indices no longer suffer from ruptures in valuation similar to those endured by their ancestors when they changed their basis (cf. above). Secondly, the selection criteria for entering the index are generally relaxed for stocks already included in the index (for example, a velocity of 25% is required to enter the AEX, but only 10% to remain in it). Thirdly, the CEO of *Euronext Brussels* has decided to base the capitalization criterion to the index itself (a free float capitalization of 300,000 times the value of the BEL 20 is required to enter the index, 200,000 to stay); during a generalized fall in prices, this criterion – as opposed to an *absolute* floor – adapts (as the index also falls) and most stocks will be retained. These three factors contribute, in the interest of traders, to stabilizing the stock market index.

Why did the shaping of the *Euronext* indices in general, and the BEL 20 in particular, follow the interests of traders rather than those of companies? One partial but convincing answer lies in the structure of the 'market of markets': from the end of the 1980s onwards, national stock exchanges competed with each other to attract, above all, savings managers whose opportunities to relocate were (perceived to be) more threatening than those of the companies issuing securities. Thus, in the Belgian case, the creation of the BEL 20 went hand in hand with the creation of a new futures and options market (*Belfox*), which was intended to make the Brussels Stock Exchange more competitive in the eyes of investors[342]. It is true that the enlargement of the Belgian financial center, engendered by the integration of index-based derivatives, was also in the interest of the exchange itself – which surely supported traders' demand for a stable index. But this alignment of interests is not enough. In particular, it no longer holds on the number of stocks included: the modernization of the Belgian Stock Exchange would have been possible with 40 stocks rather than 20, as illustrated by the French case.

It is precisely this issue of the struggle between traders and companies that is at the heart of a famous episode in the history of the BEL 20: the 'Lefebvre affair'. In December 2004, Olivier Lefebvre, who headed the Brussels Stock Exchange from 1995 to 2007, decided to increase the liquidity of the BEL 20 by tightening the selection criteria: the required free float capitalization had to exceed 500,000 times the index value. Five BEL 20 stocks did not comply with this new measure and therefore had to leave the BEL 20. The current CEO remembers that

[342] 'It is clear that if we do not launch Belfox, Belgian bond futures will be traded in London or Paris', Remi Vermeiren, president of *Belfox*, assured the newspaper *Le Soir* (Lanckmans, 1990). For an analysis of the threat of capital flight in the Belgian reform, see chapter I,2 of this thesis.

he tried to dissuade Lefebvre, warning him of the wrath this decision would bring: 'and I said at the meeting: "Listen, you, you take Baron Buysse on the phone! It's not going to be easy"'. Paul Buysse was then Chairman of the Board of *Bekaert*, one of the five companies threatened.

Two days after the announcement, 'big fuss, Buysse, television, etc., we went to see Barco, Omega Pharma... (other companies in the hot seat) Bekaert did not want to see us... Well, fine... [...] Buysse went to see Théodore in Paris (Jean-François Théodore, then director of Euronext), because he did not want to talk to us…' (interview with the CEO). In the press too, the tension between companies and traders is in full swing: an ING operator believes that 'this measure will allow the Bel 20 to gain in coherence', while an anonymous 'market participant' makes the opposite argument:

> The stock market [...] must allow the financing of companies and facilitate their growth. It is certain that removing companies from the Bel 20 index means removing their visibility and a certain international credibility. These companies disappear from the radar of institutional investors, which will not facilitate their financing [...]. Euronext is no longer a public company that seeks to develop the European capital market, but is above all a private company that must grow its profits (quoted in *L'Écho*, 2004).

This battle was won by the 'companies camp', supported by the media coverage of the event, as well as by the resonance of figures like Paul Buysse. 'We came back saying: "well, it's still not a very good idea, let's cancel it, we're not going to do it on January 1"' (interview with the CEO). When, two years earlier, Bekaert was already questioning the selection criteria of the index, Olivier Lefebvre explained himself in the pages of *L'Écho*, exposing better than ever the tension between companies and traders:

> Managing an index is a difficult art. We are constantly faced with contradictory demands. If we listened to institutional investors, we would probably have a BEL 5 because these investors are obsessed with liquidity. If we listen to issuers, we would need a BEL 30 or BEL 35 in order to have a greater representation of the Belgian economy [...]. Should the rules be reviewed? Yes [...]. But let's also be careful. Let's avoid any tinkering, because that would scare away investors (*L'Écho*, 2002).

The potential mobility of investors thus still gives them an advantage over the rigidity of corporate infrastructures. And this can be seen in the *Euronext* indices.

National vs Global

The different dimensions of the performativity of the indices give them a privileged status and attract the covetousness of researchers, traders, *Euronext* directors, companies and public authorities. Privileged status, but not monopolistic. However powerful it may be, the index is involved in dynamics that are independent of its performativity, driven by other logics,

and which may even threaten it. This is the case with the concentration of stock exchanges. When *Euronext* was created in 2000, all the national indices survived because the exchanges did not merge completely: the order book of the Brussels Stock Exchange (determining the BEL 20) remained separate from that of Paris (location of the CAC 40). But in January 2009, two years after the merger between *Euronext* and the *New York Stock Exchange* (NYSE)[343], the unification of order books was adopted ('Central Order Book'): from now on, a company listed on two different exchanges (Paris and Brussels, for example) will only display one price (L'Écho, 2009).

This homogenization is of course intended to increase the liquidity of the *NYSE-Euronext* global market: since buy and sell orders from Amsterdam, Paris or Lisbon are centralized in a single 'order book', a seller will have a better chance of finding a buyer (and vice versa). But at the same time, this unification weakens even more the territorial anchoring of the transaction systems. *Euronext* is now only a financial platform, supplanting the national exchanges. This trend towards globalization (rather than internationalization) does not spare national stock market indices, especially those attached to a 'small' market: by delocalizing finance, it makes any anchoring absurd[344]. By unifying markets, it prepares for the advent of a single '*Euronext* index' (if the main New York stocks are found on all the markets that are members of *NYSE-Euronext*, they alone will make up all the indices attached to smaller exchanges).

But this logic is not hegemonic: it meets resistance from 're-nationalizing' dynamics, notably on the part of *Euronext* itself, which wants to keep its five major national indices in Europe. To this end, in parallel with the adoption of the Central Order Book, the concept of the 'reference market' appeared: when a company is listed on *Euronext*, its shares can be bought and sold at a single price by investors from all member countries, but – at the same time – this company affiliates itself to a particular national stock exchange (its 'reference market'). A new selection criterion was therefore adopted in order to save the national character of the BEL 20 (or the CAC 40): having *Euronext Brussels* (or *Paris*) as the reference market. In the Belgian case, however, this compromise did not stifle the national/global tension: the country's economic system is populated by foreign companies (which have often opted for a foreign

[343] This merger later broke up when *IntercontinentalExchange* bought *NYSE-Euronext*, retained the *NYSE* and the *London International Financial Futures and options Exchange* (Liffe) that *Euronext* had absorbed in 2001, and split from *Euronext* in 2014.

[344] In recent years, the new *Euronext* indices have been developed according to the type of industry represented (industrial, eco-responsible, etc.), rather than the territory involved.

‘reference market’), and it may appear costly to ignore these players. This was the view of the Steering Committee: ‘we were not satisfied with the resulting sample, which was no longer representative of the Belgian market’ (interview with CEO). As a result, the reference market criterion was initially supplemented by three others relating to the national anchoring of the company (balance sheet assets, head office activities and staff employed, as reported *in* Euronext 2015). Only the last criterion was finally retained:

> Eligible companies are: I. Companies with Euronext Brussels as Market of Reference; and II. Current constituent companies with a Market of Reference other than Euronext Brussels [...] as long as their staff in Belgium represents at least 15% of the consolidated group staff (Euronext, 2020b).

Today, two companies are part of the BEL 20 with *Euronext Amsterdam* as reference market; the other 18 are associated with the Brussels Stock Exchange.

The tension has not disappeared, however, and it is common for a spokesperson from one of the poles to reignite the debate. For example, in a 2017 article, a journalist from *L’Écho* expressed concern about the entry of many international stocks on the Brussels Stock Exchange:

> One wonders whether the Bel 20 is not becoming more of an international index (with Engie, ING, Ahold Delhaize, AB InBev...) than a purely national one. If all the Aperam & Co. of this world ask for a listing in Brussels in order to join the Bel 20, is there not a risk that the index will become even more distorted? Internationalization is not serious in itself – Belgium is international – unless it has a crowding-out effect on Belgian companies seeking development and visibility (Lambrechts, 2017).

Two years later, two economists from the *Research Group for an Alternative Economic Strategy* proposed an ‘alternative Bel 20’ that questions the financial focus of the BEL 20 criteria, but also its national filtering: ‘Belgium is a very open economy. Large foreign companies are present without having Brussels as their reference listing or at least 15% of their workforce in Belgium’ (Bauraind & Van Keirsbilck, 2019). Their alternative index, based on turnover, gross value added and number of employees, now includes only eight Belgian companies and includes, among others, Total, ArcelorMittal and Janssen Pharma. Where Lambrechts wants to see a promoter of Belgian capitalism, Bauraind and Van Keirsbilck aspire to a more accurate reflection of economic power in Belgium… which would be more capitalist than Belgian. The contemporary BEL 20 still hesitates between these two logics, but owes its survival to the resistance of the first.

Regulation vs Marketing

The impact of indices, as benchmarks and underlyings for derivatives, on investor behavior and therefore on prices is in many ways their main performativity – the one that attracts financial actors and public authorities. But we have seen that this dimension can be in tension with others, such as its effect on the ease of financing of companies included in the index. It can also conflict with the impact on the visibility and revenues of the company producing and publishing the index. Indeed, for *Euronext*, stock market indices are something else than a driver of stock market prices: a brand.

In the history of the BEL 20, this aspect was born when the Brussels Stock Exchange and its index were privatized. On its first day, the limited company that replaced the stockbrokers' cooperative invested 60 million Belgian francs in a promotional campaign entitled 'visibility, transparency and the general public'; its manager, Baudoin De Cannière, wanted to 'translate the democratic, open and friendly character of the product' (quoted in *L'Écho*, 2000). In this new competitive context, the stock exchange was looking for new clients: 'hence the choice of a very popular campaign, very public. And indeed: the visual shows a blackboard announcing the 'promo' of the moment and holds the attention of two housewives with umbrella and poodle. We understood: the 'mini BEL 20' is for everyone' (Ibidem).

Since then, the BEL 20 – like other stock market indices – has not lost this commercial dimension. The head of communications at Euronext Brussels is particularly aware of the 'free publicity' it offers: 'We are fortunate that when we talk about the stock market in the media, we talk about the BEL 20. We have identified them: stock exchange = BEL 20 [...] It is the biggest brand that Euronext has put on the market' (interview). He therefore tries to make his annual review an event, in particular by stimulating the journalists of the financial press with a careful staging:

> The annual review is a moment that generates a lot of attention… of visibility. All the Belgian media and some abroad relay the information. [...] During the day, I say nothing to the media (who want to get a scoop), but, in return, at the end of the meeting (of the Steering Committee), we give the media who have insisted all day a moment of discussion with (the CEO) (interview).

In the eyes of *Euronext*, the stock market index is therefore not an instrument for regulating stock market prices, but a marketing tool. The more it is mentioned in the media, the more visibility the company gains. Unfortunately, this advertising role is not always aligned

with the regulatory function that the index could have through its impact on prices. This can be seen by discussing the financial crises with *Euronext* employees:

- How did Euronext experience the crisis of 2007-2008?
- Euronext employee: Listen... it shook things up... Well, you know that the stock market is an operator, so uh... so we're a bit agnostic about crises. We just apply the rules that we always apply, that is to say that we have safeguards against price variations, things like that... [...] So, we continued to play our role as operator if you like. Well, with a volatility that was obviously much higher. Which incidentally also generated... (laughs) commissions... We didn't necessarily have a worse year in the year of the crisis, on the contrary, because well... whether you like it or not, that's how it works: in general, when there's a crisis, there's more activity, so we have more income (laughs).

We will not develop here the issue, however normatively central, of remuneration by commission, but rather the type of behavior induced by *Euronext*'s 'agnosticism about crises'. In other words, the Exchange does not take a position on financial crises, those critical moments when thousands of jobs depend on the regulators' ability to stabilize the market. All regulatory instruments are then mobilized: central bank interest rates, quantitative easing, budgetary support and government deposit guarantees, etc. But the stock market index will be agnostic. Its regulatory power will remain untapped. On the other hand, the over-visibilization of stock market indices during these moments of panic when the stock market permanently occupies the media space certainly represents a success for the marketing department of *Euronext*. Moreover, we could argue, without really being able to attest it, that this massive and anxious relay of the fall of the index feeds – by mimicry or performativity – the sell orders of investors.

The price drop resulting from the coronavirus did not invalidate these three pillars of the regulation/marketing tension. Firstly, *Euronext* was not particularly concerned; the company did not consider appropriate to close the stock market (which many economists thought necessary) and the Brussels CEO explained that liquidity was 'very good' for the moment. Secondly, the stock market indices were mentioned more than ever: in addition to *L'Écho*, which reports the daily variations of the BEL 20, the entire general press of the country gave it a central importance: 'the biggest fall in its history', 'historic fall', etc. Finally, the third pillar – accentuation of the crisis by media coverage – is difficult to verify, but even more difficult to deny: how can one imagine that savers, as well as professional intermediaries, are impervious to this intense diffusion? Once again, the point here is to highlight the dissonance between the importance of the stock market index as a marketing instrument and as a regulatory tool.

b. The Public and its Numbers. A democratization of stock indices?

The findings of this ethnographic survey, summarized in the table below, reveal the political nature of statistical construction: the shape of European stock market indices is not 'dictated by common sense', but marked by conflicts between actors with divergent interests. Denaturalized, this shape is no longer immune to the imperative of justification and can be questioned. Unlike other economic indicators such as the GDP, the stock market index has not yet been the subject of extensive debate, which we could relate. To conclude this article, we propose to put forward some guidelines that could be used for a potential discussion of stock market indices, based on a brief comparison – geographical (between *Euronext* indices and their main American rivals) and historical (with respect to their ancestors).

Dilemma	Source	Targeted performativity	Status	Dominant (dominated)
Barometer-Instrument	Creation of index-based derivatives (80s)	Orientation of investor behavior	Solved	Traders (researchers)
Transparency-Privacy	European legislation (2010s) and privatization of Exchanges (2000s)	Orientation of investor behavior	Balanced	*Euronext* (public)
Objectivity-Subjectivity	Birth of indices	Reputation	Balanced	CEO (other stakeholders)
Companies-Traders	Competition between Exchanges (90s)	Orientation of investor behavior (funding facilitation)	Unbalanced	Traders (companies)
National-Global	Concentration of Exchanges (2000s)	/	Balanced	Big markets (little Exchanges)
Regulation-Marketing	Benchmarking (80s) and privatization of Exchanges (2000s)	Visibilization of *Euronext*	Solved	*Euronext* (public)

Table 12 - Dilemmas of stock index engineers

Firstly, from a heuristic point of view, we have seen that the *Euronext* indices, by making the denominator the adjustment variable, have responded to traders' demands for continuity, at the expense of historical consistency. Unsurprisingly, the major US indices that are at the source of much larger derivatives have adopted the same position:

To assure that the index's value does not change when stocks are added or deleted, the divisor is adjusted to offset the change [...]. (It thus) plays a critical role in the index's ability to provide a continuous measure of market valuation (S&P Dow Jones Indices 2021: 5).

This option condemns indices to being able to represent only the variation in value of a portfolio – and imperfectly. The analytical ambition of their predecessors, both European and American, was quite different: indices were to be barometers, revealing the pulse of the situation and our position in economic cycles (Armatte, 1992). When an adjustment of their sample was necessary to adequately represent the stock market sector, these indices fell back to a standard value (Duterme, 2021b; Wilson & Jones, 2002). The Dow Jones, in particular, was to remain an average of 20, then 30 stocks: 'while the editors had to acknowledge (the change), they desired to maintain the divisor at 20' (Stillman, 1987: 58). At present, following successive adjustments, the denominator of the Dow is about 0.15 – the index no longer represents the average price of a sample of stocks. This first point does not call for a nostalgic return to indices that would be unusable in today's markets, but – perhaps – for their pluralization: other indices, similar to those formerly calculated by the National Statistical Institutes, can serve other audiences and capture other realities than the evolution of portfolio returns.

As far as the democratic issue is concerned, the *Euronext* indices have little to learn from their American rivals: although their methodological notes are more detailed, their decision-making process – about which companies to include and the selection criteria – is left 'at the discretion of the Index Committee' (eight occurrences in S&P Dow Jones Indices 2022), composed of company employees. Most of the old stock market indices were even less explicit about their inner workings, especially those produced by financial newspapers. However, as the Libor scandal strikingly reminded us, the identity of index engineers and the transparency of their operations are essential aspects to limit abuses such as market manipulation and insider trading. In this respect, stock market indices could take inspiration from other financial indicators which, because of the critical attention they have attracted, have been made more open. Consider, for example, credit ratings: following the debates about their role in the sovereign debt crisis, the main rating agencies have had to clarify their decision-making process, notably by publishing the mathematical models used. Moreover, initiatives have emerged to ensure greater representativeness in governance committees, both geographically, with the promotion of a European rating agency (Altdörfer et al., 2019), and socially, with the proposal for a 'decentralized rating agency' (Özdal, 2022).

Finally, because of the importance they have acquired in the eyes of traders and asset managers, indices can be assessed by their impact on the stability of the financial system. We saw in the last of the six dilemmas that, at *Euronext*, this status of regulatory tool was dominated

by the status of marketing instrument. Further study of the Dow Jones and the S&P 500 is needed to determine whether the US indices have anything to teach us on this point. But it is to be feared that the latter – like their predecessors – do not mobilize their political potential in the interest of price stability or fair valuation of companies. Once again, it seems that indices have to take inspiration from other financial indicators, which have more integrated their regulatory function, such as the key rates of central banks. While also constrained by an external reality that they must represent (the general state of the economy), these rates are designed to channel the behavior of market actors towards a desirable scenario (Braun, 2020). Of course, the constraints on index shaping are different, and arguably more onerous (i.e. the duty to represent a sample of large firms). But the fact remains that the leeway of index engineers could be exploited in the same way as central bankers do: with the aim of ensuring the stability of the financial system, rather than maximizing the visibility of *Euronext*.

Stock market indices permanently go beyond the passive role of reflecting an external reality: they can claim several performativities, which had not been identified by the scientific literature. The six dilemmas have shown that several financial actors have been aware of this for a long time and have tried to incline the shape of the indices in the direction of their interests. However, these performativities are sufficiently important for the constitution of stock market indices to be more open to public debate. In conclusion, we have put forward three issues on which such a debate could be based, in order to compare the qualities of different indices[345]. Two research perspectives could enrich our results (and the debate on financial indicators). Firstly, a deepening of the comparative approach. A more detailed study of American indices, but also of indices elsewhere, would bring to light the cross-cutting aspects of stock market indices and the possible regional specificities. For example, it would be fruitful to investigate indices attached to differently instituted financial markets, such as the SSE Composite (the main index of the Shanghai Stock Exchange produced by the company *China Securities Index* founded in 2005). Secondly, an extension to other financial indicators. We have mentioned central bank rates and credit ratings which have been the subject of some publications (Braun, 2020; Stellinga, 2019), but many other indicators consulted by traders have not yet been explored. The most widely used information platform in trading rooms, *Bloomberg*, offers thousands of indicators, and some of them have achieved sufficient success to frame the way

[345] This normative proposal goes beyond the orientation generally taken in the Social Studies of Finance, where the 'success' of a performative device is evaluated by the stability of the reality it institutes (Muniesa, 2007). For devices with significant effects such as stock market indices or credit ratings, other, more demanding, criteria seemed relevant to us.

the market is viewed. More fundamentally, such an extension would allow for a better understanding, from the inside, of those devices now acting as the main regulators of financial markets.

Chapter V: Stock market indices in the trading room

Just as we called, in the conclusion to chapter III, for an investigation into the plurality of uses of the Bloomberg Terminal, we consider it useful to examine the plurality of these uses in the case of stock market indices. These indicators are not "just" benchmarks for asset managers. They are also inescapable signs for traders covering the equity market. Drawing on Peirce's semiotic concepts, and applying the theoretical suggestion put forward with Jean De Munck earlier (cf. Section I.2c of the general introduction), this chapter takes a step in this direction by identifying the different modes of signification endorsed by stock market indices when they intervene in the trading room. It consists of an article published in December 2023 in the journal *Valuation Studies*, as part of a special issue entitled "Valuation as a semiotic, narrative, and dramaturgical problem"[346].

[346] The Semiosis of Stock Market Indices: Taking Charles Sanders Peirce to a Trading Room, *Valuation Studies*, 10 (1), 10-31, https://doi.org/10.3384/VS.2001-5992.2023.10.1.10-31.

1. The Semiosis of Stock Market Indices: Taking Charles Sanders Peirce to a Trading Room

Traders are overwhelmed by signs.[347] 'This is the fate of all our contemporaries', a postmodern thinker might reply. Admittedly, every city dweller is constantly stimulated by their environment (advertisements, passers-by, road noise…). However, they allow themselves to refuse most of these 'propositions'; they adopt, for their psychic well-being, 'the blasé attitude' (Simmel, 1995: 412). Since 'nothing is a sign unless it is interpreted as a sign' (2.308[348]), most urban stimuli do not flower into semiosis. This is different in trading rooms where signs are better received. According to the sociologist Charles Smith, this receptivity is the trader's main mission: 'The crucial task here is not to become fixated on any given set of markers at any given time, since new markers of importance are apt to appear suddenly while others are likely to disappear' (Smith, 2011: 279). This implies a permanent vigilance not only for signs, but also for the absence of signs, which then becomes a sign. As Smith notes, 'some key markers take the form of the expected not happening: these markers make their mark by continuing to remain dormant' (Smith, 2011: 284). The trader's semiotic work does not stop there though: 'When a marker appears, it still needs to be interpreted within the existing context' (*Ibid*: 284).

These 'markers' do not bring together all the signs that traders are confronted with. The work of interpretation involves discarding some stimuli deemed irrelevant (the attire of colleagues, the noise of the trading room fan, etc.). The markers evoked by Smith are the signs *that enable the valuation of financial products*. Only these markers are used by traders to revise their positions. Their scope is unclear: some are well established (price-earnings ratio, volatility, volume, etc.), others make rather cyclical appearances. For example, the generally insignificant attire of colleagues can become a relevant 'marker' if sweaty halos are perceived as an index of panic in the market managed by that colleague. In this article, I will adopt the semiotics of Charles Sanders Peirce to study a well-established valuation sign: the stock market index.

[347] The term 'trader', often used generically to designate any participant in financial markets, will refer in this article to the profession which consists in buying and selling securities – whether for own account or within a mandate. Located at one extremity of the chain of participants (client-salesperson-trader or employee-pension fund-asset manager-trader), the trader is therefore the one in direct contact with the market which they monitor via their various screens.

[348] Peirce's writings are referenced in the standard form: (n.m) refers to paragraph m of volume n of the *Collected Papers*.

The contribution of this chapter is therefore predominantly theoretical. It presents the 'toolbox' of Peircian semiotics and demonstrates, through a case study, its twofold relevance for valuation studies. On the one hand, concepts relating to the relationship between a sign and its object (icon, index, symbol) allow a systematic description of 'valuation signs' through identification of the plurality of their meaning: a sign is not assigned, *a priori*, to a unique object. On the other hand, the second conceptual triad explored in this article (rheme, dicent, argument) opens the way for an analysis of the role of signs in the process of valuation, by suggesting certain hypothetical effects that can be tested empirically. Given this double contribution, I believe that pragmatist-oriented studies on relations between economic devices and valuation practices can benefit from Peirce's toolbox. If its main purpose is to illustrate the heuristic virtues of this toolbox, the case study proposed in this chapter also sheds light on stock market indices, at the heart of contemporary stock markets but yet little studied.

The chapter is structured as follows. The first section presents the concepts of Peirce's semiotics, which will be useful for analyzing stock market indices and then reviews previous works linking Peirce, valuation and financial markets. The following sections illustrate how stock indices can assume different semiotic statuses. Depending on the financial context in which they operate, their signification and thus their function for traders will vary. Finally, the conclusion focuses on the consequences for studies of valuation.

a. Key concepts of Peircian semiotics

For Peirce[349], semiosis is a process of signification involving 'the cooperation of three subjects' (5.484): a sign or representamen (e.g. a cry) that refers to an *object* (a person's fear or distress) for an *interpretant* (the effect produced: directing attention to the origin of the cry). This already implies the pragmatic dimension of semiosis. First, the relationship between the sign and the object (which will determine the one between the sign and the interpretant) is attached to a situation; in other words, only practice informs to which object the sign refers (for a cry: surprise, joy, distress, madness…). Second, the attribution of a semiotic status is contextual: a public cry can become the *object* if a witness plans to mime the situation, while the orientation of the witnesses' attention can be a *sign* of an event 'worthy of attention' for

[349] This brief section is a theoretical reminder of the more developed presentation of Peircian concepts in the general introduction (see Section I.2c).

other passers-by. Each component of semiosis, as well as each relationship between these three components, can itself take three forms.[350]

The referral of the sign to the object can be iconic, indexical or symbolic (2.299). The icon *resembles* the object; it owes its semiotic power only to its own quality (a unicorn drawing is a sign, even if its object does not exist). The index[351] is *marked* by the object; it testifies to the object by a physical connection with it (a weather vane can only refer to its object if the wind actually blows). The symbol is associated by *convention* with the object; it refers to the object via a mediator who links them by virtue of a general rule (the semiotic quality of a word is based only on the convention regulating interpretation).

As for the relationship between the sign and the interpretant, it can be rhematic, dicent or argumentative. A rheme loosely determines its interpretant, limiting itself to *suggesting* a potentiality; 'not true nor false' (8.337), it is illustrated, in Peirce's work, by phrases with blanks, such as ' -- *buys*-- *from* -- *for the price* - ' (3.420). A *dicisign* transmits information 'without furnishing any rational persuasion of it' (2.313). It relies on previous experience to *submit* an interpretation. Peirce takes the example of a photograph: 'the mere print does not, in itself, convey any information. But the fact, that it is virtually a section of rays projected from an object **otherwise known**, renders it a Dicisign' (2.320, emphasis in the original). The argument, finally, *involves* its interpretant, whom Peirce then calls its 'conclusion' (2.95); deductive reasoning, for example, brings into play arguments that constrain the interpretant to the point of making it necessary.

	Firstness	**Secondness**	**Thirdness**
Relation to the object	*Iconic* (looks like)	*Indexical* (marked by)	*Symbolic* (refers to by convention)
Relation to the interpretant	*Rhematic* (suggests)	*Dicent* (proposes)	*Argumentative* (implies)

Table 13: Two triads of Peircian semiotics (from Peirce, 1931-5)

An aspect that does not appear in Table 13, but which will be central to the analysis, is the dynamics of these statuses. For example, Peirce notes that language tends to 'symbolize'

[350] These triads are always structured around the three categories of Peirce's philosophy: Firstness (pure quality remaining at the state of potential; for example, solidity), Secondness (actual causal relation; a stone hitting a wall), Thirdness (general mediation, ensuring predictability; the law announcing the reaction of the wall to the shock of the stone).

[351] In this article, the term 'index' will be used alone, without qualification, when referring to the second element of the Peircian triad, and it will be qualified ('stock market index' or 'stock index') when referring to the empirical object.

itself, moving from iconic writings such as hieroglyphics to 'conventional sound signs' (2.280, cited in Viola, 2018). In parallel, just as the sign–object relation tends to evolve towards the symbol, the sign–interpretant relation tends to evolve towards the argument. Indeed, in order to limit the volatility of their interpretation, humans tend to stabilize the sign-interpretant relation by the effect of habit (De Munck, 2020). Repetition is an essential part of this dynamic: 'repetitions of the actions that produce the (habit-)changes increase the changes' (5.477). This stabilization, then, alters the semiotic status of the sign that produces its effects with more and more certainty. Take, for example, when a foreign expression is imported (e.g. 'give me five'), the interpretants are at first random ('do you want five euros?'), then – by habit, that is to say by dynamics of collective learning (confirmation of peers, etc.) – converge towards the clapping of hands. That being said, habit, however instituted, never ensures complete certainty of the future: 'chance or uncertainty shall not be entirely obliterated by the principle of habit, but only somewhat affected' (1.390). Crises of confidence, such as those that occur during market crashes, bear striking witness to this.

b. Peirce and valuation studies of finance

This chapter's approach lies at the crossroads of two research streams: Valuation Studies and the Social Studies of Finance. In the first field of research, I take up the perspective of pragmatist-oriented works that grasp valuation as a *practice* rather than as the discovery of an essence or the convergence of desires (Muniesa, 2011b). In this practical operation, 'valuation signs' are mobilized to make emerge and then 'hold' the value of things (Bourgoin & Muniesa, 2016). For example, as Philippe Lorino (2018) noted about Shewhart's control card (a management tool representing the evolution of a performance), 'manufacturing engineers often used control (cards) as manifestations of scientific truth in quality evaluation' (Lorino, 2018: 247). Muniesa's (2014) theorization explicitly linked Peirce's sign theory to this research perspective. So far, this work has mobilized the icon-index-symbol triad. I continue and extend this work by paying attention to the two triads presented in the previous section.

In the field of Social Studies of Finance, I join what could be called the 'informational' perspective. Researchers here have paid special attention to how financial market actors process massive flows of information in such a way as to reduce the uncertainty of their environment and make decisions (Arnoldi, 2006). In this effort to reduce uncertainty, these actors will rely on situational cues: the content communicated by these cues, as well as the way they are communicated, is a key object of exploration for the 'informational perspective'. In this spirit,

different studies have inspected the semiotic power – that is the potential as 'uncertainty reduction tools' – of trading volume (Schinckus, 2010), data patterns stimulating high-frequency trading algorithms (MacKenzie, 2018), 'spreadplots' (Beunza & Muniesa, 2005), as well as the decisions and profiles of managers of listed companies (Certo, 2003; Janney & Folta, 2003).[352] Such an approach has not been applied to stock market indices. While the latter have been the subject of historical studies (Stillman, 1986; Goede, 2005; Hautcoeur, 2006; Duterme, 2021b) and have recently attracted the attention of political economists (Petry, 2021; Petry et al., 2021), they have never been studied for themselves in the context of the Social Studies of Finance. That said, as will be elucidated in the next section, they have become central features of financial markets and thus appear in several works that I shall mobilize as empirical support points.

Three articles have explicitly mobilized Peirce to grasp certain dynamics of financial valuation.[353] They lie at the conjunction of these two fields and are therefore close to my perspective. First, Fabian Muniesa (2007) studied the stock market price itself, revealing the relationship between the ground (i.e. 'the material vehicle of signification') and the type of referral of the sign to the object (iconic/indexical or symbolic). He argues that different market technologies perform prices with different semiotic statuses. Thus, the Parisian closure call auction produced a price-sign whose indexicality 'held' (the sign bore witness to the actions of the operators, durably and consensually). Conversely, the 'weighted mean' (another technology implemented at the Madrid Stock Exchange) produced a price-sign with a low indexicality because it was 'perceived as being "calculated from the outside"' (Muniesa, 2007: 388). Then, based on historical research on the Chicago and New Orleans futures markets at the end of the 19th century, David Pinzur (2016) compared the impact on volatility of two 'semiotic infrastructures' embodied by the classification practices of the products traded (wheat and cotton). Unlike the grade produced in New Orleans, the grade produced in Chicago was a bad index (because it was often manipulated) but provided a secure connection between the index

[352] These last two publications are part of the 'Signaling Theory' initiated by the so-called Nobel Prize for Economics holder Michael Spence, that focuses on situations of information asymmetry in which 'one party, the sender, must choose whether and how to communicate (or signal) that information, and the other party, the receiver, must choose how to interpret the signal' (Connelly et al., 2011: 39). Constrained by the framework of neoclassical economics, the scope of investigation is therefore much narrower than that of Peircian semiotics (exclusively signals from humans to humans, consciously emitted and consciously perceived, implying a cost and a 'return', within the framework of information asymmetry).

[353] Two other publications refer to Peirce to study the financial sphere: Johnson (2017) proposed a brief analogy between the scientific community theorized by Peirce and the financial community, while Souleles (2020) relied on the icon/index/symbol triad to formulate a critique of the concept of 'semiotic ideology'. However, these two papers do not address the issue of valuation.

(used on the spot market) and the symbol (used on the futures market). These semiotic qualities favored speculation rather than hedging, explaining – at least partially – the greater volatility observed in Chicago. Finally, Benjamin Lee (2018) traced the evolution of the use of the 'Black-Scholes model' as an 'indexicalization' of this valuation sign. Designed to 'reveal' the price of an option from different market variables, the model was then 'diverted' to calculate one of the variables (volatility) from the market price, triggering some self-referential dynamics: 'the calculation of implied volatility ties Black-Scholes to the indexical time of trading and the market; the starting and end points of the pricing process are the market prices of options' (Lee, 2018: 243).

Of these three pioneering pieces of research, the last one is the closest to my work. The reason is that the first two question the valuation of the sign itself (the price for Muniesa, the grade for Pinzur), and not the valuation that the sign allows – as a 'valuation tool' – to be instituted. Like Benjamin Lee (and Lorino in another field), I study the role (or, rather, the roles) that a sign plays in a process of valuing *something else*. While Lee explained the semiotic status of the Black-Scholes model in the valuation of financial products, I will explain the semiotic status of stock market indices.

c. Methodological approach

In order to understand the different roles of stock indices in the valuation work of traders based on Peirce's concepts, it is important to identify (1) what a stock index can refer to for a trader (sign–object relationship), then (2) the impact of this reference on their decision making (sign–interpretant relationship). I approached the first part through fieldwork spread over two years (from March 2020 to April 2022). I first conducted exploratory interviews with five traders and distributed a questionnaire aimed at understanding what the main Belgian stock index (the BEL 20) represented for traders active in this market. Then, I deepened and broadened the initial findings through a three-month participant observation in a trading room of one of the main European banks. As an intern, I had the opportunity to conduct one to three semi-structured interviews with the 19 traders in the room and to spend days sitting next to several of them. I was thus able to address the first issue: the observation of what a trader looks at on their six screens, completed by requests for explanations[354]. This allowed me to identify the different objects to which a stock index could refer. These results have been corroborated in discussions with traders and, as we shall see, are frequently found in the financial press

[354] 'Why do you devote a screen to the American indices?'; 'why is the S&P 500 down?'…

(*Bloomberg*, *Financial Times*, *Wall Street Journal*…). In reality, they are not very innovative – at least for financial market professionals and commentators. At this stage of the approach, I used Peirce's toolbox to put some order into these empirical materials. Specifically, his triad 'icon-index-symbol' offered an effective structuring of the different objects to which stock market indices refer.

The second part is more original and implied a reversal of the relationship between field and theory. The impact of these different relations between the stock index and its object on traders' purchases and sales is more difficult to identify, above all, for very practical reasons. Not all appearances of the indices give rise to position taking (or not immediately; they are kept 'in a corner of the head'). Decisions are always motivated by several factors: the moments of buying and selling are stressful and monopolize the trader's attention, who cannot explain the reasons for their action while acting. Therefore, I had to operate in a more deductive way. Peirce's conceptual architecture seemed to be particularly well-suited to this purpose. To each reference observed empirically (sign–object relation), I associate a theoretical effect (sign–interpretant relation). The result is a set of original but more speculative propositions. The following sections attempt to demonstrate their empirical relevance by using 'vignettes' from fields explored by other sociologists of financial markets. While they help limit the risk of excessive idiosyncrasy, these illustrations do not constitute proof. They reveal a certain relevance of conceptual hypotheses that remain open to challenge. The discussions and critical mobilizations that they can fuel even constitute their main contribution.

Finally, it should be noted that my focus on the semiotic powers involved in the valuation work of traders leaves some issues unaddressed. These same stock market indices will present – under another 'semiotic framing' (Kockelman, 2005) – other semiotic qualities: when the CAC 40 logo appears on the *Euronext* website, does the index not become the *object* of this iconic sign? Moreover, in addition to the value of a security, the stock market index can indicate the quality of the firm that calculates it (representative sample, consistent weighting, etc.) but also the 'normal return' (against which an asset manager's performance will be evaluated). In other situations, it can also signal the health of the economy (when it is announced on the television news), the difficulty of paying a loan (if the rate is indexed to the S&P 500), or even the 'financialization of societies' (if it rises during an economic and health crisis). All these semiotic aspects, interesting as they are, will not be discussed here.

d. Stock market indices as valuation signs

Formally, a stock market index is an average of the price of a sample of stocks, usually weighted by the size of each stock (i.e. the number of shares issued). During the 20th century, indices – produced by financial newspapers, national statistical offices or stock exchanges themselves – were one focus among many for market participants. In the 1970s and 1980s, their importance exploded as a result of an evolution in financial theory and its impact on portfolio management: the random walk hypothesis. This hypothesis argues that, given the random ('Brownian') movement of prices, no investor can, on average, obtain a better return than 'the market' as a whole. The indices were doubly impacted. First, in the academic arena, researchers wanted to test this hypothesis and therefore needed a representative of 'the market'. This is how stock indices are invoked in most scientific articles. Sometimes, researchers try to demonstrate that an investment technique '(beats) the average represented by the S&P 500 Index' (Sorensen et al. 1998). In other cases, they propose a new algorithm 'to predict the stock price index' (Kim & Han, 2000). Second, in the financial world, several investment techniques – grouped together under the label 'passive management' – have sought to take advantage of the conclusions of the random walk hypothesis by investing in 'the whole market'. This involved transforming indices into financial products. After an intense socio-technical process described by Millo (2007), index futures and index options emerged and became very popular.[355] In addition, index funds offer to guarantee the performance of the index to those who invest in them; if they are listed on stock exchanges, these funds are called 'exchange-traded funds' (ETFs) – the ETF having become one of the main investment products, with US$10 trillion assets under management (Statista, 2022).

This explosion in popularity has transformed the way stock market indices are produced. They now represent very profitable brands for the few companies owning them – MSCI, S&P Dow Jones Indices, FTSE Russell and Euronext – which are constantly trying to adapt to the needs of their clients, to the point where Bloomberg now references more stock indices than stocks! Despite this proliferation, the historical stars – Dow Jones, S&P 500, CAC 40 … – remain the most influential indices. Who do they influence? First and foremost, asset managers. If they adopt a passive strategy, they *de facto* delegate their decision-making powers to the

[355] An index option gives the holder the right to sell or buy the index at a predetermined price and date, while the index future establishes a transaction at a predetermined price and date. Since indices – unlike the agricultural commodities that are the source of these derivatives – are not 'deliverable' at the maturity of the contract, the holder obtains from the seller the difference between the predetermined price and the market price at maturity (if positive, of course).

index engineers (Petry et al., 2021). If, instead, they are active managers, the indices dictate the performance benchmark against which they will be assessed, encouraging them to deviate little from passive management. However, asset managers are not the only ones to be more influenced by indices since their popularity exploded. Traders are forced to consider them carefully in their valuation work.

The traders at the heart of this chapter are equity traders, responsible for trading on (a specific part of) the stock market, although we will see that other traders are also impacted by stock indices. Equity traders are traditionally distinguished according to the 'side' of the financial system in which they operate: 'sell-side traders' respond to requests from clients for which they act as counterparty (which implies giving a price to the requested product and then hedging the position taken), while 'buy-side traders' manage a portfolio of products that they hold (typically within an investment mandate of a fund). Although this distinction is important for grasping the potential variety of traders' responsibilities, it will not impact the rest of the analysis because, in both cases, their main job is to assess the value of the securities for which they are responsible.[356] In both cases they rely on signs. These signs include stock market indices as an icon, index and symbol. The predominance of one semiotic dimension over the other depends on the specific stock market situation.[357]

First, the stock index can refer to its object as an icon, by virtue of its resemblance: it is the representative 'of the market'. I have mentioned that this is the case in the financial economics literature, but also in the trading room, where comments on the state or sentiment of 'the market' are frequently associated with stock index movements. Financial commentators take up – and help to stabilize – this first sign–object relation, as in the following excerpt: 'the July signal was not as good as many of the previous signals, but it still preceded a 10% rally in the S&P before the market reversed'[358] (White, 2022); what has 'reversed' is the price of the S&P 500, but it is now referred to as 'the market'. Note that this iconic quality is independent

[356] Another frequent distinction separates traders according to their type of strategy: scalping, day trading, swing trading, arbitrage, technical trading … Again, these categories are not central here, because none of them exempts the trader from the essential work of stock valuation (even when this work is assisted by an algorithm). However, we will see that there are 'elective affinities' between certain semiotic properties of stock indices and certain trading strategies.

[357] Let us note, by the way, that with regard to another Peircian triad dealing with the nature of signs 'for themselves', the stock market index is always a *legisign*, that is to say, a sign of a general nature established by convention. 'Usually established by men' (2.246), the *legisign* is illustrated in Peirce's work by a word or a graph (independently of their practical realization, their *replica* which is a *sinsign*).

[358] I mobilize articles from *Bloomberg*, rather than the *Financial Times* or the *Wall Street Journal*, on purpose: the Bloomberg Terminal, which relays these articles, is the platform most used by traders and contributes to disseminating certain interpretations of events (see chapter III).

of its object ('the market'). Moreover, a little bit like the drawing of a unicorn can dispense us from proving its existence, the stock market index as an icon of the market allows us to avoid a definition of this object, since it is confused with the object. A good icon-index is representative *whatever the definition of the market*, that is, independently of its object – which is well in conformity with the Peircian definition of an icon.

As for its role in the traders' valuation effort, I argue that the index has a *rhematic* relation to the interpretant. This is a relation of incomplete determination (see the example of Peirce's phrases with blanks). In fact, an index-icon does not imply any univocal reaction or even proposes a type of response. It only conveys potentialities about the state of the market. A rise in the index *can* mean a future rise (and have the *buy* as interpretant), but *can* also mean, if the point reached is a 'peak', a future fall (and have the *sell* as interpretant). In this respect, it is indicative that this sign is coveted by technical analysis. This has been the case for a long time: the Dow Jones was conceived in 1896 by Charles Dow precisely to develop his own technical analysis (the 'Dow Theory'). Even today, indices are popular tools for many technical analysis models (Edwards et al., 2018). As opposed to fundamental analysis which is based on an examination of company balance sheets, technical analysis bases its predictions on the trends 'revealed' by the history of stock prices. It is characterized by the openness of its interpretation: two traders using technical analysis can, from the same sign, deliver contrary recommendations. Thus, Olivier Godechot (2016) relates the predictions on CAC 40 movements made by the technical analyst of a trading room: 'He envisioned a fall that should either stop at 2812, or at 2784, or in the worst case at 2650, unless prices should rise, in which case it would reach 2857 or 2885' (*Ibid*: 424). In conclusion, as an icon, stock market indices do not reduce the uncertainty of the valuation of financial products.

Second, the stock market index can refer to its object as an index when it 'physically' bears the mark of its object. As I have shown, stock indices are now treated as products in their own right, autonomous entities from the stocks they aggregate. When one invests in an S&P 500 ETF, they invest in the S&P 500 index as such. Therefore, as with any financial product, stock indices can signal some behaviors by the brand they imprint on it. They become an index of 'the attitude of other investors'. Again, this sign–object relationship is part of the common sense of traders and often comes up in financial commentary. For example, a Bloomberg analyst recently described the movements of the major US stock index as: 'After a bounce that started around noon in New York and was attributed to a big options trade, the S&P 500 came back lower again' (Nazareth, 2022a).

In practice, this indexical relationship takes two forms. The most explicit is the recognition of the 'paw' of a financial operator in a movement of the index price or of its order book (all bids and asks pending). This phenomenon appears regularly in trading rooms and has been identified in previous research. The anthropologist Caitlin Zaloom (2003) gives the example of the 'spoofer'[359] that the London traders she met were trying to unmask: 'Traders learned to identify a spoofer by watching changes in the aggregate number of bids or offers on the screen' (*Ibid*: 10). Without focusing on this phenomenon, Donald MacKenzie (2006a) notes two other illustrations.[360] Finally, Fabian Muniesa (2011a) found that traders are not the only ones to exploit the indexicality of stock market indices (and other financial products): market surveillance officials also manage to detect the activity of 'arbitrage traders' through the movements of CAC 40 stock. The second form of this indexical relationship is not offered spontaneously to the eyes of traders; it involves an intervention in order to be 'unveiled'. It is the recognition of the positions of other financial operators in the depth of the index's order book.[361] If a moderate buy order doubles the price of the S&P 500, it is an index of the weak presence of other operators at the sale. This sign, as frequently seen as the previous one, therefore requires intervention in the situation, taking a position in order to 'test the market'.

And what is the effect (on the valuation of financial securities) of the stock market index as an index? In its relation to the interpretant, this second type of index is a *dicisign*: it transmits information without proof of its validity. Unlike the rheme, the informational content of the *dicisign* is sufficiently structured to be true or false (e.g. it is indeed a spoofer or not), but – unlike the *argument* – it does not, in itself, provide 'any rational persuasion of it' (2.313) (i.e. the proof that it is indeed a spoofer or not). Another characteristic of *dicisign* is its reliance on prior knowledge: Peirce's print only becomes *dicisign* when a photograph is recognized in it,

[359] The 'spoofing' is a technique consisting of entering very large buy or sell orders in order to inflate the volume on one side of the order book (bid or ask), then to cancel these orders. The objective is to make other traders react in the direction desired by the spoofer.

[360] At the end of the 1990s, 'arbitrage traders' recognized in the movements of index prices certain strategies of traders from the Long-Term Capital Management fund. Earlier, during the crash of 1987, the decline of the S&P 500 was associated with the behavior of traders from portfolio insurers (forced to sell to secure the floor they guarantee to their clients): 'the crowd detected a pattern of a guy who had to sell as the market went lower. So what you do? You push lower' (quoted in MacKenzie, 2006a: 186). In these two cases too, the 'proposed' interpretant is mimicry (cf. Table 1b below).

[361] In an 'order-driven' market, buy (resp. sell) orders are ranked in descending (resp. ascending) order to establish the price range (bid–ask spread) of a security. The depth of a security can be understood as the capacity of its order book to 'absorb' large volumes of purchases or sales without the price varying greatly (this happens when a large number of orders have been introduced close to the bid–ask spread: even a large buy order can be absorbed by these numerous sell orders without straying too far from the price range). Depth therefore provides information on the 'state of the forces at play'. Finally, it should be noted that this second form of indexicality can also be found in a 'price-driven' market (e.g. by testing the counterparty's reserves).

when it is associated with an already established landmark. In the example given by Zaloom, the evolution of prices only provides information on the presence of a spoofer if the principle of the order book is kept in mind. Without this 'background knowledge', the numbers displayed on the trading screen would not reach *dicisign* status. Without convincing, *dicisign* thus allows one to frame the interpretation: 'traders try to gain contextual clues from their interactions with other traders (…); (this) helps traders create understandings of market fluctuations that direct their decisions to enter and exit the market' (Zaloom, 2003: 7). As Zaloom notes, this type of marker 'directs', but does not 'determine' the valuation effort of traders. As *dicisigns*, stock market indices therefore propose an interpretant; the latter can be picked up by the formula: 'follow him!'.

On financial markets, information on the position of competitors (whether judged from the price movements or revealed in the evolution of the bid–ask spread) offers an opportunity for profit. The index-*dicisign says* 'follow him!' What does it mean? For example, when the index (through its price or bid–ask spread) signals important upward pressure, it *suggests* that the index should be valued more and thus bought and vice versa. In other words, it invites adoption of a mimetic behavior. Note that the 'to take advantage of the future appreciation' is a rationalization of the interpretant that is not included in the index-*dicisign* itself and is therefore largely dependent on the example: the same semiotic quality can produce, in other illustrations, very different or even opposite rationalizations (e.g. 'to avoid future loss'). This means that the advice 'follow him!' does not contain the reasons for following him. Since it is not rationally founded, this interpretant is not necessary. The case of the spoofer perfectly embodies this persistence of uncertainty. In fact, if a trader relies on the indexicality of the index to interpret a price movement as a symptom of the action of a spoofer, 'follow him!' will no longer translate into an imitation, but into a stalking: '(traders) aspired to "take out" the Spoofer by calling his bluff, selling into his bid, and waiting for him to balk' (Zaloom, 2003: 10), which gives rise to a reverse valuation (selling rather than buying in the face of upward pressure). More generally, a trader can also take the opposite side of the '*dicisign* advice' if they judge the position of their competitors to be 'unfounded' or revealing a 'short-lived bubble'. In sum, as an index, the stock market index gives financial operators a grip by reducing uncertainty, while at the same time leaving room for doubt. More stabilized than technical analysis, it is still less so than logical reasoning.

Third, the stock exchange index can refer to its object as a *symbo*l when it functions as a convention. The most popular stock market indices are formidable centers of attention and

are therefore at the origin of the well-known self-referential sequence. When everyone looks at the index, everyone knows that everyone looks at the index and thus everyone tries to look at it as everyone else looks at it. From this dynamic popularized by Keynes's (1936) beauty contest, a collective perception of the index is born. This perception is not the result of each individual's view of the index, but of each individual's view of what the collective view of the index is. In other words, each member of the group learns to read the evolution of the index *as the group reads it*. This interpretation will be reinforced by a broad adherence (if every member shares it, it will effectively represent the 'collective gaze') and destabilized by dissident readings. These are the features of a *convention* (relatively arbitrary, collectively sanctioned, nourished by repetition…); the association between the prices of the index (sign) and a collective interpretation of these prices (object) is thus of a symbolic nature.

This association is found in the press when financial journalists invoke shared understandings of the financial community to account for the movements of a stock index: 'It was a sea of red across equity trading desks, with the S&P 500 briefly breaching its June closing trough (…). Chartists looking for signs of where the rout might ease had identified that as a potential area for support' (Nazareth, 2022b). Traders associated the crossing of a symbolic milestone (the June closing of the index) with a technical interpretation known to all (once this threshold is crossed, the decline will be accentuated), which fed the validity of this association since these traders wanted to sell before the lowest point ('sea of red'). These articles, just like the textbooks taught in business schools that use their content, stabilize the convention, notably by facilitating its transmission. As a child learns the conventional association between words and things, the young trader learns to associate prices of the index and the collective opinion.[362]

A well-known and several times empirically observed phenomenon (Cyree et al., 1999; Lobão & Pereira, 2016; Woodhouse et al., 2016) provides an illustration: the abnormality of the movement of stock market indices when they approach 'round numbers' (e.g. prices ending in 00). For example, the growth of the Dow Jones has been regularly interrupted near the threshold of tens of thousands. Behavioral finance links this phenomenon to biased reasoning: investors tend to cling to benchmark numbers that should not be relevant to a rational individual. But this hypothesis becomes hardly tenable when one discovers that traders are generally aware of this phenomenon (Mitchell 2001). It is therefore likely that this 'roundophobia' is more the result

[362] Tullio Viola (2018) relies more on Mead to characterize this institutional power of the symbol that 'allows the individual to adopt the attitude of a generalized Other and to internalize the attitude of other members of the community' (Viola, 2018: 83).

of collective reflexivity than of behavioral bias. If the trader has learned to associate a stock index movement (a rise approaching a round number) with a collective interpretation ('fear' preventing prices from reaching this number), their decision not to buy in order to avoid the stagnation (or even the fall) of prices is not irrational. On the contrary, it is rational reasoning – based on the symbolic quality of the stock market index – that explains the persistence of this conventional phenomenon.

Reflexively, the trader recognizes in a sign a type of reaction specific to their community (not to buy as a round number approaches) and relies on this information to react by *imitation*. Imitation must be distinguished here from the mimicry that characterized the interpretant of the stock index as an index: whereas the 'follow him!' implies a 'simple' mimicry (copying the other's behavior, regardless of the motivation for this behavior), imitation 'requires copying both the form and function of another's behavior (both what others do and why they do it)' (Kockelman, 2005: 294). Our trader's reflexive reaction is to adopt the same attitude as their peers (not to buy) for the same reason as their peers (each judging that the community is afraid to cross some thresholds). By the same token, the nature of the relationship between the sign and the interpretant is no longer *dicent* (proposal of an unproven answer), but *argumentative* (deduction of a proven conclusion). Where the index-*dicisign* transmitted information without rationalization (detection of a presence through price movements or bid–ask spread, but without proof that it is a spoofer), the index-argument relies on a 'law': the growth of the index weakens around a round number, *by virtue of roundophobia*. The interpretant, taking a short position, is therefore logical. It is even necessary, because the law covers all potentialities, present and future: the slowing down of the index around round numbers is certain, conditionally, not to future behaviors, but to the 'law' pacing them. In other words, this sign can only produce other effects if it violates its own rationalization, that is, if it is no longer a symbol-argument. The adoption of a short position by the trader perceiving the sign is the *conclusion* of this sign.

This symbolic quality of the index is the most general and comes to weigh on markets other than equities. Despite the weak connections between equities and their scope (foreign exchange), one trader I met devoted half of one of their six screens to the evolution of major stock indices and justified it as follows: 'because of self-fulfilling prophecies'. At the same time, all equity derivatives markets are symbolically linked to indices. Traders watch the movements of the index to establish the value of index-based derivatives. One might even say that, in the case of index futures and index options, the symbolic relationship has stabilized to such an extent that traders fluently interpret them as if they were reading in their native

language. Formalization has contributed to this evolution: until the mid-1970s, traders deduced the value of derivatives from those of the underlying assets, based on certain 'traditional rule-of-thumb heuristics' (MacKenzie, 2006a: 257) similar to *roundophobia*. These rules were then supplanted – or extended (Haug & Taleb, 2011) – by the Black-Scholes model, which enjoyed tremendous success in the financial community. Once they were widely adopted (notably because they were accessible to all), the equations of this model made it possible to stabilize the link between the value of the underlying (in this case, the index) and that of the corresponding option. The model was later embedded in price evaluation software.

Regarding the interpretant, this type of sign results in an adjustment of the trader's position which is logically deduced from the sign itself. This adjustment is generally entrusted to an algorithm (again, modeled on the risk hedging techniques initially proposed by the Black-Scholes model). It is not surprising that algorithmic techniques can support, or even supplant, the trader's interpretation of this type of sign; their functioning fits easily with the generality and necessity of the symbolic-argumentative relationship of a Peircian triad. Moreover, we could imagine, if the convention hardens to the point of crossing the threshold of mathematical formalization, an algorithmic treatment of *roundophobia*. Conversely, the interpretant of the stock index, as an icon and index, seem too weakly marked out to allow for deterministic treatment. However, here again, as the appearance of the 'volatility smile' showed (MacKenzie, 2006b), control of the future allowed by the stock market index remains relative.

Below, I reproduce the table now completed with the salient features of the three semiotic statuses of stock market indices.

	First index	**Second index**	**Third index**
Relation to the object	*Iconic* (looks like the market)	*Indexical* (marked by the behavior of peers)	*Symbolic* (refers to a collective interpretation)
Relation to the interpretant	*Rhematic* (suggests potentiality on the state of the market)	*Dicent* (proposes a mimetic response)	*Argumentative* (implies a revision of the position)
Examples	Technical analysis, general impressions on the state of the market	Detection of a spoofer, interpretation of a shocking fact (e.g. a sharp rise)	*Roundophobia*/Black-Scholes model, unanimous conclusion of a typical phenomenon

Table 14 – Two Peircian triads applied to stock market indices(from Peirce, 1931-5)

e. The evolution of financial signs

By mobilizing the triad 'icon-index-symbol', I have conceptualized the significations of stock market indices in the trading room. In a certain way, they always evoke the market: by constituting a representative sample (icon), by bearing the imprint of the forces at work (index) or by referring to a shared reflexive interpretation (symbol). By adding the triad 'rheme-*dicent*-argument', I was able to grasp the indices as valuation signs, through their effects on traders' interpretation. This allowed me to explore the ways in which stock market indices *could* be used by traders as a basis for their decisions. To explore this issue, which is at the heart of this theme issue, I conclude by briefly addressing a question that may have confused the reader: if the index as a symbol-argument is more effective in reducing uncertainty, why would traders rely on the stock index as an icon-rheme or index-*dicent*?

In my field experience, some traders refused to rely on stock index as an icon-rheme ('I don't believe in technical analysis') and as an index-*dicent* ('it's too risky: other orders can bypass me, like the algos'). On the other hand, others used them generously, devoting two of their six screens to technical analysis (to 'spot patterns in the market') or scrutinize the dynamics of the order book (to identify the 'big players'). To account for these situations without resorting to the behavioral perspective of 'bias', two approaches exist. The first is 'genealogical' (Viola, 2018), whereby today's symbols are yesterday's successful icons and indices. Some of today's extravagant interpretations of technical analysis could therefore achieve the symbol's degree of certainty if they convince enough to stabilize. Conversely, today's symbols, unanimously approved, could not have germinated without the effort of lonely precursors. It is therefore useful to look at the stock market index as a rheme: it could reveal the symbol to come. The second approach is more institutional: in financial markets, consensual signs are not profitable. For example, once they were integrated into pricing software, the Black-Scholes equations could no longer be used to exploit discrepancies between theoretical and actual prices, precisely because their success made such discrepancies disappear. Traders who use technical analysis often put forward this argument: 'it allows me to see things before others' (interview extract).

The pragmatic turn in sociological research on economic valuation has brought to light processes that reifying conceptions of value had tended to ignore (Muniesa, 2011b; Elder-Vass, 2022). Indeed, many works have done justice to the roles of unsuspected objects, such as the underlying assumptions of models, graphs or computer cables. This theme issue has called for

new concepts and tools that help us to better understand the semiotic and dramaturgical aspects of valuation. For there is a need. The massive recourse to the concept of 'performativity' in this field of study is symptomatic: this concept allows us to grasp a type of impact of a device on valuation practices (Sparsam, 2019). However, performativity captures only one of the modalities of this 'device-valuation' relationship. Peirce's concepts can help to fill this gap: as the summary tables illustrate, they offer a systematic view of the plurality of sign contributions to valuation, from the most loose and unstable ('rhematic') to the most instituted and performative ('argumentative').

As this chapter has shown from a study of stock market indices, mobilizing Peirce's concepts offers two types of insight. On the one hand, it allows us to identify the plurality of objects to which a sign can refer – without enclosing these objects in a relation of internal correspondence determined *a priori*. In other words, and contrary to non-pragmatist semiotic concepts (such as the 'signifier-signified' pair mobilized by Schinckus 2010), the 'icon-index-symbol' triad is sufficiently flexible to shed light on the plurality of significations, but also on their evolution (e.g. the tendency towards symbolization of language evoked by Peirce). This first contribution refines the *description* of 'valuation signs' and enables us to put some order into the empirical material. On the other hand, the Peircian toolbox makes it possible to elaborate conceptual hypotheses concerning the roles of devices in valuation processes. The triad 'rheme-*dicent*-argument' can indeed be conceived – and has been effectively conceived in this article – as a set of propositions that need to be tested empirically. This second contribution is the most original and enriches the *analysis* of valuation signs.

This chapter thus opens the way for a Peircian study of other valuation signs. The economic sociology literature is full of potential candidates. For example, central bank interventions, like stock market indices, are signs that are closely monitored by many financial market actors. Their semiotic dimension has already been raised (Holmes 2013; Braun 2015). The Peircian toolbox could be used to structure and enrich this work, first by clarifying the objects to which central bankers' interventions can refer, depending on the 'enunciation context' – as an index (are securities purchases identified in prices?) or as a symbol (a conventional reference to the future state of the economy?) – then by suggesting different impacts on traders' decision making – as a rheme (during ambiguous communication?), *dicent* (following price movements driven by the central bank?) or argument (automatic conformism according to the

adage ‘Don’t Fight the Fed’?[363]). The Peircian framework thus offers both a logical organization of empirical material and an opening to potentially unexplored avenues. Its formalism may seem costly to adopt, but this article has tried to highlight the many ‘returns’ of such an investment.

[363] Moreover, attempts at automated processing of monetary policy decisions seem to suggest a tendency towards symbolization (Goshima & Kumano, 2019).

Chapter VI: The semiotic turn of central banks

In this chapter, we intend to follow the path suggested in the conclusion of the previous chapter: to investigate the semiotic dimension of central bank intervention. The originality of our work lies not in the object studied (as was the case for the Terminal and stock market indices), but in the approach adopted. Indeed, as we mentioned in the general introduction (cf. Section III.2c), central banks have been extensively analyzed, particularly since the financial crisis of 2007-2008, when their centrality (re)came to the fore. Even in the more restricted community of "social scientists" studying economics, numerous publications appear every year on this theme[364].

The ambition of this chapter is to qualify an idea that has become commonplace in the abundant literature on central banks, according to which the transformation of monetary policy tools in the 1980s and 1990s was part of a strategy by central bankers to emancipate themselves from the state and move closer to the markets. Based on a semiotic analysis of this transformation in the Belgian case, we reveal the precariousness of the new monetary policy tools which are based on "communication" between the central bank and the financial markets. The new felicity condition of monetary policy - producing signs that are perceived, understood and respected by money market traders - was not initially assured, so much so that this transformation represented at least as much a crisis as a strategic opportunity for (Belgian) central bankers. In so doing, this chapter sheds light on a new valuation support - central bank announcements - which has become a must for many financial market participants (in its monetary segment), including the traders we met in Brussels. It consists of an article submitted to the *Revue française de Socio-Économie* as part of the thematic call for papers "Les politiques monétaires face aux crises" (it has been accepted in December 2023), enriched by certain theoretical contributions from a paper presented at two conferences[365].

[364] At the time of writing, three books in this field have just been published (or are in the process of being published) on this theme: *The rise of central banks: State power in financial capitalism* by Léon Wansleben (2023) from Harvard University Press, *Taming the Cycles of Finance? Central Banks and the Macro-prudential Shift in Financial Regulation* by Matthias Thiemann (2023) from Cambridge University Press and *Unexpected Revolutionaries: How Central Banks Made and Unmade Economic Orthodoxy* by Manuela Moschella (2024) from Cornell University Press.

[365] "The central banker and the trader: which one needs the other?", 34th annual conference of the *Society for the Advancement of Socio-Economics* (SASE) in Amsterdam in July 2022; "The three felicity conditions for 'Open Mouth Operations'", annual conference of the *Finance and Society* network in London in September 2022.

1. Convincing the market. Belgian central bankers at the test of globalization

During the 1980s, the operating methods of many central banks underwent profound changes, in at least two respects. Firstly, the objective of their interventions became narrower: the global regulation of borrowing conditions faded from the mandate of central bankers, who tended to focus on strictly monetary issues (price stability via control of interest rates and exchange rates) (Monnet, 2018). Secondly, intervention techniques were made more flexible: "administered instruments" - forced underwriting of government securities, quantitative limits on credit, prescriptions on lending and deposit rates, etc. - were abandoned in favor of more market-based channels (policy interest rates and open market operations) (Quennouëlle-Corre, 2013; Lemoine, 2016). The implications of these two developments extend beyond the realm of monetary policy. On the one hand, the financial sector is liberated, even encouraged in its innovations, while the sole objective of price stability is aligned with the interests of creditors. On the other hand, the state loses its privileged financing channels and is forced to comply with market conditions when borrowing, even if this means suffering certain "internal adjustments" (cutting social benefits, limiting wage indexation, etc.). This transformation of central banks has been identified as an essential factor in the "neoliberal turn" of our societies (e.g. Harvey, 2005).

The role of central bankers in this process remains debated. According to one view, dominant in economics, this evolution is a "necessary modernization" of monetary policy: in the face of technological progress and theoretical discoveries, the adaptation of central bank operations was inescapable (e.g. Mishkin, 2007). Contrary to this deterministic interpretation, some critical authors believe that this transformation was the result of a maneuver: it enabled central bankers to increase their autonomy vis-à-vis the State, or even to forge closer ties with financial players whose efficiency they valued or whose interests they shared (e.g. Jacobs & King, 2021). Recent work in the social studies of central banking goes beyond this dichotomy. Using case studies, they highlight the plurality of factors - intentional or otherwise - behind this transformation. It appears that central bankers have often demonstrated a "constrained opportunism": caught up in ideological, macroeconomic and technological dynamics, they try to take advantage of the situation in various ways. Theories in vogue, such as the association of monetarism with rational expectations at the end of the 1970s, are thus sometimes invoked to justify unpopular anti-inflationary measures (Krippner, 2011), sometimes to depoliticize their

interventions (Marcussen, 2009), and sometimes to mask the uncertainty of decision-making (Best, 2022). Similarly, financial innovations, such as repurchase agreements (repos) on the interbank market, are not passively tolerated, but mobilized as channels for transmitting monetary policy (Gabor & Ban, 2016), at the risk of making them indispensable and therefore untouchable (Braun, 2020; Walter & Wansleben, 2020).

This chapter is part of the social studies of central banking movement, sharing its methodological ambition of combining qualitative field analysis with an institutionalist perspective (Coombs & Thiemann, 2022). In addition, like the above-mentioned works, it traces the transformation of central bank operations "in the making", in order to identify the explanatory factors and main repercussions, notably on the boundaries with the state and the market. Within this literature, the originality of this research is twofold. On the one hand, it brings to light a little-explored dimension of the introduction of market-based monetary policy instruments: their defamiliarization. Indeed, recourse to a globalizing money market peripheralizes the former privileged interlocutors (the heads of the country's main banks), and makes the success of monetary policy dependent on the support of anonymous operators. On the other hand, while most case studies have focused on one of the "Big Four" (Fed, ECB, Bank of England, Bank of Japan), this chapter looks at the Belgian central bank. Without falling into the aforementioned deterministic interpretation, it offers a glimpse into the evolution of a "less central" central bank, which welcomes the upheaval of its instruments at least as much as a critical situation as a stimulating opportunity.

Methodologically, this research is based first and foremost on an analysis of unexploited archives of the Belgian central bank, known as the National Bank of Belgium (NBB): the minutes of weekly meetings of the executive committee and the Council of Regency between March 1989 and December 1991, as well as notes from the Research Department and press clippings[366]. We also consulted the NBB's monthly publication (*Bulletin d'Information et de Documentation*), its annual reports and a few articles from the journal of the think tank close to the NBB (*Revue de la Banque*, published by the *Centre d'Études Financières*). Finally, we have consulted publications by historians on the NBB, although the promotional nature of most of these limits their heuristic potential (anniversary works, tributes to retired or deceased Governors, etc.).

[366] The confidentiality period for such subjects is 30 years. Documents relating to the analyzed reform (1989-91) are therefore available since 2019-21.

The remainder of this chapter is structured as follows. First, it briefly describes the way in which the NBB operated from the post-war period until the late 1980s. In this way, we can fully appreciate the originality of an administered credit policy based on familiar interpersonal relations, as well as the reasons behind the criticisms to which it was subjected. Secondly, we look at the process of transformation of this mode of operation, focusing on strategies for adapting to the "defamiliarization" engendered by the globalization of the money market. It appears that this adaptation has taken the form of a "semiotic turn": in order to convince the market, that is unknown operators, the NBB's interventions must constitute positive, reassuring *signals*. In conclusion, we return to the main findings of this case study, in an attempt to identify some guidelines for assessing the evolution of relations between the State and the central bank, on the one hand, and the central bank and the financial markets, on the other.

a. Reign and crisis of the "old Bank"

In the aftermath of the Second World War, a regulatory system similar to the French "Treasury circuit" (*circuit du Trésor*) was introduced in Belgium. It is based on three coefficients that restrict the structure of banks' balance sheets: the cash coefficient (4% of liabilities due within 2 years to be invested in liquid assets), the coverage coefficient (65% of liabilities due within 2 years to be invested in short-term public debt securities) and the solvency coefficient (5% of liabilities to be constituted as equity capital). As a member of the NBB complained in the November 1957 *Bulletin*, none of these coefficients were designed for central bank policy: rather, they were intended to ensure the stability of banks (cash flow and solvency) and the adequacy of public financing (coverage). What's more, within this regulatory architecture, the central bank acts primarily as a lender to the Treasury. As a result, its Governor, Maurice Frère, was quick to call for the State to "give back" to the NBB its room for maneuver via three measures designed to enable the development of a money market: reducing its weight in the economy[367], limiting its recourse to NBB loans and relaxing banking coefficients.

These claims, supported by the Treasury's changing financing requirements (Cassiers et al., 1998), were heard in Parliament. As early as 1957, the coverage coefficient was adjusted - not without concessions from the banks, which agreed to link their borrowing rate (i.e. the rate at which deposits are remunerated) to the NBB's official rate. Then, in January 1962, the cash

[367] "The growing influence of the State on the country's activity and its high levies on national income tend to attenuate the effects of the discount rate policy on the evolution of the market" (Annual Report, 1955: 13). In other words, the proportion of banks' balance sheets earmarked for loans to the private sector, mainly in the form of discounting (see below), was squeezed by the size of public debts and the magnitude of the coefficients. Under these conditions, the NBB's main instrument, the discount rate, has limited scope.

coefficient and the coverage coefficient were abolished (a "public bills floor" was introduced as a transitional measure to avoid a massive withdrawal of public financing). At the same time, the monetary reserve coefficient (percentage of liabilities to be placed in a non-interest-bearing account with the NBB) was introduced as a new instrument available to the central bank. Finally, in 1962, which marked the end of the Belgian "Treasury circuit", the link between the banks' borrowing rate and the NBB discount rate was no longer fixed by scale, but is deliberative:

> this link was replaced by a new system under the terms of an exchange of letters between the President of the Belgian Bankers' Association and the Governor of the National Bank, dated December 21 and 22, 1961. Henceforth, changes in the borrowing interest rates in question [...] are subject to an agreement preceded by consultations between the National Bank and the Belgian Bankers' Association (*Bulletin* March 1962: 236).

Central bankers and their friends

From 1962 onwards, the NBB had unprecedented leverage. The opening of the money market gave its main rate, the discount rate, a new influence. This rate represents the cost to a commercial bank of rediscounting a bill of exchange (i.e. an IOU) given to it by a company. In other words, it designates the conditions of access to the central bank's liquidity. As a result, Belgian banks have become accustomed to basing their lending rates - i.e., the rate at which they grant credit (over 60% of which takes the form of discount credit) - on the NBB rate. Moreover, this same NBB rate is linked to the banks' borrowing rates via the consultation process mentioned above. Belgian central bankers are thus in a position to ensure the stability of prices and of the Belgian franc, as well as the borrowing conditions faced by the three major macroeconomic actors - the State, companies and households (Janssens, 1980). In addition to the relative international stability offered by the Bretton-Woods system, proximity to the country's main financial players favored this comfortable situation: the central bankers were consulted and shared their recommendations with the financial institutions: "when it became apparent, at the beginning of 1964, that the rate of increase in bank loans was still too rapid and that inflationary pressures were becoming clearer, the Bank invited the banks to exert effective restraint and to agree with it on a program to be respected" (*Bulletin* of February 1965: 156).

In the same spirit, the NBB took the liberty of broadening its range of instruments to limit monetary expansion during the instabilities of the early 1970s. Since its action on the cost of credit via the discount rate proved insufficient, it decided to act on quantity via a rediscount ceiling: in March 1970, only 10% of rediscountable bills were eligible for rediscount. In addition, it imposed "monetary reserves" on banks and other financial organizations (public

credit institutions, savings association, etc.) for their Belgian franc commitments, and then for their loans: each new commitment, and then each new loan, implied a non-remunerated reserve of a fraction of the amount committed/loaned - which weighed on their cost. Finally, the NBB's recommendations, which mainly took the form of limits on bank lending, were backed up by regulatory measures from December 1973 onwards. While these new instruments demonstrated and amplified the power of the central bank, they also revealed the inadequacy of the discount rate: the scripturalization of money was making the money market - which was in the process of being internationalized - less dependent on NBB loans[368]. This trend is set to intensify, weakening the NBB's flagship rate.

The double crisis of the 1980s

> The policy of quantitative credit restriction [...] acts as a constraint on new entrants and dynamic banks that are more efficient. [...] In short, the present system of banking supervision contributes to a highly cartelized sector, with all the well-known consequences: high profits, low interest rates for savers, the emergence of inefficient forms of competition and the perpetuation of an over-concentrated sector, with a long-term loss of efficiency and dynamism (De Grauwe, 1978: 11).

At the end of the 1970s, the influential Belgian economist Paul De Grauwe, like many of his colleagues, waged an ideological battle: the NBB's policy - both through its regulations and its consultations with the banks - was accused of distorting competition. This argument also benefited from the increasingly frequent condemnation of the role of the group of banks consulted ("the Consortium of Banks") in the high interest burden on the public debt (rising from 3% to 8% of GNP between 1973 and 1981)[369]. In this way, it quickly established itself and disqualified administered instruments. The NBB's last recommendation to financial intermediaries was in 1981, and bank borrowing rates were opened up to competition in 1982.

While this crisis of legitimacy for the NBB's main instruments spares the discount rate, it feeds a "crisis of effectiveness" that hits it head-on. As soon as the consultation between central bankers and financial players comes to an end, the NBB's official rate loses its conventional link with the borrowing rate. Worse still, its hold on the lending rate, which correlates with its influence on banks' access to liquidity, has weakened considerably. In fact, following the decline in the use of bills of exchange in industrial relations and their partial replacement on banks' balance sheets by public debt securities, banks are mobilizing

[368] Commercial banks are increasingly managing their accounts "among themselves" using scriptural money, rather than "central bank money".

[369] A few years later, this condemnation was echoed by advocates of debt market liberalization: "this improved debt management should be carried out according to 'market-compatible' rules, and not through laborious negotiations with creditors, as had been tried in the past with rather dubious results" (Lefèbvre, 1993: 134).

rediscounting less and less (Minguet, 1990). Whereas they accounted for 60.6% of loans granted in 1964, discount loans fell to 18.3% in 1984, and less than 15% of them were rediscounted at the NBB (*Bulletin* of July 1985). Deprived of its conventional link to borrowing and lending rates, and of its hold on bank cash flow, the discount rate became powerless.

To understand how the NBB managed to regain a last instrument before the turning point of the 1990s, we need to explain the main reason why private loans (discounting) were replaced by public-sector loans on Belgian banks' balance sheets. In the mid-1980s, the cost of rediscounting was so high that banks found it advantageous to mobilize another liquidity management technique: the purchase of very short-term public debt securities ("treasury certificates" with 1-, 2- and 3-month maturities). Belgian financial institutions then acquire such a volume of these securities (see Figure 44 below) that they simply have to make up their deficits by recovering the liquidity from matured securities, and their surpluses by acquiring new securities (which are issued on tap). In this way, their liquidity imbalances are passed on to the Treasury, which has to repay or incur debt on a daily basis, and ultimately to the NBB, which is forced to adjust its advances to the State. Fortunately, since 1957, the NBB has set the rate for these certificates, which are now at the heart of liquidity management for Belgian banks. Since 1985, these rates have been its main policy instrument. But while the NBB did not suffer from the liberal criticism that had been leveled at administered instruments, this back-up instrument did not stand up to another criticism: that of the NBB's "schizophrenia", voiced by advocates of a new monetary theory.

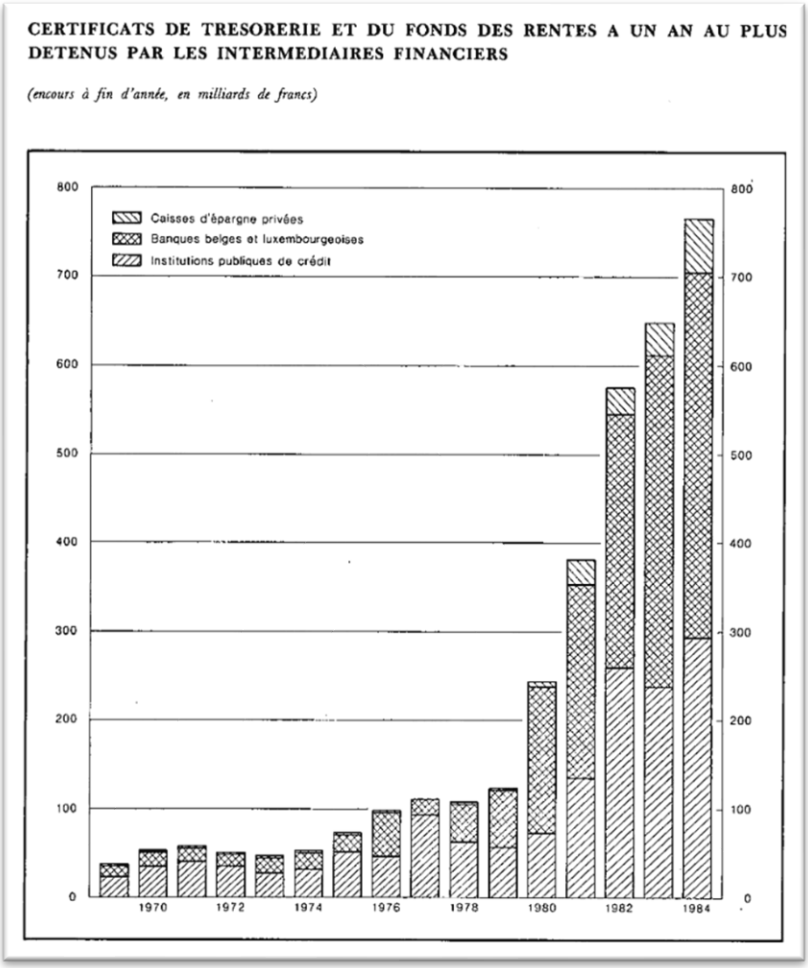


Figure 44 - Source: July 1985 Bulletin: *15.*

The mourning of a total central bank

Since the end of the Second World War, central bankers have defined their objective as the regulation of the Belgian monetary and financial system, which has translated into a concern - variable according to the economic situation - for the borrowing conditions offered to public and private actors, as well as for the stability of prices and the Belgian franc. While this plurality implied frequent trade-offs (e.g. raising interest rates to appreciate the franc, at the risk of increasing the burden of public debt and depriving certain companies of sources of financing) and institutional innovations (e.g. the dual foreign exchange market[370]), it was not seen as a contradiction. This is changing with the new monetary theory, which is gaining influence within the executive committees of central banks and international bodies (Chwieroth, 2010). Postulating that the success of a monetary policy depends on the reaction of a large number of

[370] This configuration, introduced in 1954, divides the Belgian franc market into a deregulated segment governed by capital flows and a segment reserved for commercial transactions, in which the NBB intervenes. See footnote 90.

players (irreducible to a handful of bankers committed to its cause - which is increasingly true in the Belgian case), this new approach establishes *credibility* as an indispensable attribute for central bankers' decisions (Barro & Gordon, 1983). By the end of the 1980s, however, the NBB, like most of its counterparts, was violating several theoretical conditions for credibility: its dependence on the budgetary authorities raised the risk of "electoral" inflationary pressures, while the plurality of its objectives prevented the anchoring of agents' expectations. In any case, this is what the IMF's conclusions to the NBB in May 1989 regret:

> The crucial policy questions are why the markets continue to fear a weakening Belgian franc, and secondly, how these fears can be allayed. The answer to the first question lies partly, in our view, in the general perception that the authorities actually have rather two monetary policy objectives than one, namely that they have the additional aim of reducing interest rates to the extent compatible with the constraints of the E.M.S. (European Monetary System). [...] We recommend that the authorities make the stability of the franc against the German mark the sole operational objective of monetary policy (IMF 1989 Consultation Conclusions: 11-12).

The IMF's criticism is aimed not only at the objectives, but also at the NBB's instrument: decoupling fiscal and monetary objectives means that central bankers no longer use rates on public debt securities to disseminate their decisions. During discussions of the IMF's conclusions within the Executive Committee, Governor Jean Godeaux challenged the spirit of the recommendations: "The Governor refutes the thesis that the rule should be to 'follow the market' [...]. By definition, monetary policy is about guiding the market, not following it" (PV, May 16 1989: 4). He then assumes the pursuit of "two objectives rather than one: the stability of the franc within the E.M.S. and lower interest rates" (Ibid: 4). His position was in the minority, however, and did not survive his departure in July 1989. His replacement at the head of the NBB, Fons Verplaetse, was more convinced by the "urgency" of the reforms suggested by the IMF: a central figure in Belgian politics, he had guided Prime Minister Wilfried Martens towards a liberal, austerity-oriented agenda in the early 1980s (Evrard, 2023). Spurred on by his reformist zeal, Belgian central bankers resigned themselves to monetary orthodoxy, striving exclusively to maintain the stability of the Belgian franc against the German mark. After the "marketization" of the NBB's instruments, the "monetarization" of its objectives became a reality.

Within the framework of the EMS, the currencies of the member states are all defined in reference to the ECU (the euro's ancestor unit of account) and thus linked by "bilateral reference rates" which can only fluctuate within the EMS margins (+/- 2.25%). Thus, in December 1989, 1 ECU was worth 42.4582 Belgian francs (BF) and 2.05853 marks (see Table

15); the bilateral reference mark/FB rate is therefore equal to 20.6255 (42.4582/2.05853). This is represented by the solid horizontal line in Figure 45. The fluctuation band authorized by the EMS means that this central rate cannot exceed 21.0896 (dotted line). At the time of the IMF's conclusions (May 1989), the FB's discount against the mark was close to the authorized limit. If they aspired to reach a more comfortable position (i.e. appreciate the FB against the mark), Belgian central bankers would have to raise interest rates, at the expense of their historic concern for borrowing conditions. They are now agreed on this point. But how can this be achieved? The NBB will no longer be able to mobilize the treasury certificate rate, as it is too closely linked to fiscal policy... As illustrated by the position of a member of the executive committee, the prospect of the single European market supports, on this point, the prescriptions of the dominant theories: "such financing [induced by the operation of treasury certificates], already prohibited by the orthodox conception of fiscal policy, will normally be prohibited tomorrow within the framework of the European system of Central Banks" (Quaden, 1990: 114). The main challenge, therefore, concerns the channel through which decisions are transmitted: reliance on the membership of a community of Belgian bankers that has supported the success of the NBB's policies since 1962 has become difficult to justify and, above all, appears incompatible with the globalization of the money market.

Currency	**Reference rate (ECU)**
German mark	2,05853
Belgian franc	42,4582
Danish krone	7,85212
Spanish peseta	133,804
French franc	6,90403
Irish punt	0,768411
Dutch guilder	2,31943
Italian lira	1483,58

Table 15 - EMS reference rates (Statistical Annex X-4a of the January 1990 Bulletin*)*

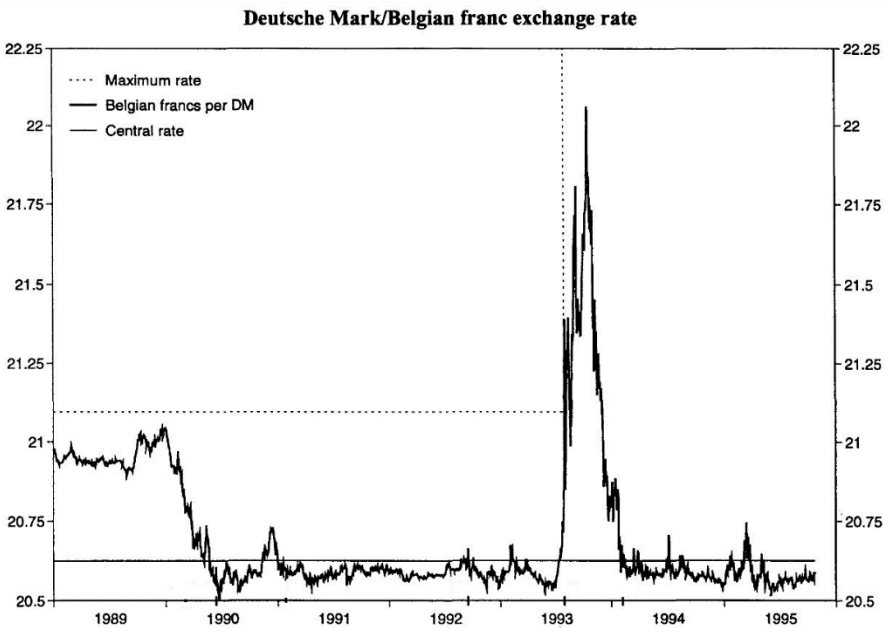


Figure 45 - Mark/FB exchange rate (Timmermans et al, 1996)

b. To be followed by the market

Gaining the trust of strangers

Never before has the success of Belgian central bankers' decisions depended on out-of-touch actors. Proximity to the representatives of the country's main financial institutions has guaranteed the effectiveness of the measures adopted. Consultation with the Belgian Bankers' Association (ABB) was not always consensual, but once an agreement had emerged, its implementation left little doubt. By the early 1980s, when this mode of operation was dying out under the pressure of liberal criticism, central bankers had managed to maintain privileged contact with financial intermediaries via the rediscounting of their commercial paper. On the contrary, this contact has become looser since the switch to the treasury certificate rate. Although these certificates are subscribed by the same Belgian banks, their issue is not directly organized by the NBB. It was to remedy this weakening of proximity that, in 1988, the central bankers adopted a new monetary policy instrument, short-term credit by auction:

As the Bank aims to develop regular contact with financial intermediaries through the granting of loans, it would be advisable to introduce the new system not in an authoritarian manner, but through negotiations with the various financial institutions. Such negotiations would enable the Bank to specify the concrete terms and conditions of its lending and could, if necessary, be coupled with the discussion of other issues relating to the organization of the money market or, more generally, to relations between the Bank and financial intermediaries (Briefing note of June 2, 1988: 12).

However, this "personalization" of monetary instruments was not to last. While the criticism of liberal economists such as De Grauwe was aimed at "distorting" regulations, and the IMF's conclusions were aimed above all at the plurality of the central bank's objectives, these two interventions also undermined the legitimacy of the NBB's "family" mode of operation. Both De Grauwe and the IMF economists felt that the NBB should no longer rely on agreements with a handful of influential acquaintances, but should submit to market discipline. At the turn of the 1990s, this position was fueled by the new paradigm dominating economics, inspired by neo-Keynesian economics, in which expectations played a central role, particularly in monetary theory (Roberts, 1995). As mentioned above, the resulting prescriptions for central bankers are aimed at ensuring the *credibility of* monetary policy objectives, which implies, in particular, transparent and horizontal operation (e.g. Woodford, 2005). From this perspective, managing expectations through communication is an essential channel for transmitting monetary policy and should be a central concern for central bankers (Guthrie & Wright, 2000).

That said, although supported by theories in vogue, these opinions were for a long time insufficient to drive profound change. It was more the evolution of the money market in the 1980s, now the sole focus of attention for Belgian central bankers, that prompted the shift to action. On the one hand, the financial system was no longer "in the bank", i.e. dependent on injections of liquidity and therefore governed by interest rates. Indeed, thanks to the expansion of financing sources (in particular via the growing interbank market[371]) and lucrative opportunities (via the despecialization and internationalization of activities: sale of shares in investment funds, investment banking in Eurocurrencies, etc.), financial intermediaries are gaining in autonomy vis-à-vis the NBB. On the other hand, the historical partners of Belgian central bankers are having less and less influence on the key variables of monetary policy: as Figure 46 below illustrates, the share of foreign institutions in the Belgian banking market is rising sharply, particularly in foreign exchange and interbank transactions - and European integration will reinforce this trend. In a globalizing money market, the agreement between central bankers and national financial players can no longer be the channel for disseminating the NBB's policy: the former no longer represent an obligatory point of passage for the latter, who in turn no longer offer a guarantee of rate control.

[371] Banks established in Belgium collected on this interbank market 9% of their liabilities in BF in 1970, rising to 18% in 1984 (Acx et al., 1986). See footnote 368.

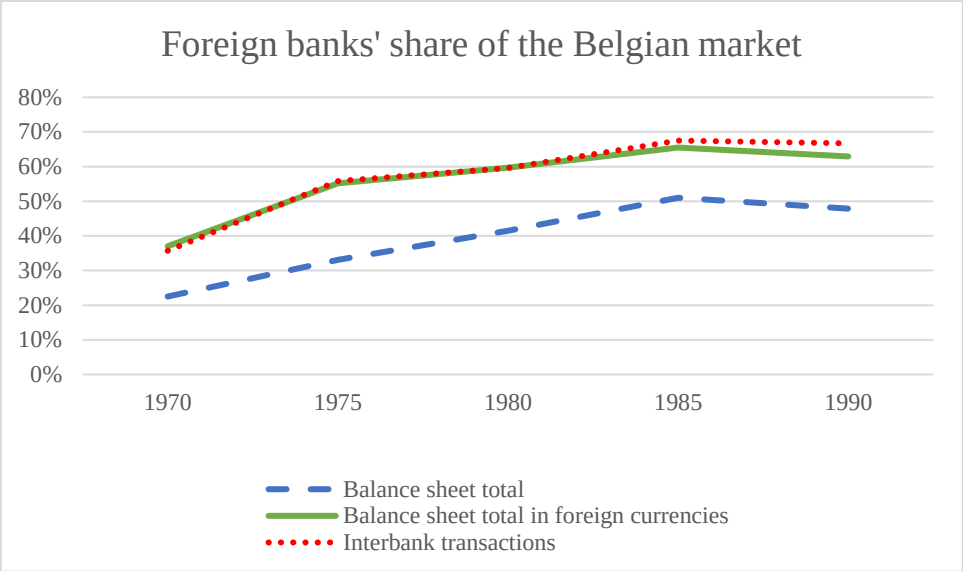


Figure 46 - Source: Figures from the BBA, taken from Cassiers et al. (1998).

The challenge is to reinvent a channel of influence that enables Belgian central bankers to carry out their duties. To confer regulatory power on the NBB's rates in the age of globalization, it is necessary to convince the market, that is to win the trust of strangers. The new liberal Governor, Fons Verplaetse, is vigorously leading the NBB in this quest for "market confidence". The day after his appointment, he hastened the process: "in view of the very favorable psychological effect that the announcement of the abolition of the dual [foreign exchange] market [see note 364] would inevitably have, it might not be necessary to wait [...] before making such an announcement" (PV, July 4, 1989: 4). The plan was to send reassuring signals to this new, anonymous audience, in order to subsequently gain power over its behavior: "the Governor thinks that we should act as all the other central banks do, and in particular the Bundesbank, which, without necessarily changing its key rates, manages to influence the market" (Minutes, October 11, 1989: 7). By the end of the year, the currency crisis was approaching: the FB was deteriorating and flirting with the limit of the EMS. Despite the concern spreading through the executive committee, the "good student" strategy was maintained:

> With regard to the Belgian franc, the Governor was of the opinion that the franc's image would improve if the following three elements could be announced for 1990: the reduction of the withholding tax on capital to 10% [...], the abolition of the Treasury's monetary financing [...], and the abolition of the dual foreign exchange market (PV, December 8, 1989: 4).

At the beginning of the following year, the "good will" of Belgian central bankers received a boost: German reunification caused the mark to depreciate to such an extent that the FB suddenly returned to its reference rate (see Figure 45). The opportunity was seized to

continue the “announcement policy” by officially linking the fate of the BF to that of the mark by a 0.5% band (instead of the 2.25% authorized under the EMS): “if we want to make a solemn announcement, it is important to choose the most appropriate moment” (Minutes, May 16, 1990, p. 5). Verplaetse proposed to mark the occasion with the issue of a security intended to inspire market confidence:

> The Governor expressed the idea - which could constitute a kind of crowning achievement of the success of the policy undertaken - that the Treasury could issue, for example, within six months of the Government’s official announcement of the new exchange rate policy [i.e. the 0.5% band], short-term treasury certificates denominated in Belgian francs and guaranteed on the rate of the mark (PV, May 16, 1990: 3).

On the eve of the abandonment of the treasury certificate rate instrument, the NBB is embarking on a campaign of seduction to ensure the effectiveness of future open market policies. While the Governor seems to be taking a more assertive approach, the uncertainty surrounding the NBB’s ability to disseminate its decisions without the support of local intermediaries is at the heart of executive committee meetings. For, once the “announcement effects” have been exhausted - in other words, once all the institutional “archaisms” have been modernized with great fanfare - it does not seem certain that the central bankers’ minor measures will be followed by the market. To make sure of this, at the turn of the 1990s, the men at the NBB undertook a formatting exercise designed to make their monetary policy decisions “acceptable” to market professionals. It is this work, which constitutes the Belgian central bankers’ response to the test of globalization, that we now propose to analyze.

c. The semiotic turn in monetary policy

In January 1991, Belgian central bankers lost their power to set the rate on treasury certificates, the securities at the heart of bank liquidity management. Most of the meetings held in 1990 were devoted to future operating procedures. It was decided that the short-term loans by auction adopted in 1988 would become the NBB’s dominant instrument. It was also decided that two other “penalizing” rates would govern the rate of these loans, enabling financial intermediaries to offset their liquidity imbalances: a higher rate for daily advances (to make up for shortfalls) and a lower rate for daily loans (to absorb surpluses). At the same time, the NBB experimented with open market policies for fine-tuning: mainly buying and selling currencies, but also foreign exchange swaps. Although this system may have seemed banal, as it was very

similar to the way many central banks operate today[372], its success seemed highly uncertain to more than one NBB director at the time, to the extent that several "backtracking" operations were envisaged until the day before its adoption.

Multimodal felicity conditions

The concern is how receptive the new public will be. This receptiveness was ensured by the proximity between commercial and central bankers: recommendations and other decisions were communicated, explained and agreed at meetings dedicated to this purpose. These different "felicity conditions" now pose a problem: to ensure the success of their policies, central bankers now had to ensure that their decisions were interpreted in accordance with their intentions. By whom? Not by "the public at large", the abstraction often put forward by central bank spokespeople and sometimes taken up in anthropologists' accounts (Holmes, 2013). Above all, as important central bankers frankly observe (Issing, 2019), by market professionals - and, in particular, by the most reactive among them: traders.

Thus, this moment of institutional change led central bankers to reflect on the issue of communication, which until then had generally been little considered. The challenges to be taken up have, of course, a linguistic dimension (being intelligible, rational, etc.), but not only: it is also a question of being perceived and adapted to the "community of reception" that traders constitute. In order to identify the different felicity conditions for this sign, i.e. the different types of efforts to be made by central bankers to be listened to on the markets, it therefore seems relevant to adopt an approach that does not restrict the analysis to the speaker. This is why we propose in this section a brief mobilization of Peirce's pragmatist semiotics. The latter allows us to address extra-linguistic acts of signification (noise, movement…) and the conditions of enunciation (e.g. contextual relevance of the speech).

Moreover, Peirce's triadic conceptualization allows us to break down the general requirement that central bankers must meet – traders must *follow* their announcements – into three finer felicity conditions: announcements must be *perceived* (as when one says "I follow the news"), *understood* ("I didn't follow a word he said") and *obeyed* ("I follow the instructions"). We could say that the first condition is sensory and implies a situational work: the announcement must be produced in such a way that it is perceived by the trader, i.e. seen

[372] At the time, the corridor system was not widely used. It is even possible that the NBB was the first central bank to introduce it, given that an ECB working paper erroneously states that "the Bank of Canada appears to have been the first central bank to introduce a corridor system in 1994" (Bindseil & Jabłecki, 2011: 9).

(e.g. on his Bloomberg Terminal), but also possibly heard (e.g. announced on the financial channel broadcast on the screens of the trading rooms). Since "nothing is a sign unless it is interpreted as a sign" (Peirce, 1931-5, 2.3081), this condition is indispensable. However, it is not sufficient to become an important reference in the formation of traders' judgments. Indeed, many signs make their way into the trading room – notably via Bloomberg or *CNBC* – without influencing traders' decisions, for lack of intelligibility or authority.

The second felicity condition (to be *understood*) is therefore important for traders to correctly grasp the intentions of central bankers. It is no longer sensory, but cognitive, and implies above all an organizational effort: within the central banks, departments must be set up to generate and transmit the knowledge necessary to understand monetary policy announcements (statistics, forecasting models, inflation targets, etc.). If this pedagogical work is successful, the trader will have the resources to deduce from a Governor's speech – for example: "the level of inflation is worrying and will probably imply a change in key rates" – a clear intention: the mastery of the links between inflation and key rates, the access to the levels of these two metrics, as well as the knowledge of the inflation target which gives a direction to the speech, form the background knowledge necessary to understand the announcements of the central banks. However, as long as these announcements do not have unquestionable authority, traders are still free to refuse to fall in line.

For this refusal to align to be marginalized to the point of being collectively considered as an *error*, the last felicity condition is necessary (to be *obeyed*). It is normative in nature and involves institutional work: the central bank must inspire such confidence that compliance with its announcements is no longer a question. When a sign reaches a certain degree of stability on the financial markets, every trader knows that all the others will interpret this sign in a certain way and has an interest in doing the same (in order to profit from the capital gain in the making or vice versa). Ultimately, when institutionalization is so complete that it becomes naturalization, this collective dimension is forgotten and the sign is interpreted as spontaneously as a familiar word when reading a book. Let us note that at this stage of authority, the second felicity condition becomes superfluous: respect is no longer dependent on comprehension (as is the case for most words whose conventional meaning is respected while ignoring the causes of their link with the object to which they refer).

This typology of felicity conditions will be useful in the analysis of the Belgian case. It also makes it possible to appreciate in a more systematic way various contributions from the

scientific literature (see Table 16). Thus, the numerous studies in economics on the statutory independence of central banks shed light on the condition of institutional felicity: the credibility of the targets that results from it establishes the authority of monetary policy statements[373]. As for the almost equally numerous studies on the transparency of central bank operations, they raise a condition of organizational felicity: greater control of the internal workings on the part of the "public" (i.e. market professionals) limits the risks of misinterpretation of central bankers' intentions.

Closer to our approach, two researchers have particularly contributed to the understanding of the efforts made by central bankers to meet the felicity conditions. On the one hand, Braun's (2015) investigation of the techniques adopted by the European Central Bank to solidify its performativity. By uncovering the apparatus deployed to "educate" market professionals (notably about the Bank's target inflation[374]), it is fully in line with the cognitive dimension of the central bankers' framing work. On the other hand, Wansleben's (2018) historical analysis explicitly addresses the condition of institutional felicity. In the course of his comparison of the Swiss and British central banks, however, other elements emerge, such as the need to recruit new economists to disseminate statistics and make monetary decisions *understood* (cognitive dimension). To our knowledge, no research has so far focused on the situational aspect of the problem (see Table 16).

Felicity conditions	Perceived	Understood	Obeyed
Dimension	Sensory	Cognitive	Normative
Strata	Situation	Organization	Institution
Examples from the literature	?	- Transparency (facilitating identification and anticipation of CB interventions) - Educative apparatus - Research department reform (new statistics published)	- Independence (ensure credibility of commitments) - Insertion into the institutional order

Table 16 – The three felicity conditions for central bank interventions

[373] This point does not validate neoclassical monetary theories, but it does remind us of their impact on the financial world, whose actors – who have often had to study these theories – have come to adopt their mode of reasoning. And yet, imperfectly: for example, contrary to theoretical prescriptions, these targets have rarely taken the form of a univocal figure, for several pragmatic reasons that we have outlined elsewhere (see next chapter).

[374] A senior economist interviewed by Braun explained the Governor's educational work this way: "He insisted so much on our mantra… the close to two but below two percent [ECB inflation target]. He repeated this concept again and again… […] the main purpose of his insistence was really to educate, or to make really very clear… the whole point of the monetary policy of the ECB" (*Ibid*: 377).

Before delving into the Belgian case study, let us recall that Peirce's pragmatist orientation invites us to keep in mind the "semiotic niche" (Berger, 2020) in which central bank announcements are inserted: the three felicity conditions are not independent of the target audience. Traders have a specific way of perceiving, understanding and obeying – they form a "community of reception". The central bankers' framing efforts take these specificities into account and therefore cannot be understood without keeping them in mind.

Adjustments by Belgian central bankers

In the eyes of Belgian central bankers, these three felicity conditions took the form of very concrete problems: how to make a change in the NBB's key rate appear on the screens of money market traders? How could we ensure that these traders interpreted the change in line with the central bankers' intentions? How can we give it sufficient authority to bring about the desired behavior? These three semiotic issues were identified in a March 1990 memo from the Research Department:

> This influence [of the NBB instruments currently being adopted] will be all the greater if the market can correctly perceive and anticipate the intentions of the monetary authorities. This last condition will be best met if the authorities set themselves precise objectives, clearly perceived by market participants (Note "Réforme des instruments de la politique monétaire", March 23, 1990: 1).

This conception of the new monetary policy was then used by Governor Verplaetse to reassure his colleagues:

> In response to the concern expressed by some about the possible insufficiency of the means at the Bank's disposal to conduct an active monetary policy, [...] the essential thing is that financial intermediaries clearly perceive the signals that will be sent by the Bank to the market, in the direction of lowering or raising interest rates (PV, May 23, 1990: 5).

Various NBB departments will be mobilized to ensure that these three felicity conditions are met. Firstly, to ensure that changes in NBB rates are *perceived* by market players, "these rates will have to be published officially, with the appropriate denomination" (PV, May 18 1990: 9). This "appropriate denomination" refers to the election of the *official* rate from among four candidates: the lending rate, the two penalty rates and the former discount rate. The Belgian central bankers first decided to abandon the discount rate, which was too closely associated with the old way of operating – "there will no longer be an official discount rate" (PV, May 22, 1990: 8), but without designating a replacement. Anxious to match the "market logic" of the new system, they also plan to apply the "market rate" for their short-term loans. This reluctance to elect an official rate representative of the NBB's strategy must also be understood in the light

of the memory of the sacralization of the discount rate, which had "paralyzed" them five years earlier[375]. The members of the Executive Committee were finally forced to settle this issue at their meeting on January 22, 1991, a week before the new operating method was adopted:

> Following the reform, [...] the official discount rate will cease to exist. In fact, the new official rates will consist of the tender rate [short-term credit], and the upper and lower intervention rates [penalty rates] (PV, January 22, 1991: 4).

A few minutes later, the central bankers realized the untenability of this non-decision - particularly with regard to legal acts requiring *one* reference rate - and changed their minds: "the tendency is asserting itself to consider the higher intervention rate applicable to end-of-day [advances] as having the strongest official character" (*Ibid*: 5). Ten days later, the question was raised again when journalists suggested they (re)define "an official reference rate for the Bank, intended in particular to reflect the Bank's desire to pursue its policy of pegging the Belgian franc to the German mark" (PV, February 1, 1991: 3-4). On this occasion, "the Bank proposes to recognize as official one or two rates, the first of which [...] will have a hyper-penalizing character"[376] (PV, February 4, 1991: 6-7). This choice - unlikely to ensure the visibility of the NBB's rates - was revised two months later: the NBB's directors reintroduced a discount rate which "will be modified only episodically in order to retain a symbolic character of general orientation" (Minutes, April 15, 1991: 9). In the press, the Governor explains:

> There are two reasons for reintroducing the discount rate: the press and the public want an official interest rate that doesn't change often, and the NBB wants to stimulate commercial paper. But [we] are not sure that the second objective will be achieved (Verplaetse, quoted *in* WV, 1991).

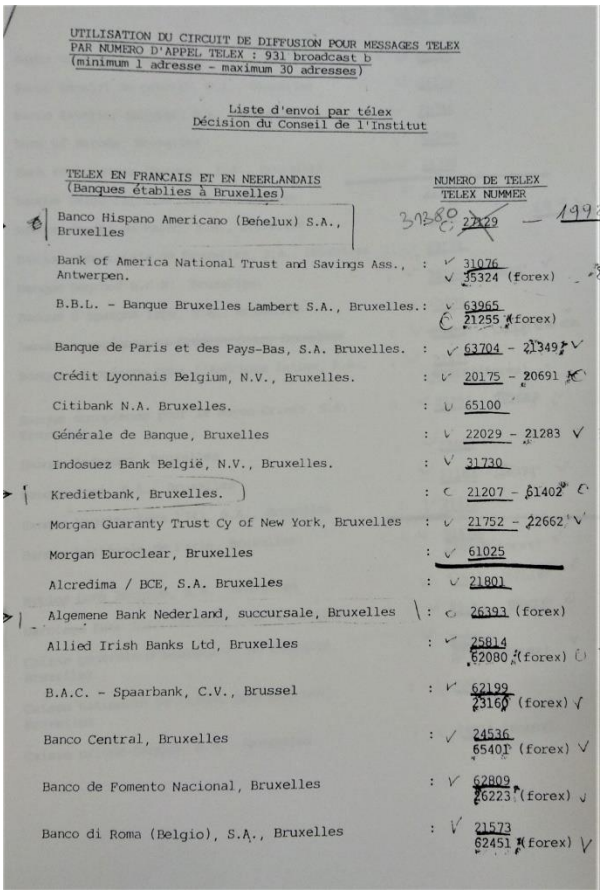
The NBB's efforts to satisfy the first felicity condition - that of perception - did not end with the election of an official rate. Central bankers' decisions had to conform to a new medium: in the early 1990s, market professionals communicated via Telex, the forerunner of SWIFT (Carré, 1993). To be seen by traders, NBB announcements are encoded on a Telex Terminal (a kind of large typewriter) and sent to all the players who count. This involves compiling each player's identification number - the famous Bank Identifier Code (BIC), which will survive the demise of Telex (see Figure 47) - and standardizing the NBB's interventions in the form of a template completed by the secretariat (see Figure 48). At the same time, the NBB mobilized the Reuter and Telerate information platforms - which were to dominate until the arrival of the

[375] See the next chapter for more on this issue.
[376] This is still the rate applied to end-of-day advances, but in a doubled form: banks can borrow a certain quota at a low penalizing rate, then face a "hyper-penalizing" rate.

Bloomberg Terminal - and the Brussels Stock Exchange distribution channel ("bourse data beurs"). However, being admissible on the trading floor is not enough to be perceived. In an environment awash with stimuli, the NBB's announcements have to constitute an event to be noticed. To this end, central bankers script communication - traders must expect their interventions:

- On Monday, at 11 a.m., meeting of the Cellule [...]. This would be followed at 11:30 a.m. by the Committee meeting, and at 11:45 a.m. by the usual media announcement of loan auction results and overnight rates [...].

- On the other days of the week, the Cellule [...] meets at 10 a.m., followed at 10.30 a.m. by the Comité meeting. Then, and as soon as possible, announcement of overnight rates by the media, either before 10.50 a.m. or after 11.10 a.m., the cut-off times for the period during which banks set the "Bibor"[377] (PV, 15/01/91: 3-4).

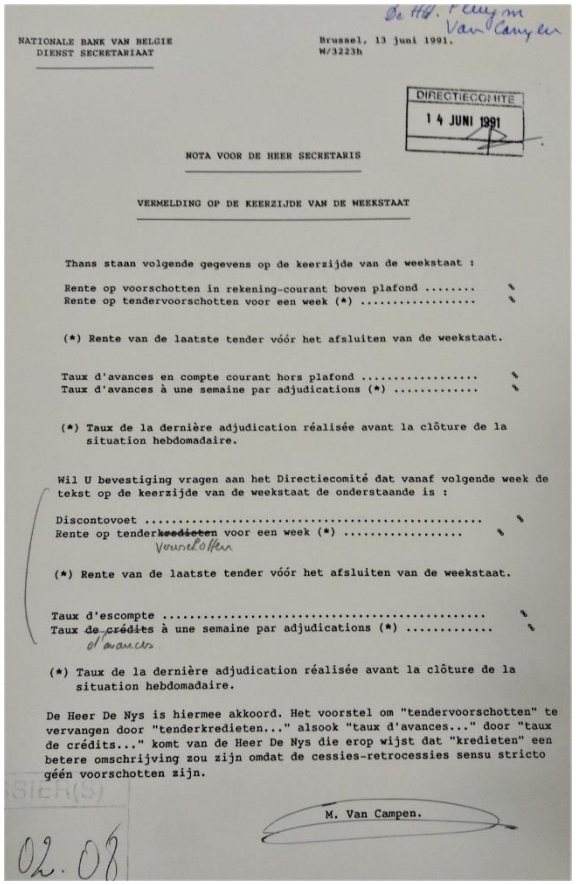


UTILISATION DU CIRCUIT DE DIFFUSION POUR MESSAGES TELEX
PAR NUMERO D'APPEL TELEX : 931 broadcast b
(minimum 1 adresse - maximum 30 adresses)

Liste d'envoi par télex
Décision du Conseil de l'Institut

TELEX EN FRANCAIS ET EN NEERLANDAIS (Banques établies à Bruxelles)	NUMERO DE TELEX / TELEX NUMMER
Banco Hispano Americano (Benelux) S.A., Bruxelles	22129
Bank of America National Trust and Savings Ass., Antwerpen.	31076 / 35324 (forex)
B.B.L. - Banque Bruxelles Lambert S.A., Bruxelles.	63965 / 21255 (forex)
Banque de Paris et des Pays-Bas, S.A. Bruxelles.	63704 - 21349
Crédit Lyonnais Belgium, N.V., Bruxelles.	20175 - 20691
Citibank N.A. Bruxelles.	65100
Générale de Banque, Bruxelles	22029 - 21283
Indosuez Bank België, N.V., Bruxelles.	31730
Kredietbank, Bruxelles.	21207 - 61402
Morgan Guaranty Trust Cy of New York, Bruxelles	21752 - 22662
Morgan Euroclear, Bruxelles	61025
Alcredima / BCE, S.A. Bruxelles	21801
Algemene Bank Nederland, succursale, Bruxelles	26393 (forex)
Allied Irish Banks Ltd, Bruxelles	25814 / 62080 (forex)
B.A.C. - Spaarbank, C.V., Brussel	62199 / 23160 (forex)
Banco Central, Bruxelles	24536 / 65401 (forex)
Banco de Fomento Nacional, Bruxelles	62809 / 26223 (forex)
Banco di Roma (Belgio), S.A., Bruxelles	21573 / 62451 (forex)

Figure 47 - Telex numbers



NATIONALE BANK VAN BELGIE
DIENST SECRETARIAAT

Brussel, 13 juni 1991.
W/3223h

DIRECTIECOMITE
14 JUNI 1991

NOTA VOOR DE HEER SECRETARIS

VERMELDING OP DE KEERZIJDE VAN DE WEEKSTAAT

Thans staan volgende gegevens op de keerzijde van de weekstaat :

Rente op voorschotten in rekening-courant boven plafond .....
Rente op tendervoorschotten voor een week (*) .....

(*) Rente van de laatste tender vóór het afsluiten van de weekstaat.

Taux d'avances en compte courant hors plafond .....
Taux d'avances à une semaine par adjudications (*) .....

(*) Taux de la dernière adjudication réalisée avant la clôture de la situation hebdomadaire.

Wil U bevestiging vragen aan het Directiecomité dat vanaf volgende week de tekst op de keerzijde van de weekstaat de onderstaande is :

Discontovoet .....
Rente op tenderkredieten voor een week (*) .....

(*) Rente van de laatste tender vóór het afsluiten van de weekstaat.

Taux d'escompte .....
Taux de crédits à une semaine par adjudications (*) .....

(*) Taux de la dernière adjudication réalisée avant la clôture de la situation hebdomadaire.

De Heer De Nys is hiermee akkoord. Het voorstel om "tendervoorschotten" te vervangen door "tenderkredieten..." alsook "taux d'avances..." door "taux de crédits..." komt van de Heer De Nys die erop wijst dat "kredieten" een betere omschrijving zou zijn omdat de cessies-retrocessies sensu stricto géén voorschotten zijn.

M. Van Campen.

Figure 48 - Template for rate communication

Secondly, to ensure that its interventions are *understood* by the new impersonal audience of market professionals, the NBB decides to produce and disseminate new data. It can no longer

[377] The *Brussels Interbank Offered Rate* (Bibor) was the reference rate for the Belgian interbank market in the early 1990s.

assume that the recipients of its interventions are aware of its intentions and familiar with the workings of its instruments. Central bankers are quickly made aware of this:

> With regard to the information to be communicated to the outside world, the members of the Committee recognize that it is essential to provide information concerning interventions in the foreign exchange market, if the Bank's decisions are to be understood (PV, October 10, 1989: 5-6).

To this end, a research team was mobilized to define a quantified target to be communicated (i.e. the range of 0.5%, then 0.2%), and a "Financial Market Instruments" unit was set up to "give reliable indications [on the market parameters involved in the new policy]" (PV, October 5, 1990: 2). Shortly before the reform, this unit published a guide outlining the NBB's new role, "aimed primarily at professional traders and potential investors" (PV, February 15, 1991: 1). The NBB's collective effort constitutes an important "investment in form" (Thévenot, 1986) aimed at ensuring that the central bankers' decisions are perceived and understood. However, the regulatory power of the new monetary policy instruments remains dependent on the last felicity condition: as long as the NBB's decisions do not enjoy unquestionable authority, market participants are free to refuse to align themselves. For this refusal to align to become marginalized to the point of being collectively considered as a *mistake*, the central bank must inspire such confidence that obedience to its announcements is no longer questionable.

But this quest for confidence is proving perilous. We have seen that, right from the start of the reform process, Belgian central bankers invested this quest with a number of "announcement effects". Independence from the budgetary authorities, the abolition of restrictions on capital movements (dual foreign exchange market), lower capital taxation (withholding tax) and greater transparency of operations were all designed to win the confidence of the market and the power of influence it should confer on the NBB's decisions (see Table 17 below for a summary of these formal investments). However, at the turn of the 1990s, several members of the management board doubted the success of this venture and were reluctant to throw themselves fully into this (unknown) world. So much so, in fact, that proposals to "go backwards", that is to re-personalize transmission channels, were considered.

Felicity conditions	Perceived	Understood	Obeyed
Dimension	Sensory	Cognitive	Normative
Strata	Situation	Organization	Institution
Examples from the Belgian case	- Exploitation of momentums for "announcement effects". - Construction of an official rate and standardization of the encoding template for the other rates - Exploitation of market medias (Telex, *Reuters*, *Telerate...*) - Scripting of decision announcements	- More transparency in foreign exchange market interventions and policy rates - Raising awareness of primary dealers on the objectives, promotional tours and guide (public education) - Creation of a "Financial Market Instruments" unit - Mobilization of the research department to publish a target and a guide	- Removal of monetary financing of the Treasury (independence) - Insertion into the institutional order via the primary dealer system

Table 17 - Framing effort at the NBB

d. Resistance to the "impersonalization" of instruments

If the dominant strategy of Belgian central bankers in adapting to the globalization of the money market is this "investment in form" designed to make their new interventions perceived, understood and obeyed, it has been accompanied by a strategy of resistance designed to maintain certain personalized transmission channels as "safety nets". The introduction, in 1988, of short-term credit by auction had anticipated this strategy by aiming to "develop contacts with financial intermediaries" (PV, June 21 1988: 1). Shortly before the adoption of the new operating mode, two other avenues were explored. The first was to enlist primary dealers in the pursuit of the monetary objective. Intended to ensure a liquid market for public debt, the primary dealer system grants certain financial institutions a set of rights and duties linked to a market segment - typically, a primary dealer can participate in debt issuance sessions (primary market), but must act as a market maker in the secondary market (constantly displaying a buy and sell price). To counter the depersonalization of instruments and the separation of budgetary and monetary missions, the Belgian central bankers propose to use their participation in consultation meetings between the Treasury and primary dealers to raise awareness of the NBB's objectives among the fourteen financial intermediaries present:

The primary dealers should be aware that the Bank's objective is to maintain the exchange rate of the Belgian franc within a range of around 0.20% against the mark [...] [They] should strive to reduce the franc's differential against the mark as much as possible (PV, January 21, 1991: 4).

At the same time, some Belgian central bankers are expressing their doubts and envisaging a completely different, "re-personalized" mode of operation:

> The question was also raised as to whether the Bank would be in a position, after January 29 [when the new operating mode comes into force], to bring Belgian rates into line with German rates [...]. Some members of the Committee believe that there is some sort of agreement between the Dutch commercial banks and De Nederlandsche Bank, with the latter providing the latter with all the liquidity they need to enable them to charge market rates in line with German rates. [...] The Committee agreed to instruct Director Rey to ask Mr. Szasz, Director of De Nederlandsche Bank, about the existence of such an agreement and whether it was formal or informal (PV, December 21, 1990: 5).

The radical nature of the planned reversals is doubly instructive. On the one hand, it reveals, at the very least in the Belgian case, that this aspect of central bank transformation - i.e., the anonymization of instruments - does not stem from a coherent project. It is hard to find in these meeting excerpts the intentionality that some histories of neoliberalism lend to the figure of the central banker in the 1980s. Submission to market codes was more a strategy of adaptation than a deliberate undertaking. What's more, the scale of the rescue package envisaged - to "rinse out" a few banks so that they set a rate in line with monetary policy - reveals the precariousness of the adaptation strategy. Without wishing to dramatize, the meeting excerpts quoted here testify to the worrying uncertainty hanging over the reform process. This is a far cry from the masterful maneuvering. If the path of the anonymized market was chosen, it was at least as much by the grace of factors beyond the control of central bankers (e.g. the weakening of the mark following German reunification) as by the determination of the men at the helm.

e. Who benefits from the semiotic turn?

This study of the Belgian case highlights a central dimension of the transformation of central banks at the end of the 20th century: the use of policy instruments based on a globalizing money market puts in crisis the familialist modus operandi based on proximity between central bankers and national financial players. To maintain their power to regulate monetary conditions, Belgian central bankers adopted - not without hesitation - a semiotic turn: they invested in their mode of communication to ensure that their interventions were perceived, understood and obeyed by the anonymous operators who drive the money market. Several lessons can be drawn from the literature on the social studies of central banking. Firstly, the communication efforts of central bankers are directed at a specific audience, whose support has become a condition for the success of monetary policy. It is not so much about convincing "the public" as it is about

convincing the community of market professionals, as leading central bankers are quick to point out (Issing, 2019). Secondly, this semiotic turn has often been more chaotic than the analyses of leading central banks suggest. Unlike the European Central Bank's performative device (Braun, 2015), the NBB's semiotic techniques are riddled with inconsistencies and blunders; they stabilized through a process of trial and error, rather than through the execution of a plan. Thirdly, the conditions for the success of this new transmission channel are manifold. In order to be perceived, understood and obeyed, central bank interventions cannot simply rely on a "financialized" institutional assemblage (Wansleben, 2018). They must also invest in the *situational* - e.g., conforming their signals to the Telex medium - and *organizational* - e.g., training communication experts.

On a more normative level, the issue of central bank independence can be seen in a new light. While the NBB aspired to, and succeeded in, achieving autonomy from the State for the first time in the 1960s, its "second autonomy" at the turn of the 1990s, via the loss of control over treasury certificate rates, was primarily suffered. Although the spirit of this reform was supported by the NBB's new Governor, Fons Verplaetse, two external pressures - the IMF's conclusions and the globalization of the money market - were the decisive factors. The image of the strategic central banker, exploiting every opportunity to increase his room for maneuver vis-à-vis the State, therefore deserves to be tempered. As for the central bank's "other dependence", no longer on governments, but on private financial players[378], the Belgian case also calls for nuance. Admittedly, the semiotic shift in monetary policy has made central bankers dependent on the reaction of financial operators, whom they must now convince. Several authors have pinpointed the "infrastructural power" that these players at the heart of the money market derive from this (Braun, 2020; Walter, 2019; Walter & Wansleben, 2020). But, in the Belgian case, the previous situation, characterized by a familialist modus operandi, did not guarantee the autonomy of central bankers vis-à-vis private financial players. The real change concerns the identity of these players: yesterday's Belgian bank bosses, today's money market traders. What's more, without denying the problems associated with this infrastructural power of financiers, the dependence is now reciprocal: as evidenced by the impact of key central bankers' statements on different market segments (e.g. Hansen & McMahon, 2016), financial market professionals need these semiotic interventions to make decisions in a context of high

[378] For a review of this literature, see Fontan et al. (2018) and do Vale (2022).

uncertainty. The extent of this reciprocity is unstable, however, and varies in particular according to the prestige conferred on *certain* central banks, or even certain central bankers.

In both positive and normative terms, this chapter does not aim to exhaust the discussion, if only because of the limits to generalization inherent in the case study format. As mentioned above, the "double transformation" - of monetary policy objectives and instruments - affected many central banks during the 1980s, but not all, and not all in the same way. This is even truer of the semiotic component: the globalization of the Belgian money market was particularly far-reaching, while the importance of interpersonal relations in the NBB's mode of operation was exacerbated by Belgium's "consociative" governance regime at the time (Sinardet, 2011). As a result, the lessons of this article would benefit from comparative testing. An examination of this turning point in other countries would enable us to grasp the variety of interconnections between the dimensions of change distinguished in this article, as well as their impact on the central bank's ability to pursue a regulatory policy independent of financial players.

Chapter VII: The mystery of ambiguous central bank announcements

Today, the signs issued by the main central banks are well established. Uncertainty about the conditions of reception remains, of course, but hesitations about the effectiveness of a semiotic monetary policy have largely been dispelled. Since the precarious beginnings of the 1980s, central banks have learned to tame the traders of the money market: they are more familiar with the conditions of reception of the signs issued, and have adapted their issues to these conditions. For the most part, these adjustments by central bankers have been welcomed by economists, because they largely covered their own theoretical suggestions. Except for one aspect of their "semiotic policy", which may appear minor, but which today concerns most central banks: the announcement of an objective to be achieved. Against the recommendations of leading macroeconomists, the vast majority of central banks still refuse to announce "to the market" a precise inflation target.

Based on a review of the literature on social studies on central banking and the case study of the Belgian central bank, this chapter sheds light on this mystery. It thus contributes to our understanding of this valuation support, but still from the angle of the "senders" of the sign. A welcome addition would be to investigate the conditions under which these central bank announcements are received, from the point of view of money market traders. On the basis of our ethnography in the trading room and subsequent interviews with Forex traders, we hope to explore this avenue. As for the chapter VII, it consists of an article submitted to the *Scandinavian Journal of Management* as part of its special issue on "the Economic Organizations, Uncertainty, and Risk: Sociological Analyses of Economic Organizations in Times of Crises", after having been presented at a conference[379].

[379] "'Below, but close to': the pragmatic origins of incomplete Central Banks' targets", 38th European Group for Organizational Studies (EGOS) conference, September 2022.

1. How central banks cope with price instabilities: Ambiguous inflation targets as organizational compromise

The inflation spikes currently facing many countries (see Figure 49 below) are at the heart of the economic and geopolitical crisis. They are both outcomes and drivers of the crisis. On the one hand, they cannot be understood without considering the war in Ukraine and the Covid pandemic. On the other hand, they aggravate socio-economic inequalities by impacting mainly on precarious households (Menyhért, 2022). Because of this 'privileged' position, inflation is a key element to analyze in order to grasp the issues at stake in the current upheavals. More specifically in relation to the theme of this Special Issue, it allows us to highlight the adaptation strategies mobilized by economic organizations to cope with the uncertainty that inflation peaks generate and result from. The example that spontaneously comes to mind is probably that of an international company: the firm must review its 'inflation risk' hedging techniques in order to manage changes in wages, as well as in the price of raw materials and products sold. This paper proposes to look at the inflation management techniques of another organization that is at least as central to contemporary capitalism: the central bank.

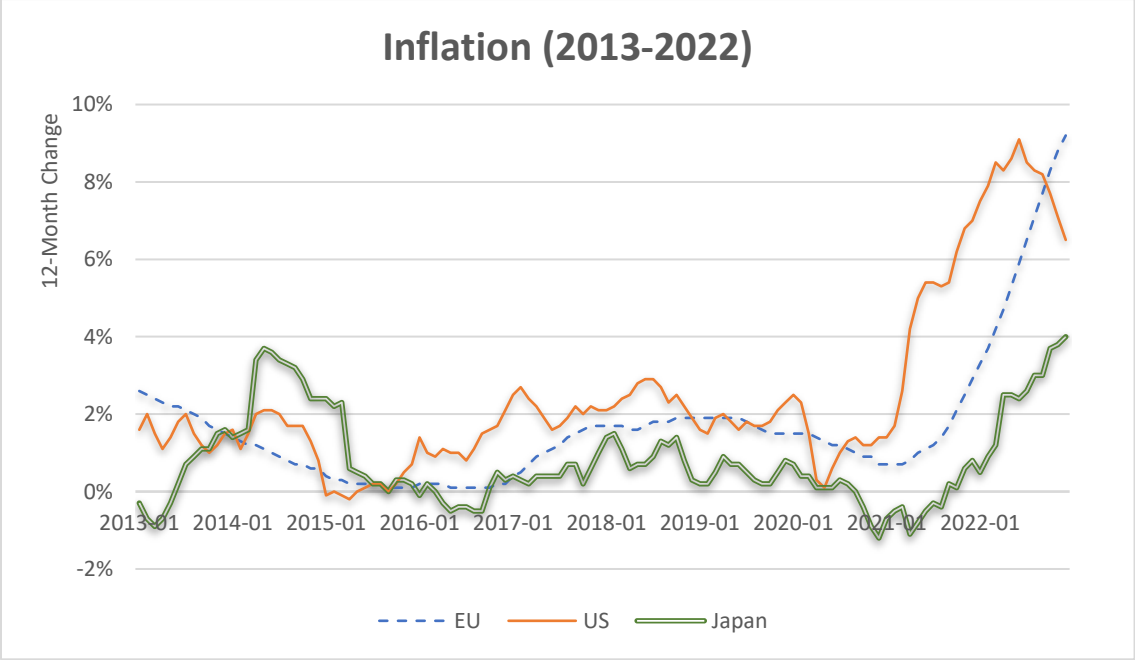


Figure 49 - Sources: Eurostat, U.S. Bureau of Labor Statistics, Statistics Bureau of Japan

There is little doubt that the central bank is highly concerned with the issue of inflation. However, it comes to mind less spontaneously than the example of the international company because it is rarely understood as an *organization*. Given the importance of its interest rates for the functioning of the economic system, it is generally perceived and studied as an *institution*

(Touffut, 2008). Without denying the interest of this institutionalist-inspired work, this paper intends to demonstrate that the management of price instabilities by central banks is also dependent on their organizational features. In particular, it reveals the organizational nature of one element of this management, apparently technical and trivial but with far-reaching consequences: the vagueness of inflation targets.

Since the 'Quiet Revolution' in their functioning in the 1990s (Blinder, 2004), the vast majority of central banks have defined inflation control as their main objective and have tried to achieve it via 'market-based' instruments, rather than via 'administered' instruments (such as regulatory credit limits). Among these market-based instruments is the communication of *credible* inflation targets: if these targets are credible, their mere announcement leads market professionals to act in such a way that the target is reached before any other intervention (like buying or selling securities). For example, if traders expect the Fed to lower short-term interest rates (because they are higher than the communicated target), they will lend dollars to take advantage of the 'too high' rate, which will result in the rate falling. This performativity, known as the 'signal effect,' has been well identified and attested in the literature (e.g. Woodford, 2005; Hayo & Neuenkirch, 2015; Hansen & McMahon, 2016; Wansleben, 2018; Anand, Basu, Pathak & Thampy, 2021), to the point that it is sometimes considered a tool in its own right: the 'open mouth operation' (Guthrie & Wright, 2000).

Despite this success story-like development, a mystery remains. As economists frequently remind us (e.g. Galí, 2002; Svensson, 2007), targets should be perfectly defined: this makes them better understood and more credible. Yet the central banks that have complied with this prescription are more the exception than the rule. Among the 73 central banks that have bound themselves to an inflation target according to the *Central Bank News* census of April 2022, only 19 have announced a fully quantified target (i.e. identifiable by a single number). All the others maintained ambiguity in their quantification, whether in the form of a corridor around a rate (35), a range of rates (13) or a comparative assessment such as 'below' or 'on average' (6). The two largest central banks – the Federal Reserve (Fed) and the European Central Bank (ECB) – belong to this last subgroup. The former resisted any quantification for a long time, before announcing in 2013 a target of 2%, which it then made more flexible in 2020 via the concept of 'Flexible Average Inflation Targetting' (the 2% target now concerns *average* inflation 'over time'). The latter specified its objective in 2003 – 'below, *but close to* 2%' – and then followed a path close to that of the Fed by announcing a new target of 2% 'over the medium term' (ECON committee, 2021).

Thus, while almost all central banks cope with price instabilities by communicating a target that is supposed to anchor the expectations of market participants (Issing, 2019), most opt for an ambiguous, theoretically imperfect quantification. This paper proposes to approach this puzzling fact from two angles. On the one hand, it will identify the possible explanations that can be found in the scientific literature. Several social scientists have studied the functioning of central banks and have put forward – most often implicitly – hypotheses as to the reasons for this quantitative vagueness. On the other hand, we will mobilize a historical case study in order to test the four explanatory hypotheses from the literature, and to support an additional path. By tracing the adoption of market-based instruments by the Belgian central bank and the communication strategies associated with them, we will uncover an explanatory factor of an organizational nature: quantitative imperfection can constitute a device that allows for the achievement of an intra- and inter-organizational compromise.

The contribution of this paper is twofold. On the one hand, it compiles the various theories that have shed light on the strategy mobilized to cope with inflation uncertainty by most central banks. This strategy consists of communicating an imperfectly quantified inflation target to the 'public' (Holmes, 2013), but especially to market professionals (Braun, 2015). It was instituted by the 'Quiet Revolution' of the 1990s, which will be covered in the next section, and has been reaffirmed throughout the current crisis (ECB, 2023; Powell, 2023). Given the centrality of the central bank in contemporary capitalism, the persistence of this vagueness is fraught with consequences and deserves to be clarified. On the other hand, by studying the case of the Belgian central bank, this paper contributes to the documentation of the history of central banks: unlike other ancestors of the ECB, such as the Bundesbank (e.g. de Haan, 2000), the Belgian central bank has not been the subject of historical investigations focusing on the 1990s – the rare exceptions being orders with a strong promotional character (Maes, 2010; Maes, Buyst & Pluym, 2005). In addition to this empirical contribution, our case study leads to a theoretical one: the four hypotheses from the literature are tested and discussed, and a fifth one – nourished by pragmatist organizational studies – is elaborated from the Belgian experience.

The rest of the chapter is organized as follows. After briefly presenting the main features of the recent transformations of central banks (the Quiet Revolution), we will develop the four explanations for the vagueness of inflation targets that can be found in the literature. We will then present our study of the Belgian experience, in order to understand – at the time of the appearance of quantified targets (1989-1991) – the reasons for their quantitative vagueness. We will then be able to evaluate the relevance of the four hypotheses derived from the literature,

and to complete them with a fifth explanatory path. In conclusion, we will review the main findings of this paper and consider its potential extensions, at the crossroads of organizational studies and the Social Studies of Finance.

a. The vagueness of the target: fatal, strategic or ideological?

The transformation that occurred in the early 1990s in the functioning of many central banks was fostered by a complex of inextricably political and cognitive influences. In microeconomics, the incentive-based approach – in some ways underpinned by the 'triumph' of capitalism over communist experiments – gained popularity. In the field of monetary policy, this took the form of the Barro and Gordon (1983) model, according to which only an independent central bank is able to steer agents' expectations – the public authorities, limited by the election horizon, having an incentive to deviate from their commitments through inflationary stimuli (and the agents anticipating this deviation, so that they do not comply with this 'non-credible' policy). In macroeconomics, monetarism – reinforced by the stagflation of the 1970s and driven by the geopolitical climate – is taking precedence over Keynesianism: often under pressure from the IMF, which recently converted to Friedman's doctrines (Chwieroth, 2010), central banks are called upon to focus on strictly monetary issues, such as fighting inflation, rather than meddling with the credit allocated to firms.

This is how the current face of central banks (or, at least, the one they displayed until 2008) gradually emerged: focus on inflation via interest rates and/or exchange rates, clear separation between monetary and fiscal policies, 'anchoring' of agents' expectations through transparent communication centered on quantified targets. As we have said, on this last point, the results exceeded expectations, to the extent that the announcement alone has sometimes been enough to produce the expected result. And yet, these targets rarely took the form, advocated by the literature, of a univocal metric – to the dismay of several perplexed economists:

> The announcement of an explicit, quantitative definition of price stability – which the Fed, among other Central Banks, does not have – should certainly be welcome. It can only help improve accountability and anchor agents' expectations (…). [However,] it is just very hard to understand why the ECB would fall short of clarifying this issue once and for all, given the clear contradiction between their operational definition [i.e. '*below 2%*'] and the conventional view (Galí, 2002: 7-11).

In the remainder of this section, we draw from the social science literature on central banks four possible explanations for this 'very hard to understand' phenomenon. Although

inherited from different theoretical traditions, these four hypotheses share a pragmatist origin that we will discuss in the final part of this chapter.

The fate of market economies

In the frequent debates about the quality of monetary policy decisions, it is common for an economist to defend central bankers by pointing out that, in a decentralized economy – that is, an economy in which the state limits its interventions in order to allow private initiatives to develop – a regulatory body is not able to control everything, its means of action are limited[380]. In other words, other 'forces' affect inflation, so that it is not possible for the central bank to announce a single figure as a target. Moreover, given the separation of regulatory authorities, it is not unusual for certain actions by fiscal authorities to constrain the room for maneuver of monetary authorities (Sims, 2004). Finally, the balance sheet resources of central banks are also sometimes singled out by economists as a factor limiting their capacity to intervene.

But the main proponents of this first explanation are not so much academic economists as central bankers themselves. For example, in a speech entitled *Central Banks: What they can and cannot do*, the Governor of the famous New Zealand's central bank, regretting that 'the public have come to believe that central banks can achieve very much more than they can, in reality, deliver' (Brash, 2001: 1), sought to remind us of the limits of its power: 'monetary policy affects [...] inflationary pressure with a considerable lag' (Brash, 2001: 5). The ECB agrees when it invokes the inadequacy of its instruments to argue that 'it would be impossible for any central bank to keep inflation at a specific point target at all times' (European Central Bank, 2003: 82). The vagueness of the targets therefore reflects the operational constraints on the exercise of monetary policy in an open economy. Moreover, the few central banks that dare to announce a perfectly quantified target expose themselves to a crisis of confidence that would undermine their means of action: market professionals, aware of the limits to which monetary policies are subject, know that a perfectly quantified target is unachievable and therefore non-binding[381].

[380] Neumann (1991) thus asserted that price stability could not imply price constancy, 'given that the price level is shocked by a variety of random disturbances which cannot be anticipated and given that the Central Bank cannot affect the price level immediately but only with a variable lag' (Neumann, 1991: 106).
[381] This reasoning is inherited from incentive-based monetary theory (which is itself based on the theory of rational expectations): if a declared target is not 'binding', the central bank will have an interest in exploiting this ambiguity; and agents anticipate this, so that they will judge this target to be non-credible and will not comply with it.

This first explanation was dominant for a long time, but has taken a hit with the generalization of 'unconventional monetary policies.' Since the financial crisis of 2007-2008, and even more so during the Covid crisis, central banks have expanded their means of action, including quantitative easing and negative interest rates, and thus increased their control over the economy. Several critics have pointed out the inconsistency between yesterday's declarations of impotence and today's demonstrations of power – both with regard to the traditional objectives of fighting inflation and to 'new' objectives such as the redistribution of wealth or the fight against climate change[382] (e.g. Fontan, Dietsch, Claveau & Dion, 2021). The factors that had been put forward to support the limits of monetary policy – weakness vis-à-vis other economic forces, conflict with fiscal authorities, balance sheet constraints – proved to be surmountable when central bankers felt it necessary. This highlights the performative dimension of this first hypothesis in its heyday (the announcement of limits contributed to their institutionalization), as well as its possible instrumentalization by central bankers anxious to protect themselves from overly demanding claims.

A desire for power

It would therefore appear that central bankers are strategists: they invoke the limits of their capacity in order to avoid being subjected to overly ambitious demands. Similarly, they may have an interest in maintaining ambiguity in the definition of their target in order to retain room for maneuver – this is the second explanation that can be drawn from the literature (e.g. Jia & Wu, 2021). Two researchers at the *Barings Investment Institute*, for example, have argued that the recent redefinition of the target by the ECB and the Fed betrayed this type of strategy:

> By targeting medium-term inflation without defining what the medium term is, the ECB has given itself a flexibility similar to that of the Fed, where average inflation targeting was introduced without providing the slightest detail about the timeframe over which the average would be calculated (Belaisch & Cominetta, 2021).

Some statements made by central bankers give some support to this hypothesis. Thus, the Governor of the Fed justified the quantitative imprecision of the new 'Flexible Average Inflation Targetting' as follows:

> In seeking to achieve inflation that averages 2 percent over time, we are not tying ourselves to a particular mathematical formula that defines the average. (…) Our decisions about appropriate monetary

[382] Indeed, on these 'new' objectives too, central bankers have often been keen to moderate expectations by reminding us of the limits of their power (see the speech by the former Governor of the Bundesbank also entitled *Combating climate change - What Central Banks can and cannot do*).

policy will continue to reflect a broad array of considerations and will not be dictated by any formula (Powell, 2020: 12).

Indeed, it is easy to understand the risk that a complete quantification of monetary policy may represent for the power of central bankers: a rigid target implies that the instruments are more 'mechanically' mobilized for the sole purpose of respecting this commitment. Ultimately, an algorithm could then constantly adjust interventions in order to stick, to use the ECB's formula, 'at a specific point target at all times'[383]. It is in the light of this apocalyptic scenario that we must understand Powell's surge of pride ('Our decisions will not be dictated by a formula') – the central bankers do not want to be reduced to algorithms.

But there may be more than personal pride in this desire for power. In the eyes of some researchers, this maintenance of arbitrariness – in contrast to the demand for transparency that aspires to make any central bank reaction predictable – is a functional necessity. Jacqueline Best (2007), in particular, has argued that it allows for better management of the uncertainties inherent in the financial world: the 'constructive ambiguity' opened up by quantitative incompleteness gives central bankers room to maneuver, allowing them to react to different shocks. Conversely, a fully defined *a priori* target does not provide regulators with the means to adjust to non-anticipated problems. Since the publication of Best's book, the successive crises – subprime, sovereign debt, Covid – have given weight to her position: without the room for maneuver that they have been able to preserve (thanks in particular to the ambiguity of their targets), central bankers would probably not have been able to deploy this new set of intervention instruments and become so central to the regulation of the world economy.

This second explanation is therefore not lacking in appeal. However, it finds a dissonant echo in the results of several sociological studies on the profile of central bankers. The image of rebellious regulators, evading the demands for transparency in order to maintain a grip on the functioning of the economy, that emerges from this second hypothesis does not correspond to the portraits painted by sociologists. In addition to a very privileged social background, central bankers share a certain theoretical corpus that guides the way they conceive their functions (McNamara, 1999; Lebaron & Dogan, 2016). They even increasingly contribute to this theoretical corpus, via publications in monetary economics journals (Claveau & Dion,

[383] *The Economist* was considering this scenario as early as 2015 on *Twitter* (https://twitter.com/theeconomist/status/630922208467132418). If, to my knowledge, no scientific article has explicitly studied this option, several have focused on the contribution of machine learning to central banking (e.g. Doerr, Gambacorta & Garralda, 2021).

2018). Not surprisingly, this corpus includes several elements of orthodox monetary theory that we have already pinpointed, including the valuation of transparency (Fontan, Carré & L'Oeillet, 2018). This therefore casts doubt on the supposed willingness of central bankers to escape a principle of transparency in which they mostly believe… But there is more. The majority of central bankers would be convinced by the 'truth' revealed by market prices and therefore inclined not to 'distort' it by excessive interventions. Again, this contrasts with the 'desire for power' at the heart of this second explanation of the vagueness of targets. An alternative hypothesis, more in line with these sociological lessons, is therefore welcome.

A free space for the market

The third explanation that can be drawn from the literature is the opposite of the previous one: the vagueness does not reflect a persistent arbitrariness, but – on the contrary – a certain restraint. Central bankers aspire to interfere as little as possible in the interplay of supply and demand, so that the output (typically short-term interest rates) is or appears to be determined by the market. The quantitative incompleteness of the target would thus make it possible to guide the market without dictating its outcome: the market is 'free' to choose its destiny within the open space (e.g. within the range or corridor of inflation rates chosen as targets). Two motivations, undoubtedly complementary, allow us to understand this position of central bankers.

On the one hand, as the sociological studies mentioned above have shown, the men at the head of the central banks are intellectually homogeneous: in particular, they are generally convinced of the virtues of market allocation and therefore inclined not to interfere with the 'sanction of the market'. This attitude, which is the result of the ideological shift in the 1980s and 1990s that we mentioned earlier, has had profound repercussions on the conduct of monetary policy: formerly in a position of superiority over a market that needed to be rationalized, central bankers have increasingly listened to the financial markets, to the point where they are tempted to conform their decisions to what 'the market' expects of them. Alan Blinder (1998) was quick to point out this risk of hindering the independence of the central bank, not with respect to the political system, but with respect to the financial markets.

On the other hand, leaving room for the market to express itself allows passing on to the market the responsibility for the output: central bankers no longer have to assume frontally the consequences of their decisions – which, especially for unpopular anti-inflationary measures, is very valuable. It was sociologist Greta Krippner's (2011) investigation of the Fed's decision-

making process that uncovered this second motivation: 'in allowing some fluctuation in the rate, the Federal Reserve produced a market-like effect, making the rate appear a bit more market determined than Fed determined' (Krippner, 2011: 122). And since 'the market' is both everyone and no one, the malcontents find themselves without obvious targets.

This third hypothesis has a comparative advantage: its empirical grounding. The two types of motivation that underlie it – ideological and strategic – have been attested by field research. It is therefore difficult to contest. That said, its validity could be very partial, because the last explanation proposes a very different, but at least equally powerful, line of reasoning.

A condition of effectiveness

Unlike the previous two hypotheses, but like the first one, this last explanation is more functional than intentional. Central bankers *must* maintain this quantitative vagueness if they want to preserve the effectiveness of their instruments. We have seen that the Quiet Revolution gave a market-based orientation to these instruments: the success of the central bank's maneuvers (trading in financial securities and changing the terms of loans to financial intermediaries) depends on the reactions of other market participants. According to this fourth hypothesis, a precise target would give too many indications to market professionals, who would then be able to anticipate the actions of the central bank and divert the outcome.

The authors who support this hypothesis actually propose an extrapolation of 'Goodhart's law', according to which 'any observed statistical regularity will tend to collapse once pressure is placed upon it for control purposes' (Goodhart, 1984: 96). Conceptually close to the 'Lucas critique' in macroeconomics and to sociological research on 'performativity', this law points to the destabilizing effect exerted by the regulator on certain economic variables which, without this effect, would follow a quasi-natural regularity. In a way, it aims to alert us to the *bad* consequences of a statement made by central bankers, whereas the concept of performativity explained in the introduction referred to the *good* consequences (those that were in line with the regulator's intentions). It is therefore the risk of 'counter-performativity' that is at stake here.

According to some social scientists, this risk is such that it prevents central bankers from being explicit about their objectives:

Central Bank mandates (…) provide little guidance on (…) specific targets that must be reached. This vagueness is motivated by the so-called 'Goodhart's law': when Central Banks are asked to reach

specific targets, financial operators try to anticipate Central Banks' monetary policy and alter its outcome (Dietsch, Fontan, Dion & Claveau, 2021).

This 'alteration' of the outcome can take the form of a movement in the desired direction, but of an excessive dimension: if market professionals anticipate a central bank purchase program by buying the security massively themselves, the price increase can exceed the regulators' intentions. It may also result in a neutralization of the effect of the policy, particularly when the main market players consider the central bankers' statement to be non-credible. This fourth hypothesis thus reveals a downside to the 'signal effect': while it is true that the announcement alone can have the desired effect, this transmission channel is not immune to overreactions or crises of confidence. So much so that it may be necessary for central bankers to limit the predictability of their actions by leaving their target definition vague.

b. The Belgian experience as an empirical test

In this section, we analyze the Quiet Revolution 'in the making' at the Belgian central bank, known as the National Bank of Belgium (NBB)[384]. In the course of our account of events, we will note the factors that motivated the NBB's leaders to define their target imperfectly. As we have already seen, the importance of targets – and thus of the question of their (im)perfect quantification – emerged during the reform of monetary policy instruments: the new market-based instruments involved a communication effort that led to the construction of quantified targets. Since the pioneering research of Alain Desrosières (1993), we know that the obstacles to quantification are particularly visible during the emergence phase: the effort of shaping then rapidly disappears in the event of success. Indeed, once stabilized, the convention makes one forget its conditions of production. This is why we looked at the issue of quantifying targets at their inception, that is, when market-based instruments are adopted. In Belgium, this aspect of the Quiet Revolution was adopted in January 1991.

From credit policy to inflation targeting

After the Second World War and until the mid-1970s, the NBB was mainly concerned with the borrowing conditions faced by the three major macroeconomic actors – the government, firms and households (Janssens, 1980). It was not until the instabilities of the

[384] As far as the contribution of this section to historical documentation is concerned, it seems to us that it can go beyond the Belgian case. Indeed, other research on the genesis of the ECB has shown that the trajectory it took 'reflects different domestic historical legacies from individually distinctive "defining moments"' (Dyson & Marcussen, 2009: 6), and that the Belgian position was more influential than a German-centric reading might suggest (Maes & Quaglia, 2003).

1970s (in particular the oil shocks) that the objective of price stability was added to the 'credit policy'. And it was in 1989 that the NBB resolved to confine itself to its modern role as guardian of inflation and exchange rate; only then did the plan to announce a quantified target appear.

Prior to this latest turning point, the NBB's policy was implemented mainly through control of the borrowing and lending rates of commercial banks. These rates, central in a 'bank-based economy' (Levine, 1999), were linked to the NBB's 'discount rate,' first formally (through legal scales), then informally (through recommendations accompanied by sanctions and through consultations within committees). This rate informed the conditions under which the NBB agreed to rediscount commercial paper held by the banks. For various reasons, both ideological and macroeconomic, it lost importance in the early 1980s. In order to maintain its power of influence, the NBB then mobilized another channel: it transmitted its decisions by setting the interest rates on 'Treasury certificates'. It is appropriate to briefly consider this method of operation, which set the pace for Belgian monetary policy from 1981 to 1991.

The NBB set the interest rates for short-term public debt securities (1, 2 and 3 months), called 'Treasury certificates' and issued on tap (i.e. at the investor's request). Given their flexibility and yield, these securities have become highly coveted by Belgian banks, which have subscribed to them en masse. They even became the main instruments of their liquidity management: the banks invested their daily surpluses in new certificates and compensated their deficits by not renewing expired certificates. Consequently, the interest rates on the certificates set by the NBB had a direct influence on the banks' liquidity management and thus on their borrowing and lending rates. This being the case, while these rates constituted the authentic instrument of monetary policy, the symbolic power of the discount rate remained, to the great displeasure of central bankers who did not dare to modify it for fear of sending a signal with unfortunate consequences:

> It was the overemphasis on the [NBB]'s rates that hindered their adjustment to changing money market conditions. The focus of commentators' attention was such that they were raised only in the event of a relatively acute exchange rate crisis and lowered only after a delay in the improvement of the foreign exchange market climate. In addition, the symbolic weight of the discount rate has at times influenced long-term interest rates [...]. The decision to change the discount rate was therefore likely to be clouded by considerations unrelated to the [NBB]'s objectives (*Bulletin de la NBB*, July 1985: 25).

This fear of a 'paralyzing sanctification' of the figures communicated by the NBB is important because it influenced the form of the first target that appeared four years later. It also led the NBB to reform its method of setting the discount rate in 1985, in order to symbolically

lighten it. Unambiguously, its only tool of influence was henceforth the issuance of Treasury certificates – which had many advantages already mentioned, but also a disadvantage: it distanced the NBB from financial intermediaries, because, unlike rediscount, the issuance of certificates was not directly managed by the NBB. To get closer to these privileged partners, another monetary instrument was introduced during a reform in 1988: 14-day credits – by auction rather than on tap – were offered to financial intermediaries, but were hardly mobilized (the certificates were sufficient to meet their needs).

The main reform of monetary instruments was therefore that of January 1991, the decision-making process of which we will analyze. It can be summarized in three main points. First, the separation of the monetary and fiscal authorities: the NBB ceased to set the rates for Treasury certificates and to grant lines of credit to the government. Second, the exclusive focus on price stability, which implied, in the Belgian case, ensuring the firmness of the Belgian franc within the European Monetary System. Third, the mobilization of market-based instruments in the form of open market operations and credit auctions. Quantified targets appeared in this new monetary landscape.

Hesitant first steps: a range of rates

The idea of a publicly announced target evolved in conjunction with the reform project. Both came into being in May 1989 when the IMF submitted its conclusions to the NBB's Executive Committee in the context of its annual consultation. These were quite critical of the monetary policy transmission channel: in the eyes of the IMF, the Treasury certificate instrument was tugging at the NBB between the objective of accessible financing for the Treasury (encouraging lower rates) and the objective of a firm exchange rate (encouraging higher rates[385]). The concertation between monetary and fiscal authorities, long seen as a synergistic alliance, was condemned as an inefficient incest. The NBB should therefore focus on the value of the Belgian franc (BF); according to the IMF, the BF is currently undervalued, penalized by the ambiguity of the NBBs' attitude. In practice, the IMF recommends to the NBB 'to affirm its desire to link the fate of the BF to that of the mark' (Conclusion of the 1989 consultation). It is clear that the communication issue is at the heart of the proposed mechanism.

[385] The underlying reasoning is that of the interest rate parity relationship: an increase in the interest rate remunerating investments in the Belgian franc leads to an inflow of foreign capital, that is an increase in the demand for francs and therefore an appreciation.

It was during the discussion of these conclusions among the members of the Executive Committee that the proposal emerged to link the BF to the German mark by announcing a range: an interest rate differential, in relation to the mark, of between 1.6% and 1.9%. The intention is to prevent the BF from having to compensate for its weakness in relation to the mark with an interest rate that is too high: keeping this interest rate within a range means ensuring that the BF does not deteriorate (too much) in relation to the mark. What interests us most is the justification for this objective and, above all, for its form. The memory of the paralyzing sacralization of the discount rate can be discerned in several remarks, such as that of director Fraeys: 'he believes that it [the range] could vary over time and not be clichéd' (Minutes, 16 May 1989: 12). Another member justifies his adherence to the range in a more elaborate way:

> In its policy towards the market, a Central Bank must try to adopt a policy that is neither totally unpredictable nor totally predictable. From this point of view, the use of a range [...] is an excellent technique, provided, however, that the range is not 'fetishized' (Minutes, 16 May 1989: 13).

We can thus see that the functional argument, presented in the previous section as a variation of Goodhart's law, was not absent from the original motivations. That said, the purpose of the range was not, as early as 1989, to anchor the expectations of market professionals in the long term, but rather to inspire their confidence by sending a clear signal. The proof is that the band was to be 'reviewed every three months, in the light of the trend in the interest rate differential' (Minutes, 16 May 1989: 14). However, the Executive Committee was accustomed to a different way of operating, based more on the logic of solving problems through small adjustments rather than pursuing a single objective. So much so that it invested little in shaping and highlighting the target. Nor did it keep to its quarterly review: it was only in September, when the situation had evolved in such a way that the target no longer made sense (the differential was worth 1.25%), that the directors considered 'that it was becoming urgent for the [Executive] Committee to redefine the objectives it had set for itself at its meeting of 16 May last' (Minutes, 5 September 1989). However, no redefinition will be implemented before the following May 16!

The instability of the prevailing European Monetary System was of course a factor that complicated the revaluation of a credible target. But that was not all. The fear of a paralyzing sacralization durably haunted the NBB's leaders. Thus, the Governor regretted, for example, that the rates on Treasury certificates 'would suffer the same fate' as the old discount rate: 'this instrument is currently sacred [...]. The media, moreover, take a certain pleasure in counting the rate increases that have occurred. This greatly reduces freedom of maneuver' (Minutes, 11

October 1989: 7). The impact of transparency on the room for maneuver of central bankers is causing teeth to grind. It is a similar fear that motivates NBB directors to intervene in the market at a time when their actions are less visible:

> The depreciation of the Belgian franc [i.e. its weak position on the foreign exchange market] is permanently present on the screens – in particular at the time of the fixing – and the level of the [NBB]'s interventions can be more or less hidden, except at the fixing (Minutes, 1 March 1990: 3)[386].

In fact, the NBB's attitude towards transparency issues will long be ambivalent: it hopes to benefit from the effects of announcements designed to seduce market professionals, while retaining the power left by the gray areas of its action and mandate. The 'neither totally predictable nor totally unpredictable' range was one way to resolve this dilemma. Another example occurred during the discussions on the adoption of market-based instruments: a director proposed that the NBB set itself 'limits on the variations of its [foreign exchange] reserves' in order to increase the credibility of its commitment to support the FB and thus enjoy the 'announcement effect' (Minutes, 13 April 1990: 2). The Governor decided in the other direction: 'it is advisable to guard against any dogmatism and to avoid being locked into a kind of straitjacket' (Minutes, 13 April 1990: 3). Wishing to remain unpredictable and powerful, the NBB's leaders proposed an imperfectly quantified target and limited their transparency efforts.

An opportunistic step forward

In May 1990, an exceptional situation led the NBB's directors to reconsider the definition of a quantified target. The horizon of German reunification had weakened the mark to such an extent that a closer linkage between the FB and the mark was possible (see Figure 50). But the success of this project depended on its credibility in the eyes of market professionals. A clear target was therefore seen as a strength, as was a carefully timed announcement: 'It is considered preferable to take advantage of any favorable opportunity to make the new exchange rate policy credible and to avoid any "ex abrupto" political statement that would appear to be artificial and not in line with the real evolution observed in the market' (Minutes, 16 May 1990: 5). At the same meeting, the members of the Executive Committee therefore decided that 'the depreciation of the BF against the mark should in the present circumstances be less than or, at most, equal to 0.50%' (Minutes, 16 May 1990: 3). To understand this new target, which no longer deals with the interest rate, but directly with the

[386] The directors will hesitate for a long time on this subject: 'It is important not to take a definitive position on whether or not the [NBB] should keep its interventions in the foreign exchange market secret. Only circumstances and opportunity should inspire the [NBB]'s conduct in this area' (Minutes, 4 January 1991: 26).

exchange rate, we must have in mind the functioning of the European Monetary System (EMS), presented in the previous chapter. The fluctuation band allowed by the EMS implies that this central rate cannot exceed 21.089 (dotted line in Figure 50), but the NBB directors restricted this freedom by targeting a depreciation ≤ 0.5% (thick blue line).

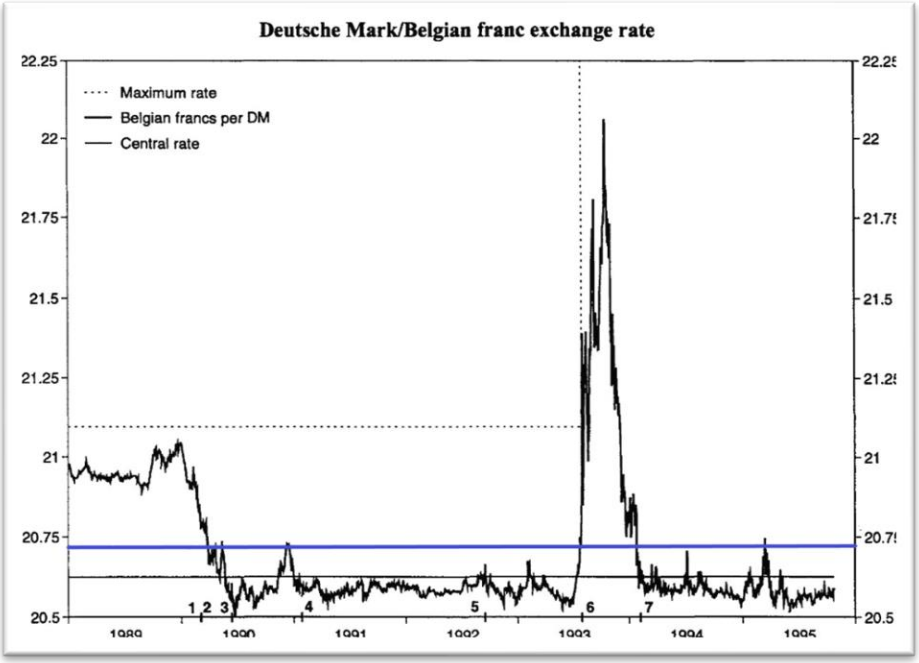


Figure 50 – Mark/BF exchange rate (from Timmermans, Delhez & Bouchet, 1996)

In the new system resulting from the 1991 reform, the NBB mobilized mainly open market operations and credit auctions to support the value of the BF. At the same time, it set itself up as a counterparty to financial intermediaries wishing to sell their surpluses or make up their deficits at the end of the day, but at penalizing rates so as not to substitute for the money market: 'the upper and lower intervention rates should constitute the limits of a band within which all money market rates would fluctuate. These two rates would thus have a precise meaning for monetary policy' (Minutes, 18 May 1990: 4). The upper rate of this band – that for advances – was set by the NBB, while the lower rate – that for loans – was set by a historical institution whose existence was threatened by the reform: 'this system [of the band] has the advantage of maintaining the intervention of the IRG [*Institut de Réescompte et de Garantie*] in the mechanism for settling end-of-day balances, which ensures the survival of this organization' (Minutes, 18 May 1990: 5). Of course, this concerns the definition of techniques, rather than the target, but it illustrates an 'organizational solidarity' that will come back in the evolution of the exchange rate target.

As for the target itself of a depreciation ≤ 0.5%, the NBB's leaders remained cautious in their communication, especially concerned not to lead to a 'paralyzing sacralization.' Thus, the day after the announcement of the target, the Governor replied to a journalist asking about the level of the link to the mark: 'As far as the figures are concerned, we must not be dogmatic' (quoted in Delvaux, 1990). But this cautious attitude was also motivated by another factor: the NBB was integrated into the EMS and had to justify its new target at the meeting of the Committee of Governors. In particular, it had to demonstrate that the new target did not conflict with the provision of the Basel/Nyborg agreements 'according to which the Governors agreed to make more active, flexible and concerted use of exchange rate variations within the Community band [i.e. +/- 2.25%]' (Minutes, 29 May 1990:. 9). The incompleteness of the target was therefore also aimed at not deviating (too much) from the logic of flexibility agreed between the central banks of the European Economic Community.

The vagueness as a compromise device

In November 1990, the German central bank moved its rates slightly. The FB was in a sufficiently favorable position not to follow this small increase, but some directors 'felt that, if only for psychological reasons, the [NBB] should join in the movement' (Minutes, 2 November 1990: 6). In the end, it was decided to make only an anecdotal change, but to reaffirm the NBB's objective in a press release: 'in the day-to-day management of the money market, the [NBB] will continue to ensure that [...] the Belgian franc oscillates only within narrow margins with respect to the reference currencies' (Minutes, 2 November 1990: 7). Just as several critics did with regard to the ECB's 'below, but close to', journalists from Reuters questioned the Governor of the NBB about this vagueness ('narrow margins'), alerting him that 'the absence of precise information on this matter worried the market' (Minutes, 16 November 1990: 4). This subject was therefore discussed. The Governor feared 'a certain persistent lack of confidence on the part of market forces in the policy of pegging the Belgian franc to the mark' (Minutes, 16 November 1990: 4). This being the case, the Executive Committee maintained the vagueness of the target:

> The [NBB] must be careful not to quote any figures concerning the tolerated fluctuation margin for the franc against the mark. Any statement in this area could only get the [NBB] into trouble with its EMS partners (Minutes, 16 November 1990: 5).

This point was reiterated when the target was narrowed on the eve of the adoption of the reform instituting market-based instruments:

This target [‘a range of around 0.20%’], it is understandable, cannot be clearly and publicly formulated, on pain of being accused of non-compliance with the Basel/Nyborg agreements (Minutes, 21 January 1991: 4)

Another factor of an organizational nature arose when it came to defining the interest rate differential corresponding to the exchange rate target. Traditionally, the discount rate was set by the Council of Regency (the body that advises the Executive Committee on long-term strategy), but this rate was about to disappear. In order to initiate discussion of this sensitive issue of shared responsibility, one director proposed ‘to point out to the Regents that the [NBB] had long since lost its autonomy in setting interest rates, but that it was still in a position to determine the desirable rate differential’ (Minutes, 25 January 1991: 2). This is the first time that this justification of insufficient means of action has appeared. And, importantly, it appears in a context of rhetorical strategy. In the end, the solution adopted was that the Council of Regents ‘set the lower and upper limits of a rate differential range, between which the Executive Committee could vary the differential’ (Minutes, 29 January 1991: 6). The band as a compromise device.

On the occasion of the first review of market-based instruments, the issue of transparency was again discussed. The Committee decided not to increase its communication efforts, because ‘the [NBB]’s monetary policy strategy should not be too clear to market participants’ (Minutes, 4 February 1991: 6). This motive was thus transversal to the discussions within the NBB between 1989 and 1991.

In concluding this case study, it is worth mentioning something that structured many of the Committee’s discussions and probably favored the form of the range, even if it was never explicitly invoked to justify it. Most members of the Committee, and especially the Governor who held considerable power, were staunch liberals. This ideological orientation is reflected, for example, in their willingness, during the reform of the instruments, to apply the ‘market rate’ to auction credits; this position is of course paradoxical, given that monetary policy is justified by the need to modify the market output. Moreover, if the NBB’s lending rate were the market rate, the central bank would be depriving itself of its famous ‘official rate’ scrutinized by market professionals! It was explicitly this issue that motivated the reappearance of a discount rate in June 1991: ‘this rate will be used to send signals to the market in specific circumstances’ (Annex 1 to the Minutes, 15 April 1991: 3). This respect for the market rate undoubtedly favored a flexible target that allowed the truth about prices to emerge.

But this was certainly not the only reason. The table below shows the main factors identified, together with the corresponding hypotheses from the literature.

Explanations of the vagueness	Occurrences at the NBB	Importance
The fate of market economies	✓ Negotiations with the Regents ('the Bank has long since lost its autonomy in setting interest rates')	Weak
A desire for power	✓ Resistance to transparency: hidden interventions, deliberate ambiguity about monetary strategy ✓ Renunciation of certain announcement effects that are too costly (limitation of foreign exchange reserves)	Moderate
A free space for the market	✓ Confidence in market output ('market rate' for credits) ✓ Willingness not to show intervention (hiding behind the market?)	Weak
A condition of effectiveness	✓ Range of rates (which cannot be 'totally predictable') ✓ Cross-cutting fear of 'paralyzing sacralization'	Moderate
An organizational compromise	✓ Respect for EMS agreements (no substitute for the +/- 2.25% band) ✓ Share responsibilities with the Regents (they set the boundaries, the Committee navigates within them) ✓ Maintenance of the IRG (it sets the lower limit for intervention rates)	Strong

Table 18 - Explanations of the vagueness of the inflation targets

c. The Fifth Organizational Path

Before presenting the fifth explanation, it is appropriate to do justice to the first four, each of which has found some echo in our study of the Belgian case. Their heuristic effectiveness is partly due to their origin: these four hypotheses were derived from empirically well-founded social science research – which limits the risk of 'scholastic illusion' (a greater threat to hypothetical-deductive models). This common characteristic gives them a pronounced pragmatist tone. The attention paid to the constraints carried by institutional features that weigh on decision-making is a pragmatic trait shared by the first and fourth explanations: the multiple forces that impact an open economy (1) or the strategic reactions of financial market operators (4) weigh on the shaping of the target. Inquiry, understood as an experimental method that makes it possible to move forward in a situation of uncertainty, is then what justifies the

‘constructive ambiguity’ of the target and the room for maneuver that it leaves for the arbitrariness of regulators (2). Finally, the identification of the use by central bankers of economic theories allowing them to ‘hide behind the market’ is in line with the spirit of pragmatist research on performativity (3).

The explanatory path we propose in this article extends this pragmatist approach by analyzing the target as an *organizational device*. As we mentioned in the introduction, the central bank has been more studied as a monetary institution (Touffut, 2008) than as an organization. The result is a widely shared conception, especially since the diffusion of the ‘independent central bank’ model, of a body that is both autonomous and homogeneous. However, a more detailed study of the functioning of central banks reveals the density of organizational issues. The ethnographic research conducted by Abolafia at the Fed has demonstrated this by revealing the extent of the dissensus that arises in times of crisis (Abolafia, 2004, 2010, 2020). In the case of the NBB, the Quiet Revolution constituted an inter-organizational *test* (with the EMS partners) and an intra-organizational one (between the Executive Committee and the Council of Regency). As we have seen, the target – in its incompleteness – allowed for a compromise between conflicting commitments and prerogatives.

This fifth explanation thus highlights what the incompleteness of the target, understood as a device, *does* to the organization of the central bank – in particular, the problems it allows to be solved and those it generates. It seems to us undeniable that this hypothesis works well in the case of the NBB, which saw its birth. The remaining question is the generality of this validity. In keeping with our pragmatist stance, we cannot answer this question *a priori*: only other surveys, conducted from within the former or current central banks, will be able to test the validity of this organizational explanation. However, it is clear from the empirical studies already cited that contemporary central banks are still grappling with inter- and intra-organizational issues, that is, issues of dependence and heterogeneity. For example, Fontan’s (2016) research has highlighted the permanence of these issues and the challenges they pose in the case of the ECB, despite its reputation for great autonomy. Could the persistent vagueness of its target have anything to do with it?

Conclusion

Faced with the current inflation peaks, a debate has been revived on the inflation targets of the central banks, in particular those of the Fed and the ECB. Some, like the economist Olivier Blanchard (2022), urge central bankers to increase their targets, while others, like the political scientist Jonathan Kirshner (quoted in Nerkar, 2023), condemn the arbitrariness of the vague 2% target pursued throughout the world. All of them believe that the way the central bank copes with price instabilities needs to be revised. The results of this chapter can inform the debate: this management of uncertainty by communicating a vague target does not come from nowhere and can be explained. It appears both too easy and inappropriate to condemn the vagueness of most central bank's inflation targets as mere nonsense. Through a review of the thematic literature and a historical analysis of the Belgian case, this chapter identified several possible explanations for this state of affairs, which the macroeconomist Galí considered 'very hard to understand'. The pragmatist dimension of these five explanations reminds us of the contribution of empirical approaches to a fine understanding of contemporary economic phenomena.

Consequently, it is essential to investigate the motives of devices that operate as 'uncertainty management tools' at the heart of economic organizations – and that are usually considered delusional or trivial by economists. Research in Social Studies of Finance has already done this work in various fields, such as order-matching software (Muniesa, 2007), grades of listed products (Pinzur, 2016), or trader compensation formulas (MacKenzie & Spears, 2014). But many other economic devices would deserve to be explored, in order to uncover the factors that have fostered their current form and their effects on the current stage of capitalism[387].

[387] To remain in the financial sphere, it would be interesting, for example, to investigate the investment fund ranking system (*Morningstar* style) that plays a central role in contemporary hedge funds.

Chapter VIII: The financial price of oil

Alongside the stock, bond and money markets, the fourth major segment of the financial markets is the commodities market. In the "Commodity Exchanges" (*bourses de commerce*), which appeared in a distinctive building in Antwerp as early as 1531 (i.e. before the stock exchanges), participants buy and sell lots of commodities on a spot or forward basis. Futures contracts quickly enabled producers and buyers of raw materials to hedge against future price trends: for example, a farmer could "lock in" the price by selling his production forward, that is at a predetermined future date and at a predetermined price. Other players can intervene in this market and act as counterparties to farmers, not for hedging purposes, but for speculation. The situation on today's commodity markets remains the same: producers and sellers of listed commodities interact with speculators on the spot and futures markets. Since the institutional changes of the 1980s and 1990s, these interactions have been largely computerized, and take place either on centralized trading platforms (such as *Euronext),* or over-the-counter. To attract (and reassure) speculators, some platforms offer a trading settlement system that is disconnected from the "physical" market: rather than actually exchanging commodities for money at the end of the futures contract, participants "cash-settle" their transaction (the difference between the predetermined price and the current price is paid to the "winner" of the bet).

Today's financial commodities markets can therefore be distinguished according to three criteria: spot or forward (a historical criterion), centralized or OTC, physical or purely derivative. These three distinctions - and their interactions - are at the root of the complexity of today's markets, which are thus made up of interdependent "layers". Although these different layers complicate the production and use of statistics, trading volumes allow us to identify that the three most traded commodities are, in descending order, oil, gold and gas - with agricultural products far behind (Rechtsteiner et al., 2023). As far as the oil and gas markets are concerned, the main market participants are not financial firms (such as Goldman Sachs or JP Morgan), but energy producers (such as Shell, Exxon, BP and Total) (FSB, 2023). That said, investment funds are playing an increasingly important role: the amounts invested by ETFs alone have risen from $1.3 billion in 2004 to $150.3 billion in 2020 (ICI, 2022). So much so, that several commentators have expressed concern about the impact of fund managers who passively track an index, dubbed "massive passives" (Plantier, 2013).

The importance of indices as valuation supports therefore extends beyond the stock market. The same players dominate the commodity markets, however: the two main indices are the S&P GSCI Index and the Bloomberg Commodity Index - produced and owned by S&P Global and Bloomberg respectively. These indices no longer aggregate the prices of a sample of stocks, but the prices of a sample of commodities (weighted very differently). This distinction is crucial, because the way in which the prices used in commodity indices are constructed is very different from that of stock prices. Unlike stocks, which are legally defined to be (almost) perfectly homogeneous (nothing distinguishes two Apple stocks[388]), commodities are - before their financialization - heterogeneous: many aspects distinguish two barrels of oil (density, viscosity, purity...)[389]. The problem is not new, and has haunted commodity exchanges since their creation: to be tradable on a financial market, raw materials must be standardized, which requires a particularly heavy "investment in form" (weight, quality, place and date of delivery, etc.).

This final chapter takes us "behind" the commodity indices, into the construction of the prices they aggregate. Once a commodity has been standardized, market participants must also agree on its reference price, notably to be able to "cash-settle" mature futures contracts. Once again, there is nothing obvious about this: many transactions involving this commodity take place every day in different parts of the world, at different prices. How can we aggregate information on these different prices? How can they be aggregated to produce a reference price? And, crucially, who does this work? As this chapter develops in the case of oil, private companies - the "Price Reporting Agencies" - have set out to perform this function. While this task provides them with income and considerable power (hence the takeover of the leader in this field by... S&P Global), it involves perilous adjustments, in order to maintain the integrity of the oil price beyond its frequent "overflowings". Written during my stay in London as a draft for a collaborative project with David Pinzur, this final chapter sheds light on another valuation support used daily by participants in the financial commodities market.

[388] The few exceptions to this homogeneity would be non-voting shares or those with double voting rights.
[389] Bond indices can be seen as an intermediate case: bonds are more resistant to commensurabilization than stocks (they differ not only in terms of the issuing company, but also in terms of interest rate and maturity), and less so than commodities. For an overview of the challenges posed by the construction of bond indices, see Reilly et al. (1992); for an analysis of the power of index providers in the bond market, see Cormier and Naqvi (2023).

1. Sociology of the Price of Crude Oil

The centrality of oil as a commodity is not the only justification for the interest of a sociological approach[390]. The formation of the price of crude oil - a key factor in the price of petroleum products (gasoline, diesel, kerosene, etc.) - has never ceased to disconcert economists, since it seems to deviate so much from the more or less spontaneous equilibria that populate classical models. In fact, from the birth of the market until today, the price of crude oil has been confronted with numerous "overflowings" that have threatened its economic integrity: as we shall see, the market's managers have had to expend considerable framing efforts to reaffirm the impermeability of the price of oil with respect to political, geological or diplomatic concerns, and thus reassure its *economic* qualification. It is therefore necessary to understand this reality not as a process of "price discovery" (Imsirovic, 2021), but as a precarious *bricolage* that tries to limit overflowings by constantly redefining its border. In this draft, we advance in this direction by tracing the young, but eventful, history of the price of crude oil using the analytical tools of contemporary sociology of markets.

In the second part of our research project, we will deepen the analysis by looking at the price of oil in its current form, i.e. the end point of our first part. If this price consists of an *assemblage* of a multitude of actors, the latter - in return - experience its sanction in very diverse ways: all do not have the same hold on its level (inequality of power) and do not interpret it in the same way (diversity of significations). On this second axis as well, the sociology of markets proves to be well equipped to lift the veil of anonymity generally implied in economic modeling: from its semiotic side - and in particular from Peirce's concepts - we bring to light the plurality at the heart of the price of crude oil.

Methodologically, this draft is based on two types of material. In the spirit of the economics of convention, it is based on a study of the traces left by the overflowings that the price of oil has faced since the 1990s. More concretely, this involved a qualitative analysis of different types of archives (financial press clippings, expert reports, research notes…). The second part of our research project will be based on semi-structured interviews, conducted with at least two members of each audience confronted with the price of crude oil (oil producer, refinery, Wall Street trader, broker...). These interviews should allow us to grasp the plurality of the relationships that the actors of the crude oil market maintain with its price.

[390] With the exception of a few suggestions (Belyi, 2016, 2020), no sociological work has yet focused on this research object.

a. Conditions for the emergence of a crude oil market

The establishment of a market price for crude oil implies, at a minimum, a competitive exchange between the producers of crude oil (i.e. the owners of the extraction fields) and the "transformers" of crude oil into petroleum products (i.e. the owners of the refineries). However, this minimum condition has only recently been met. In the first half of the 20th century, a handful of Western firms - the so-called "majors": Shell, ExxonMobil, Chevron, BP and a few others that have since disappeared - owned the entire production chain, from extraction (obtained through concession agreements) to the commercialization of the oil product. The gradual nationalization of oil supplies in the 1960s and 1970s did not encourage the emergence of a market either: the main oil-producing countries - grouped together in OPEC - now dictated the value of crude oil by announcing "administered prices".

The new dependence of the main oil-consuming countries and their majors on OPEC's decisions prompted them, particularly after the 1973 peak, to look for other sources of supply, notably in the North Sea and the USA. The decrease in the share of OPEC oil in world supply - from 51% in 1973 to 28% in 1985 (Fattouh, 2011) - led to a dual pricing system (freely negotiated price *vs* administered price) that complicated coordination among OPEC members, to the extent that in 1985 the largest supplier, Saudi Arabia, deviated from the agreement by proposing alternative pricing[391]. The latter was abandoned a year later, without being replaced by a return to administered pricing. Since 1986, OPEC has published a target price, but no longer subjects its members and buyers to an *a priori* determined price. A market price for crude oil can then be established. But why should it?

The context quickly outlined certainly offers the conditions of possibility for the emergence of this price, but not conditions of necessity. The majors, which still dominate the world market, are now exploiting new sources of oil in the North Sea and the USA, which they can simply transfer to their refineries (without any commercial exchange), and which they can supplement by purchasing from producing countries (OPEC in particular) at prices negotiated over the long term. Such a scenario would therefore certainly result in a price, but a price from which large quantities of crude oil escape (transferred internally by the majors) and which is infrequently updated (only at the time of renegotiations between producing countries and majors). However, representativeness and actuality are two essential qualities of a market price.

[391] This pricing was based on the concept of "netback": the price incorporated the costs of the supply chain in such a way as to guarantee a fixed profit for the refineries (Mabro, 1987).

So, what were the conditions of necessity that turned us away from such a poorly marketed scenario? There are mainly two.

First, crude oil buyers and sellers developed a hedging system to limit the uncertainty of their revenues. To secure a price before loading, a forward/future market was established in the late 1970s. The dual pricing of the 1980s (freely negotiated price *vs* OPEC administered price) fueled this market: in order to prevent crude oil purchased at the administered price from being sold at a lower "free" price in Europe or the US, the majors sold their oil in advance via a future/forward when the contract price was higher than the administered price. In the European case, which has become the place where the reference price is determined, this market is decentralized: a producer contacts a buyer directly, offering him a quantity of oil at a given price to be picked up at a loading station in 2, 3 or 4 months (the exact date having to be announced initially 15 days before loading[392]). The need for hedging has thus stimulated a forward market that will become a cornerstone of the market price of oil. But this informal market would not have had the liquidity required for a robust price to emerge without the second "necessity condition".

Second, the majors operating the newly discovered fields in the UK had a considerable fiscal incentive to price a portion of their production at a "market price". At first glance, this factor seems minor, if not completely trivial: British crude oil represented a tiny fraction of world supply (3% in 1992). But British crude oil - and in particular one of its crudes (Brent) - has certain qualities that allowed it to become a near-universal benchmark: while its share of supply was negligible, its share of world trade was less so (10% of non-OPEC exports) - unlike American oil, whose export was long legally restricted. Moreover, Brent is originally a high-quality crude oil ("light low sulphur"), unlike the increasingly heavy OPEC oils (Horsnell & Mabro, 1993). Above all, it is controlled by the majors (who are in a good position to impose their standards on the whole world) in a United Kingdom then convinced of the market efficiency. For all these reasons, this burgeoning "local" market for British crude oil produced a price that became the world reference during the 1980s and 1990s and still does today[393].

[392] As we shall see, this delay is essential: after the announcement of the loading date, the contract, which until then could be exchanged at will on the forward market, materializes into a very specific cargo (which can only be exchanged on the "physical" spot market).

[393] Currently, 70% of oil trade is concluded at a price defined from this English reference price (Imsirovic, 2022). Therefore, in order to understand the formation of the contemporary crude oil price, we must account for the construction of this reference price.

To understand why the fiscal factor was so important, one must realize that it involved, for the first time, establishing and communicating a price for crude oil that would prove its "marketability". In the 1980s, the British tax authorities gave companies exploiting oil fields on its territory the choice between two techniques for valuing their tax base: the profits from the fields were valued either at a reference price defined by the Oil Taxation Office or at a market price. The administration defined the criteria for the validity of this "market price" according to the precepts of economic theory (competitive conditions, anonymity of the parties, the price as the only relevant information). As soon as the reference price was lower than the market price, it was in the interest of the majors to sell their production to their refineries, rather than transferring it internally, in order to minimize the profits from the operation of the field and maximize those of the refinery (which was subject to a lower tax). But in order to benefit from this tax optimization[394], the majors had to ensure the realization of this theoretical market defined by the tax authorities[395]. And we will see that there was a lot of resistance to this framing enterprise.

b. Geological overflowing: making oil tradable

Contemporary sociologists of markets are particularly attentive to the work of shaping that any marketization implies: a judicious standardization allows a set of objects to be recognized as sufficiently similar to constitute the same commodity. After this operation, and provided that the definition holds, an economic reality ignoring all heterogeneity is instituted. Depending on the materiality of the objects processed, the undertaking can be more or less delicate. The marketization of objects that are already highly legalized generally poses few pitfalls: shares, for example, lend themselves easily to marketing, with few "borderline cases"[396]. Conversely, raw materials boast a more recalcitrant heterogeneity. Define the "standard oil" too precisely and your sample will be insufficient to constitute a market; define it too loosely and consumers will challenge standardization by refusing to pay a single price for such different qualities. As we have explained, it is the majors that are responsible for this first "investment in form" (Thévenot, 1986): they that have an interest in seeing a market price

[394] Another optimization technique contributed to the development of the trading departments of the majors and to feeding the forward market: the majors built up a large portfolio of forward contracts, then - at the time of expiry - effectively supplied the cheapest cargoes (minimizing the profits of extraction) and cash-settled the most expensive ones (maximizing the profits of the less taxed trading department).

[395] The realization of this theoretical market was also used as a justification in the debates on the concentration of the oil market and on the need for regulation. This is why, as we shall see, even when the fiscal stakes weakened, the majors were keen to maintain the "economic integrity" of the market price.

[396] As already mentioned, non-voting shares, or shares with double voting rights, could be one of those rare cases.

emerge. This being the case, they can rely on the conventionalization of the oil trade which, if it does not allow for financialization, was sufficient for the functioning of the industry in the 20th century.

But to tolerate *financial* marketization, further conventionalization is necessary. It progressed as the forward market develops. BP was initially the most proactive major: at the beginning of the 1980s, they established a set of terms and conditions that will make it possible to define crude oil as a financial commodity (Horsnell & Mabro, 1993, p. 78). Gradually, the Brent crude became the standard: on the forward market, futures contracts were exchanged for 600,000 barrels of Brent crude oil "free on board" (FOB), i.e. to be loaded in two, three or four months at a defined loading station (Sullom Voe) with a cargo that the buyer had to provide (risks during the journey were not covered). The seller must communicate the loading date by a three-day range no later than 15 days before loading (these ranges are defined between the producers who share them); the cargo then becomes "dated" and is no longer exchangeable on the forward market. The buyer *must*, before 5pm London time, accept it or pass it on to other buyers to whom he has previously sold a forward (and so on, all along a chain that can be long).

Overall, this extensive standardization is a success: most of its terms and conditions are still those that prevail today. However, it was to reveal certain shortcomings during the "Gatoil affair". Roughly speaking, after the contract expired (i.e. 15 days or less before loading), Gatoil ended up with 7 contracts for February 26-28, 1986, while only two cargos were scheduled in the loading schedule for that period. It turns out that a member of the forward chain got stuck after 5pm with an unwanted cargo whose loading date he then artificially pushed back to make it tradeable again on the forward market. The incident was resolved through informal discussions, which shows that the majors were more interested in maintaining the integrity of the market than in advancing their pecuniary interests in this particular case. The multiple geological, but also temporal and spatial dimensions have thus been contained so that crude oil could become an exchangeable commodity on a financial market.

c. Geopolitical overflowing: preserving the a-territoriality of the market

Marking the borders of a commodity is delicate, as each ambiguity can, as we have seen, threaten the integrity of the market and its price. But this operation is rarely contested: few audible audiences see their interests threatened by it[397]. More sensitive is the territorial issue of

[397] This scenario is not implausible, however: if the market was less concentrated, producers of other crude oils could challenge the election of Brent as the benchmark.

the oil market. In principle, price should be the only relevant information, so that locality is not to be considered in a perfect market. Thus, in the eyes of the majors, preserving the a-territoriality of the market is essential to guarantee the proper economic qualification of the price of Brent, but also to preserve the market deregulation (state regulation being carried away by the territorialization of the market). At first, this condition did not pose any problems: the arrival of American financial companies at the end of the 1980s (the "Wall Street refiners") reduced the British anchorage, while the method of communication (telephone, then telex) did not have to suffer the burdens of an open market.

That said, from January 1986 to May 1990, the "Transnor affair" introduced geopolitical tension into the heart of the Brent market. Basically, Transnor, a US firm, accused the majors of having blown up the price for their tax optimization via a squeeze and took the case to court! In the process of determining the competent authority, Judge Conner rendered an opinion in April 1990 according to which the Brent market was an American market (and that he was therefore competent to judge the case). This provoked insurgent reactions from the UK Department of Commerce. In order to calm the situation, the Commodity Futures Trading Commission offered the exemption from regulation to the Brent market (albeit ambiguously). Once again, overflowing has been contained and the integrity of the oil market price maintained.

d. Human overflowing: preserving the anonymity of the price

To be credited as such, a market price must act as a faithful witness to supply and demand, that is, to purely economic forces. In particular, this testimony cannot be disturbed by human arbitrariness, in which case the price would be disqualified, stigmatized as a "distorted", "manipulated", etc. In other words, "subjective overflowings" must be contained in order to guarantee the objectivity of the price. This is perhaps the most essential condition, but also, in the case of the Brent market, the most difficult to satisfy.

Its most striking violation is the squeeze: it implies that one player acquires almost all the market products, so that it can dictate the price unilaterally. While it is not possible to squeeze the Brent market (very large quantities and easily accessible substitutes via other crudes), some have managed to squeeze the Brent *forward* market (no substitute exists for a forward contract for a particular month). At the end of 1987, Transworld Oil acquired almost all the "Brent January 1988" contracts, with the aim of being able to force certain sellers of the contract who were unable to ensure the supply of crude oil to buy back their contract at an *arbitrarily fixed* price. Given the number of daily deals concluded worldwide on the basis of

the Brent market price, this affair caused a scandal: “such incidents often attract unwelcome publicity and rumors. The January 1988 squeeze had highlighted the dangers to the survival of the market” (Horsnell & Mabro, 1993: 135).

Despite the threat posed by its spectacular irruptions, the squeeze is not the most dangerous human overflow for the Brent market. Given the closeness of the actors in this concentrated market and the broadening of its physical base (see below), the likelihood of a squeeze now seems under control. Conversely, the arbitrariness of the procedure for constructing the official price has been contested since the early days of the market and until today. The issue is easier to understand than to resolve: the Brent market (forward or spot) is so dispersed and informal that it delivers an official price with greater difficulty than other markets, such as the NYSE for Apple shares. For example, as early as 1988, 76.5% of crude oil sales from West Africa - mainly from Nigeria, to the US and Europe - were concluded on the basis of a differential with Brent (e.g. average Brent price between 14 and 19 January + $2.1); but at what Brent price? The Price Reporting Agencies (PRAs) have proposed to meet this need by defining *the* reference price. Given the volume of deals that depend on their definition (70% of all world trade), one can understand the extent of their power… and the need to contain subjective overflowing by presenting their intervention as an objective relay.

Despite their competition, the two main PRAs of the Brent market - Platts and Argus - have historically evolved together. Initially, they relayed an average between the maximum and minimum price concluded for Brent cargoes on the spot market (i.e. cargoes scheduled to load in less than 15 days - the forward market deadline). This assessment, similar to the one used by financial newspapers to relay daily stock prices, managed to contain the human overflowing, but has become untenable for two reasons. First, market volatility increased, so that the reference price could be overly influenced by a very cheap/expensive deal. Secondly, and more importantly, like Nigerian crude oil, by 1988 the majority of Brent was traded at a price defined from the Brent market reference price (especially its forward leg, see Figure 51 below)! The PRAs could not base their valuations on a set of prices that were themselves based on these valuations… They therefore innovated, at the risk of revealing their arbitrariness in determining this essential benchmark.

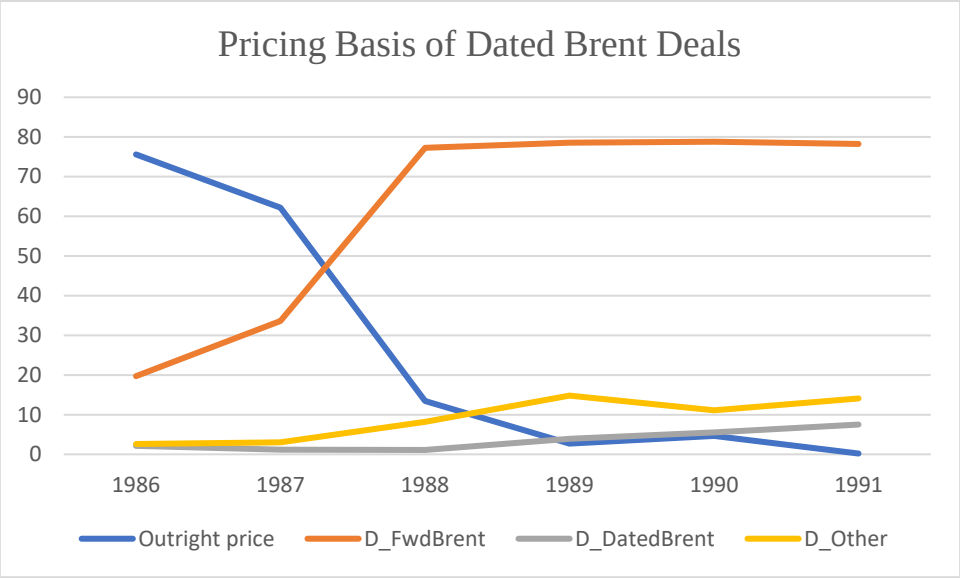


Figure 51 – Source: Horsnell & Mabro, 1993: 188, from Argus database

At the time, an obvious solution was to mobilize the price of the Brent futures market, which had become particularly active in late 1988. Unlike the forward market, the futures market is formally organized - under British law - and centralized at the International Petroleum Exchange of London (IPE, acquired in 2001 by the Intercontinental Exchange): it is therefore able to deliver a price that is just as transparent as the NYSE price for Apple shares. But the future market suffers from another flaw: in order to attract a large public (investors and speculators, rather than historical oil market players), it has had to favor the *tradability* of its product, at the expense of its "hedgability". After two failures in the launch of future contracts in 1983 and 1985, the IPE had indeed decided to design a contract for the investor that covers a smaller quantity (100 thousand, rather than 600 thousand barrels) and, above all, that is settled in cash at maturity (the fear of having to insure a load kept investors away)! The Brent futures contract therefore represents a bet on the future evolution… of the forward market: the price at which the contract is cashed-settled at maturity is indeed an index based mainly on the deals made during the day on the forward market. This futures market therefore constitutes a third derivation (spot Brent → forward Brent → futures Brent[398]) whose price does not have a sufficient connection with physical exchanges to constitute the reference. The PRA therefore had to find something else.

They fell back on the market delivering "outright" prices (i.e. expressed in direct form, rather than as differentials) as close as possible to Dated Brent (i.e. the spot market): the two-month forward market. Originally, PRA reporters tried to estimate this price for a cargo loaded

[398] The Brent options launched in 1989 constitute a fourth derivation.

in two months by talking to traders and brokers. Once this price was determined, further discussions would allow them to assess at what differentials Dated Brent was trading today, and thus reconstruct a Dated Brent outright. However, the subjectivity of this new method was all too apparent: frequently criticized, it even prompted the G20 in 2010 to mandate "the IEF [International Energy Forum], IEA [International Energy Agency], OPEC [Organization of the Petroleum Exporting Countries] and IOSCO [International Organization of Securities Commissions] to produce a preliminary joint report on how the oil spot market prices are assessed by oil price reporting agencies ('PRAs') and how this affects the transparency and functioning of oil markets". This has stimulated a lot of debate again, which in the end did not lead to reforms.

At the end of the day, the spirit of the current method has not changed, but - in order to contain the subjective overflowing - its modus operandi has been formalized. Platts has made available to the forward market players a platform where they can publish their deals between 4:00 and 4:30pm (London time). Each day, based on the deals concluded during this short period, Platts will evaluate a forward price and then infer a Dated Brent, not via untraceable discussions, but via the Contract for Difference (CFD, a financial instrument listed on ICE whose purpose is precisely to bet on the difference between the forward price and the Dated Brent to come in the next 8 weeks). For example, if the deals concluded between 4:00 and 4:30 indicate that a cargo loaded in 2 months is worth $73.72 and the CFD for the coming week is worth -$1.5, Platts can conclude that the expected Dated Brent for the coming week is worth $72.22 ($73.72 - $1.5). By interpolating the 8 Dated Brent expectations thus constructed, PRA can derive and publish a daily Dated Brent (Barret, 2012).

As we will explore in the second part of this research project, this method of determination confers a role of price-makers to the handful of firms active in the forward and CFD market during these 30 minutes (the 7 most active are responsible for 70% of the deals concluded on these two markets during this time frame, Fattouh & Imsirovic, 2019). The protests of price-takers around the world have not finished refueling this human overflowing that weakens the economic integrity of the crude oil price.

e. The return of the geological overflowing

Probably more quickly than expected, the perimeter defined by the first standardization of the Brent market had to be revised because of a lack of sufficient stocks. The dozen British

fields that supplied Brent were gradually exhausted from the end of the 1980s. This situation was dangerous for several reasons. Firstly, a reduction in supply made the probability of a *physical* squeeze greater. Secondly and most importantly, the quality of the Brent market price as a global benchmark would have been threatened by such a reduction in supply: the price would have exploded, revealing the peculiarity of a market that is intended to set the universal standard. It is therefore vital for the consistency of this price that the supply on which it is based is not limited in time (or that it is subject to the same limit as the world market). From 1990 onwards, the different layers of the Brent market changed physical support: Brent was replaced by "Blend Brent" (a mixture between Ninian and Blend, still loaded at Sullom Voe).

This addition saved time. Ten years later, and then repeatedly until today, the physical basis of the Brent market had to be revised (see Figure 52 below). Of course, each addition brings socio-material issues back to the table: the "new"crude has to be comparable, loadable at Sullom Voe or nearby… and imposes economic adjustments (e.g. "discounts" for lower quality oils). What is also remarkable is that it is the PRA that decides on these changes (at least since 2000), and that they consult the "market" for feedback. In this way, we find a relationship analogous to that between stock index providers and their customers: with their cumbersome power, these companies want above all to match their clients' desires in order to secure revenue.

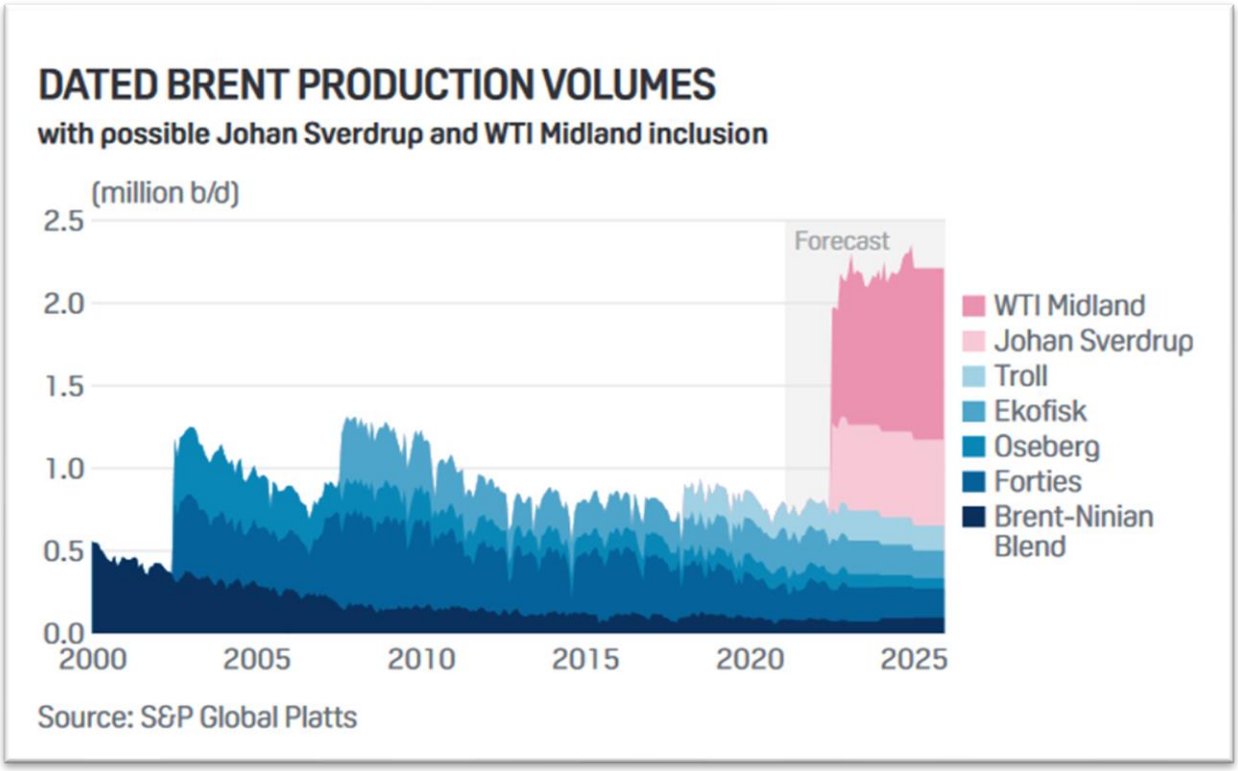


Figure 52 - Changes in the physical composition underlying the benchmark

The Brent market price does not intend to lose its status as a global benchmark because of peak oil. Does this mean that the price is determined independently of British resources? The answer lies in the interpretations of the price-makers: anything can potentially impact the price of Brent - OPEC targets, statements by the French president, climate regulations, etc. - provided that the price-makers integrate them as relevant information. In return, this price, once disseminated, will have an impact on a multitude of actors who have been invisible until now, because they do not directly influence the price of crude oil, and to whom we turn in the second part of our research project.

Conclusion

Oil benchmarks are an underground valuation support. Unlike the indices that aggregate them (such as the S&P GSCI Index and the Bloomberg Commodity Index), they are rarely considered as decision-making tools. Nonetheless, they influence the decision-making process of market participants who track their evolution. Of course, stock prices play a similar, if not more important, infrastructural role. But, unlike stock prices, the construction of oil prices is still problematic, so much so that it has been entrusted to specialized agencies (PRAs). In these circumstances, it is worth taking a closer look at this formatting work, which is merely sanctioned by commodity indices. Such is the ambition of this chapter. In a second phase, however, it would seem fruitful to follow the production chain further downstream, by investigating the construction of these indices and the ways in which they are used in the work of traders and asset managers. This would be a welcome extension of this last chapter.

General conclusion

At the end of this journey, we can draw several conclusions about the valuation supports used by traders and asset managers. We propose to structure these findings around the three axes that have guided our research: 1) the emergence of financial conventions that constitute the contemporary semiotic infrastructure, 2) the ways in which these conventions influence the valuation practices of market participants, and 3) the power of the producers and owners of these conventions. These conclusions drawn from the various parts of this work then pave the way for a more open discussion of the role of these valuation supports in today's financial regulatory landscape.

The sociological foundations of financial conventions

As stated in the introduction, this work is rooted in the economics of convention. More precisely, it intends to feed André Orléan's theories on the dynamics of "financial value" with a sociological inquiry into valuation practices. In other words, it proposes a dialogue between Orléan's "cognitive" perspective and Alain Desrosières' "pragmatist" approach[399]. The main findings of this sociological study of financial conventions are structured around central themes of the economics of convention: emergence, uses and power.

a. The emergence: the active role of "conventions providers"

Our first research project on stock market indices, carried out as part of our sociology master's thesis, focused precisely on the emergence of these financial conventions (Duterme, 2021b). In the same spirit, chapters VI and VII of this work shed light on the emergence of a new "salience" in the landscape of financial conventions: central bankers' communications. This research supports the anti-objectivist foundation of André Orléan's theory. Indeed, the emergence of these conventions is not based on their intrinsic informational virtues, but rather on conventional dynamics: the statements of central bankers constitute unavoidable references for current market participants, because everyone knows that "the market" will scrutinize and react to these statements.

That said, our inquiry leads us to insist on an issue that is generally underestimated in Orléan's work, and in that which it inspired (Brière, 2005; Tadjeddine, 2023; Bourghelle, 2023),

[399] See section 2.b of the introduction to this work for an elaboration of this issue. We are grateful for Rainer Diaz-Bone's conceptual guidance in this regard.

namely the active role of "convention providers". Indeed, in Orléan's model, the initiative belongs to the buyers and sellers of financial securities: they try to anticipate the anticipation of others and, to this end, identify salient features in the perceptual landscape of financial markets (Orléan, 1999). Yet our survey reveals the proactivity of convention providers. The "financial community" is not limited to buyers and sellers of securities, but also includes information providers. The latter work actively to become the reference on the markets, that is to become the owners and producers of financial conventions. Their interest is generally lucrative: by making themselves indispensable to traders and asset managers, stock index providers, like Bloomberg, ensure themselves a generous and stable profitability. But this interest can also be political, as illustrated in chapters VI and VII devoted to central bankers: faced with the crisis of effectiveness of their traditional monetary policy tools, central bankers have relied on "communication" with money market traders as a new political tool.

To grasp the dynamics of the emergence of financial conventions, it is therefore essential to integrate the active role of conventions providers. This result should not lead us to the opposite excess of *overestimating* this role in the emergence of conventions. In other words, we mustn't substitute Orléan's model, which lacks hierarchy, with a conspiracy theory in which information providers hold all the strings. Indeed, our research shows that there is a plurality of factors involved in stabilizing a convention, many of which are beyond the control of the convention's providers. So, for example, stock market indices would not have become so central without the "intellectual revolution" of passive management, nor without the engineering innovation of Exchange-Traded Funds. These adjuvants benefited index providers such as S&P, but were of course not under their control. This balance imposed by sociological realism is not easy to maintain, as shown by recent books with flashy titles on the "hidden power" of financial actors: *BlackRock : ces financiers qui s'emparent de notre argent* (Buchter, 2020) or *Trillions: How a Band of Wall Street Renegades Invented the Index Fund and Changed Finance Forever* (Wigglesworth, 2021).

Lastly, as our research project on oil benchmarks has already shown (see chapter VIII), this active role of convention providers never ends. Desrosières insisted on the processual, and therefore never definitive, character of convention stabilization. Thus, convention providers have to work constantly to ensure that their production continues to satisfy the "felicity conditions" of the financial community. This can be particularly demanding, as in the case of oil benchmark providers, who face frequent and dangerous controversies. This precariousness of financial conventions should not lead us to ignore the power of convention providers, but to

study it as a power to be updated, never definitively acquired. Indeed, even the most "hardened" elements of the semiotic infrastructure of financial markets are not immune to destabilization.

b. The uses: the variety of performativities

On this second axis, the foundations of Orléan's analysis are also supported by our research. Chapters III and V of this work confirm the importance of financial conventions, respectively the Bloomberg Terminal and stock market indices, for the valuation practices of market participants. The work of traders and asset managers does not consist in determining the objective expected return of financial securities, but in anticipating price trends on the basis of valuation tools. Our sociological perspective sheds light on the concrete ways in which market participants use these valuation tools. From a methodological point of view, our experience of participant observation in a trading room was indispensable in this respect: valuation practices are too complex to be fully captured through semi-directive interviews.

In this way, we were able to uncover the plurality of relationships between financial convention (captured as a semiotic emission) and the valuation practices of market participants (captured as semiotic receptions). In particular, it appears that stock market indices can refer to different objects ("the market", another trader's purchase, or even the collectively established interpretation), and thus encourage different behaviors (mimicry, imitation, or even contrarianism). These results call for a refinement of the statement of performativity often put forward in the Social Studies of Finance: rather than a univocal, immutable causality, semiotic relations on financial markets are plural and evolving. It would therefore be preferable to evoke the performativit*ies* of valuation tools.

Then, on this second axis too, the active role of convention providers deserves to be highlighted. The uses to which a convention leads depend on its form. Our analysis of the Bloomberg Terminal brings to light the choices made by the Terminal's engineers – through their information selection, indicator weighting and ranking operations – and, above all, the impact of these choices on the behavior of the financial community (during the GameStop saga). Once again, the pragmatist orientation of this work invites us to adopt a balanced position: while recognizing that the methodological choices of convention providers "don't flow naturally" (and are therefore partially arbitrary), we must acknowledge the constraints on this shaping, which could not be "anything" (and is therefore only partially arbitrary). Bloomberg therefore has power over the behavior of market participants, but this power is limited by "shaping constraints" (which condition the acceptance of the Terminal by these same

market participants). These pragmatist lessons, raised by Desrosières and Thévenot, allowed us to enrich Orléan's perspective.

c. The power: the regulation based on conventions

In Orléan's analysis, the "power of finance" derives from its ability to define the value of securities and thus the direction of capital flows. Since value loses its objective basis and rests on the opinion of the financial community, the power of this community comes to the fore. Our results are in line with this perspective, but shift the focus. Buyers and sellers of securities do not sovereignly elect financial conventions; rather, they respond to the "offers" of convention providers. The latter thus inherit a large part of the "power of finance" conceptualized by André Orléan. They define, albeit not entirely arbitrarily, the financial conventions that guide capital flows.

That being said, before identifying the power of conventions providers, it is useful to recognize the conditions under which they exist: these conventions come into play insofar as institutional constraints offer market participants room for maneuver. The looser these constraints are, the greater the freedom (and therefore uncertainty) left to market participants, and the more necessary the tools for reducing uncertainty. As highlighted in chapters I and II, over the past thirty years, these institutional conditions have undergone major transformations. Market computerization first enhanced traders' room for maneuver, before threatening it through automation. State restrictions were initially relaxed to the benefit of all market players, before being tightened in the wake of the crisis (at the expense of bank traders). A more linear trend concerns institutional investors: their concentration of savings, and therefore of decision-making power, has continued to grow.

In the end, the current institutional framework is such that several financial market participants, led by investment fund managers, are in a position - but also in charge - of managing uncertainty in the value of financial securities by deciding which securities to sell and which to buy. These participants are therefore led to rely on financial conventions, to the extent of the uncertainty offered by the institutional framework. The most emblematic illustration of this situation is undoubtedly the behavior of investment fund managers, who rely heavily on a handful of stock market indices to make their decisions. This phenomenon is not confined to "self-declared" passive managers: many funds claim to be actively managed, but barely deviate from the allocation prescribed by stock market indices. These "falsely active"

funds, also known as “index huggers”, are very present on the Belgian market, and allow their managers to benefit from the income of an active fund, and the de-responsibilization of a passive fund.

Chapter IV offers an analysis of the power of convention providers in this case of stock index providers. Responsible for shaping one of the main references of today’s financial markets, these private companies exercise, whether they like it or not, considerable power through their methodological choices. So much so, in fact, that many players are lobbying to influence the shape of stock market indices. These struggles for influence are ultimately arbitrated by the index owners. In this chapter, we suggested that the factors guiding these arbitrations are primarily economic in nature: index providers aspire to secure and extend their clientele, rather than to pursue an ideological project. That said, this “clientelist” attitude leaves its mark on the form of financial conventions, and thus on the “power of finance” identified by Orléan. Given its political centrality and proximity to Orléan’s scientific project, this theme of regulation based on conventions deserves to be explored beyond the chapters that make up this work. In the final pages of this conclusion, we propose a discussion of this issue.

From financial conventions to market regulation

The success of the financial conventions gives their producer power over the markets. We have suggested this lesson on numerous occasions, and we propose now to develop it further. What kind of power are we talking about? What do the producers of these conventions do with it? What is the relationship between this "private power" and the "public power" of state authorities? Let's note right away that, of the four valuation supports analyzed, one occupies a special status with regard to this issue of power: central bank announcements are produced by a public (or para-public) authority with the explicit aim of exerting influence on the financial markets. In other words, the regulatory role of central banks is claimed and recognized. By comparing central bank announcements with other signs that influence markets, this work reveals two insights. On the one hand, central bankers are not the only ones to tailor their "sign issuance" to the receptiveness of market participants: other actors, this time fully private, face the same semiotic challenges. What's more, if their "issuance" is successful, these other actors can play a regulatory role similar to that of central banks. Their integration into the regulatory environment of financial markets therefore deserves to be discussed.

This discussion of financial market regulation is structured in three stages. First, we look at different approaches to financial regulation. Only one of these approaches, in our view the most fruitful, allows us to consider the role of the producers of the valuation supports studied in this work. Secondly, based on this last approach, we will take a closer look at the type of "regulation" that results from the intervention of these supports. This regulation is characterized in particular by a certain passivity, a corollary of the avowed clientelism of these "regulators". Thirdly, on a more normative note, we will discuss the conditions under which this private regulation can contribute to making contemporary financial markets more efficient, stable, sustainable or fair. The role of the traditional public authority in this respect appears both delicate and indispensable.

a. Financial market regulation: state-led, legal or internal?

The issue of financial market regulation can be approached from a number of different angles, depending in particular on how "regulation" is defined. A first approach, dominant in the academic and political fields, draws on neoclassical economic theory to define regulation as an external constraint designed to correct market failures. Regulation is then a regime of exception: before imposing a standard of behavior on market participants, the public authority

must demonstrate that such intervention is desirable. Proponents of this approach are not necessarily hostile to public regulation: in the field of financial regulation, they may even argue for its extension, given the recurrence and severity of banking crises (e.g. Goodhart et al., 2013). But, in all cases, regulation must respond to a market failure:

> While the desirability of competitive markets is well established and the alternative of central planning has now been firmly discredited, it is not always the case that free markets yield appropriate outcomes. Particular features of financial markets make them especially prone to malfunction. So long as the consequences of individual purchases and sales are rapidly and readily observable, it is comparatively easy to ensure the smooth functioning of markets. But when, as in the case of finance, the consequence of actions may not be revealed for extended periods of time, perhaps years or decades, then the potential for failure and the complexities of correcting it are much greater (Armour et al., 2016: 115).

Most interventions by public financial market regulators, such as the FSMA and the NBB in Belgium, are heir to this first approach. Thus, for example, the regulation of advertising for certain financial products is justified by the market failure resulting from the "asymmetry of information" between buyers and sellers, while the capitalization requirements imposed on banks (Basel standards) aim to respond to another market failure resulting from the "moral hazard" of large financial institutions (which are encouraged to take risks when they know they are "too big to fail"). This approach has the merit of identifying certain dysfunctions in the financial markets that require external intervention. However, it has the disadvantage of capturing only a small part of the role of state law in contemporary finance. This is because it is based on a "spontaneist" conception of the market order, which is naturally efficient, and whose occasional flaws are corrected by law.

The second approach to financial regulation is more realistic: the market does not emerge spontaneously, but as the result of an intense legal effort to shape it. The law is no longer confined to the margins of the market, but is at its heart. Regulation means stabilizing the rules of the game: it includes defining the securities traded, as well as the rights and obligations attached to holding these securities. This approach is close to the economics of convention: the construction of a market is not an obvious matter, and implies plural coordination between its participants (where and when supply and demand meet, definition of the commodity, etc.). However, this approach is more restricted, as it focuses on the legal formalization that lends a particular quality to agreements between stakeholders: the language of state law offers a means of resolving disputes through these courts.

When it comes to financial regulation, one of the leading exponents of this second approach is the jurist Katharina Pistor. In her book *The Code of Capital*, she reveals the role of legal coding, largely carried out by private law firms, in capitalism past and present: capital does not exist independently of a legal effort that confers on an object (land, a gene or a financial security) the attributes of priority, durability, universality and convertibility. A fortiori, capital markets do not exist independently of this legal effort:

> To me, the most revelatory part of our findings was how familiar the basic building blocks of the financial system looked, notwithstanding the fanciful assets that had been created more recently and the system's unparalleled complexity. Everywhere we probed a little deeper, we found the core institutions of private law: contract, property, collateral, trust, corporate, and bankruptcy law. They had powered the expansion of markets in financial assets (Pistor, 2019: ix).

The functioning of today's financial markets thus relies on legal work undertaken by highly paid private lawyers (the "code masters"), commissioned by capitalists eager to preserve their privileges. According to Pistor, however, this strategy could not be successful without the support of the state:

> The more diverse the assets and the more uneven their distribution, the greater the need for coercive law enforcement, and thus for states and their coercive powers. Herein lies the deeper reason for why states and capital are joined at the hip (Ibid: 18).

In this way, regulation does not complement the market, but underpins it. It is not only "external", but also "internal": under the common law system that governs the world's financial markets, private lawyers ingeniously assemble different pieces of state law to create new rules of the game favorable to their clients. While they remain dependent on "state approval", which confers coercive power on their assemblage, these lawyers are nonetheless at the forefront of regulatory developments. A large body of literature has documented this active role of private lawyers in the creation of state law, across different areas of the economic system (Büthe & Mattli, 2011; Cafaggi, 2011; Djelic & Quack, 2018). In an article on the genesis of financial derivatives markets, Morgan (2008) thus identifies both the proactivity of private actors grouped within the International Swaps and Derivatives Association (ISDA) and the dependence of their "regulatory proposals" on sanction by state law.

At the start of our doctoral thesis, we had the opportunity to tackle this type of issue in collaboration with Aurélien Hucq, a fellow doctoral student in environmental law. As part of a

project that has so far only resulted in a communication[400], we examined the role of property rights in the creation of the Emissions Trading Scheme, sometimes referred to as the "carbon market". Property rights are torn between two ambitions, supported by two types of actors. On the one hand, market participants aspire to establish the most solid property rights possible, so as to be assured of the enjoyment of the allowances they buy. On the other hand, regulators want to limit these property rights in order to mobilize the market as a regulatory tool, which implies being able to require a company to "donate" allowances up to the amount of its carbon emissions; however, if the property right is firmly defined, this amounts to "expropriation" (Loquin, 2020). This tension has not been clearly resolved, and has opened the way to numerous disputes, for example when a company demands compensation for having been expropriated of its allowance (Ellerman et al., 2000).

Does this second approach to financial regulation do the trick? Is the capital code, created by the economic powers and sanctioned by an overly docile public authority, enough to organize the financial markets? At the end of this work, we can answer in the negative. The capital code does not exhaust the "regulatory needs" of the financial markets. In particular, while it is indeed indispensable for the creation and stabilization of financial products (such as stocks and bonds), this code does not offer a complete answer to another problem of financial markets, better identified by the economics of convention: valuation. Once created and stabilized, financial securities are traded on financial markets. But at what price? Given the centrality of stock market valuation in the creation of the greatest contemporary wealth[401], this second issue is no small one. However, to apprehend it, financial market participants need to rely on more than state law, which is generally reluctant to "bend the rules of the market". They need techniques to decode the continuous flow of signs they receive – in other words, "decoders".

We therefore require a third approach that captures all facets of financial regulation, including that operated by financial players independently of state law. Fully sociological, the corresponding definition of regulation incorporates not only the external constraints imposed by the state (the scope of the first approach) and the legal infrastructure defining the rules of the game (the scope of the second approach), but also the cognitive schemas that are sufficiently

[400] "Du droit de propriété au quota d'émission. Le marché carbone européen entre discours économiques et juridique", *Transitions en tension. Controverses et tensions autour des transitions écologiques*, December 2021 (Louvain-la-Neuve).
[401] "The richer individuals are, the higher the share of financial assets in their wealth. In the very top groups, these can represent 90-95% of all wealth in countries like France or the US" (Chancel et al., 2022: 96).

shared to enable the coordination of individuals and the reproduction of the social order. To better grasp the scope and interest of this third approach, let's take up and develop the analogy proposed by regulation theorist Jean-Marie Fecteau (2004)[402]. To understand the regulation of automobile traffic, it is possible to consider only the current highway code and its situational inscriptions (red lights, road signs, etc.). But this initial, minimal approach is insufficient to gain a detailed understanding of the driving forces behind collective coordination, which is also based on a deeper legal foundation: safety standards that subjugate car manufacturers and nurture the blind trust of users, the division of public and private space, the authority of police officers who sometimes guide traffic… But that's not all. The apparent magic of automobile traffic cannot be fully demystified without integrating a "cognitive" regulation: individuals have adopted techniques for interpreting reality, enabling them to direct their attention towards the same signs (at the expense of others) and to understand them in the same way. Without being forced to do so by law, traffic participants generally try to ignore advertising signs and decode cyclists' warnings (are they signaling the presence of radar or their displeasure with a speeding motorist?). These interpretive techniques form a layer of regulation that is indispensable to coordination, whether on the road or in the marketplace.

The valuation supports analyzed in this work focuses precisely on this layer. They provide market participants with the cognitive cues they need to understand what's going on and to value financial securities. The most central of these are vital to the functioning of the markets[403]: their destabilization would lead to a breakdown in coordination and a failure of social reproduction - in financial terms, a crash. These supports are neither externally imposed by the state nor made compulsory by law. They emerge from the financial system itself (which is not to say that all participants in this system have the same power over these supports). Thus, to a large extent, it is a "private code" constructed by "private actors", that is by participants in the financial system (see Table 19 below). However, it cannot be ruled out that public or semi-public players may participate in the elaboration of this private code, not by legally imposing rules of conduct (this would be a public code), but by proposing an interpretation technique to private players. Central bank announcements correspond to this type of intervention.

[402] We would like to thank our friend and colleague Antoine Printz, from whose thesis we have taken this reference.
[403] For a distinction between financial conventions according to their importance for the stability of financial markets, see the analogy with the dike system proposed by Pascal Combemale (general introduction, section I,2b).

Code/Issuer	Public (external)	Private (internal)
Public (external)	First approach to regulation (correction of market failures)	Second approach to regulation (legal infrastructure by lawyers)
Private (internal)	Third approach to regulation (cognitive schemas)	

Table 19 – The three approaches to financial regulation

These different forms of regulation interact more than the hermetic boxes in this table would suggest. As mentioned in the introduction about credit ratings, the insertion of a private code into the public code network stabilizes its hold on the financial community. At the same time, given the current importance of the private code, public authorities must adapt the creation of new regulation to this situation (cf. third section of this conclusion). The fact remains that this classification enables us to identify the singularity of the regulation operated by the valuation supports studied in this work. We now turn to the content of this private regulation.

b. The private side of regulation: concentrated and clientelist

One of the main shortcomings of the first approach to regulation is that it grants the monopoly of constraint to state law. In the absence of state intervention, that is when markets are functioning normally, the market would be a "level playing field" where everyone is free to choose which securities to buy and sell. This narrow conception has prevented most economists from identifying the power of the players at the heart of this thesis: stock index providers, information platform producers and price reporting agencies. More than that, it has prevented them from identifying the concentration of power that this private regulation engendered. Under the noses of these economists focused on "the danger of state regulation", a handful of private players have managed to give the "information" they produce the power of a convention. Without being legally obliged to refer to it, market participants then become conventionally constrained: if they refuse to abide by this standard, they may not be condemned in court, but they lose a lot of money and, ultimately, their jobs (which can be just as damaging).

More lucid, some legal experts have recently expressed concern about the extent of this private power. In the case of stock market indices in particular, they have pointed to the significant influence of these indices on the policy of investment funds (Robertson, 2019), then recommended that the public authority consider stock market index providers as "investment advisers" and subject them to the corresponding transparency obligations (Mahoney & Robertson, 2021). In order to appreciate, beyond the case of stock market indices, the holders of this private power, we take up again below the table presented in the introduction, which lists

the owners of the main valuation supports. It shows that private regulation of financial markets is highly concentrated: two or three companies generally enjoy together a market share over 50%. Apart from the major central banks, the Bloomberg and S&P Global groups are the main private regulators. In collaboration with Claude Duterme, our uncle and graphic designer, we have illustrated this discussion of regulation in a short comic strip, reproduced in Appendix I of this work.

Bond market	Stock market	Money market/ FOREX	Commodity market
Bloomberg Terminal (Bloomberg)			
- Credit rating (S&P, Moody's, Fitch) - Yield curve (Major central banks (MCB))	- Indices (S&P, MSCI, FTSE, Bloomberg, Euronext)	- Central bank interventions (MCB)	- Benchmarks (for crude oil: S&P, Argus)

Table 20 - Owners of the main valuation supports

The concentration of the financial information market is in no way inferior to that of the mainstream press market. The parallel is worth exploring. Like the valuation supports studied, the main media regulate behavior not by legal means, but by providing techniques for perceiving and interpreting reality. These techniques are then employed because they are available to individuals, and because they enable them to join a community (which, in the case of financial markets, is a condition for identifying promising securities). As mentioned earlier, the press market is also characterized by high concentration, both in the USA (Noam, 2009; McKnight, 2013) and in Europe (Doyle, 2002; Cagé et al., 2017). One potential difference that justifies the interest of this parallel is the owners' primary motivation. In the newspaper industry, it frequently appears that ultra-rich media owners are less concerned with their profitability (several years of losses sometimes follow one another), than with the influence these media give them on public opinion and the outcome of elections (e.g. Beaufils, 2022; Grossman et al., 2022). Political motivation often dominates economic motivation. In other words, these private regulators do indeed see themselves as regulators, charged with (and authorized to) steer collective behavior in certain directions deemed desirable.

Conversely, in the financial markets, the private owners of the main valuation supports are primarily interested in maximizing their profits. Shareholding is generally more dispersed than in the press market, where a single individual may own many media outlets; their aim is not to wage an "ideological battle" within the financial community, but - like most shareholders - to maximize the company's revenues. A notable exception is Bloomberg LP, 88% owned by billionaire and Democratic primary candidate Michael Bloomberg. If he has spent impressive

sums on “political marketing” during each campaign (over a billion for the 2020 primary), it is precisely to obtain a power over public opinion that the Terminal could not offer him - even if he wanted to. The latter, like the other valuation supports studied in this work, has an impact on a “Worth” other than public opinion and the outcome of the vote: the opinion of the financial community and the direction of capital flows. Yet, as Benjamin Braun (2022) hypothesizes in his analysis of asset managers, the power of private regulators over this “Worth” is less an opportunity to be seized than a risk factor to be minimized: it attracts the attention of the public authority, which might find in it a reason to limit the company’s growth.

In other words, these private regulators do not see themselves as regulators, nor do they seek to steer collective behavior in certain directions. Herein lies a tension, since, whether they like it or not, they do have the power to regulate: this power derives from their success within the financial community, and is therefore linked to the revenues they pocket, which in turn must be maximized[404]. How do the owners of the valuation supports go about resolving this tension? What form does this private regulation of financial markets take? Logically enough, it takes the form of minimal regulation, in the service of customers. The owners of valuation supports aim to expand their membership base, but above all to maintain their status as a benchmark by avoiding the wrath of the financial community, which might disapprove of a change in methodology. Changes are therefore kept to a minimum, and when they prove essential, they are subject to consultation with members of the financial community.

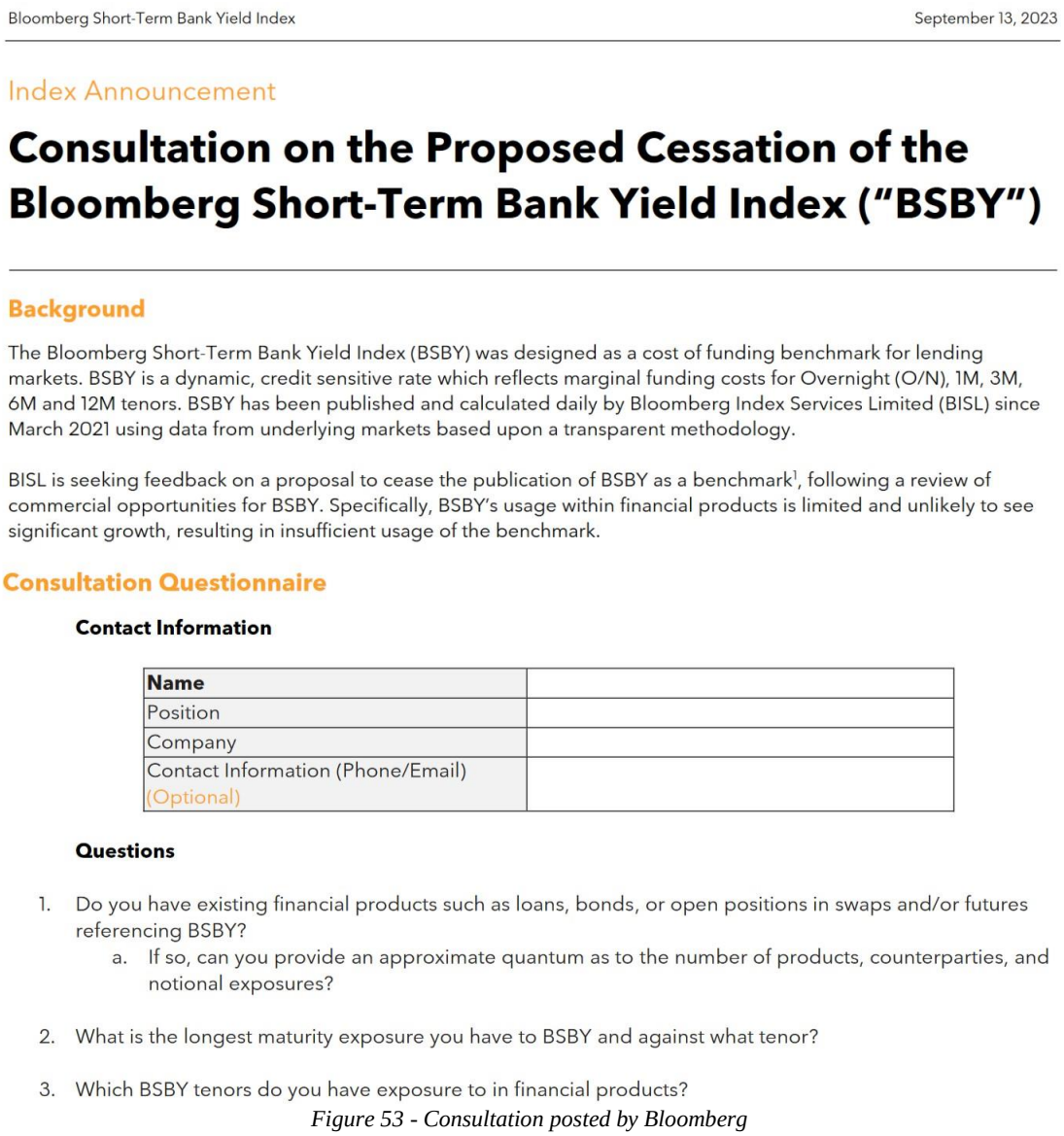
This situation is clearly apparent in the case of stock market index providers, which Hirst and Kastiel (2019) describe as “reluctant regulators”. Contrary to the view of Republican Senator Marco Rubio, quoted in the introduction, index providers have no political agenda other than that which suits the widest possible clientele. A manager working for one of the leaders summed up their conception of political power as follows:

> We’re not activists. We’re setting the minimum standards that investors generally will accept, and our role is to build consensus amongst that investor community as to what that minimum standard should be (Alloway et al., 2017, quoted in Petry et al., 2021).

The same applies to the price-reporting agencies that set prices on the commodities markets. S&P Global Platts and Argus make a point of consulting the financial community before changing the types of oil making up their benchmarks. This attitude of listening to market needs is frequently put forward by benchmark owners to counter critics who see them as “de

[404] This tension corresponds to the final dilemma faced by stock index engineers (see chapter IV).

facto regulators" (e.g. Binks, 2010). Similarly, Bloomberg regularly publishes consultations via its Terminal designed to avoid changes that would displease consumers. So, for example, in September 2023, the company considered stopping production of a money market indicator and wanted to make sure it didn't upset anyone (see Figure 53 below). Although it is assuming more of a regulatory role, the central bank is also carrying out this type of consultation[405]: no longer for profit, but in order to maintain the support of the financial community, on which so much of its power to influence depends.



Bloomberg Short-Term Bank Yield Index September 13, 2023

Index Announcement

Consultation on the Proposed Cessation of the Bloomberg Short-Term Bank Yield Index ("BSBY")

Background

The Bloomberg Short-Term Bank Yield Index (BSBY) was designed as a cost of funding benchmark for lending markets. BSBY is a dynamic, credit sensitive rate which reflects marginal funding costs for Overnight (O/N), 1M, 3M, 6M and 12M tenors. BSBY has been published and calculated daily by Bloomberg Index Services Limited (BISL) since March 2021 using data from underlying markets based upon a transparent methodology.

BISL is seeking feedback on a proposal to cease the publication of BSBY as a benchmark[1], following a review of commercial opportunities for BSBY. Specifically, BSBY's usage within financial products is limited and unlikely to see significant growth, resulting in insufficient usage of the benchmark.

Consultation Questionnaire

Contact Information

Name	
Position	
Company	
Contact Information (Phone/Email) (Optional)	

Questions

1. Do you have existing financial products such as loans, bonds, or open positions in swaps and/or futures referencing BSBY?
   a. If so, can you provide an approximate quantum as to the number of products, counterparties, and notional exposures?
2. What is the longest maturity exposure you have to BSBY and against what tenor?
3. Which BSBY tenors do you have exposure to in financial products?

Figure 53 - Consultation posted by Bloomberg

With the exception of the central bank, the owners of the valuation supports studied in this work thus assume their regulatory power "backwards". Above all, they see this power as a

[405] For a recent example of this type of consultation, see https://www.bankingsupervision.europa.eu/legalframework/publiccons/html/rdarr.en.html (page consulted on December 28, 2023).

risk factor, both politically (increased attention from public authorities) and commercially (disapproval from some customers). However, obliged to exercise this power (because it is a corollary of their commercial success), they tailor it to their customers' preferences (to minimize the commercial risk), claiming that they are not regulators (to minimize the political risk). This strategy should not mislead us: the owners of the valuation supports hold major power, and their risk minimization is indeed a particular form of regulation. The regulation that emerges is a passive, accommodating one, in tune with the interests of the financial community. Regulation that serves market professionals, especially the most solvent. Regulation that feeds current dynamics, fearing disapproval more than anything else.

Cautious about the commercial and political risks involved, this type of regulation does not guarantee financial stability. It is now well documented that this type of regulation played a role in the financial crisis of 2007-2008. The owners of the bond market's main valuation support, the famous rating agencies, agreed to assign their ratings to dangerous financial products (collateralized debt obligations), sending a signal of confidence to the entire financial community. They did so not to destabilize the financial system, but to satisfy their clientele (i.e. the creators of these dangerous products):

> The study of the ratings process confirms the view that the priority of the management teams at the credit rating agencies was to maintain market share and to issue a rating for a bond, even when their analysts expressed concern about the soundness of the securities was a contributory factor in the financial meltdown (Mullard, 2012: 77).

Unfortunately, the attitude of the producers of the valuation supports studied in this work is not fundamentally different. For example, stock index providers now do more than just publish indices: they accompany the sellers of trendy investment funds (the famous ETFs) by designing a tailor-made index. Customers can then easily sell shares in their "passive fund tracking an S&P index". That said, when a major client comes in with a more audacious fund project that he aspires to label "S&P", we can only hope that the group's managers run the stock index department differently from the credit rating department… In short, the clientelist passivity of private regulators guarantees us nothing, because when a storm threatens, blowing with the wind precipitates it. This conclusion is in line with Orléan's critical analysis, reiterated in the wake of the financial crisis (Orléan, 2009), of the intrinsic instability of "convention-based regulation".

c. A public regulation of private regulation?

Private regulation, carried out backwards by the owners of the valuation supports, does not guide financial markets towards stability or sustainability. But should it be left to its own devices? In other words, can and should private regulation be regulated? Who, then, would be the actor in this meta-regulation? To continue the discussion, this final section considers the conditions for a fruitful interaction between private and public regulation. Indeed, given the growing importance of the valuation supports provided by "private regulators", as documented throughout this work, public authorities have had to integrate their power of influence and adjust their attempts at regulation accordingly. In this respect, it has been able to adopt three strategies: second-order regulation, competitive bidding and circumvention.

Firstly, then, public authorities can attempt to influence the owners of valuation supports by regulating them. As we mentioned in the chapter IV, the European Union has recently moved in this direction: in response to proven manipulations of Libor (an interest rate index influencing the daily allocation of billions of dollars), the "European regulation on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds (EU BMR)" was adopted in 2016 and came into force in 2018. Its scope is very broad, since it covers all indices on which the value of a financial product depends or which serve as benchmarks for an investment fund – whether stock, currency or commodity markets. The main stock market indices, as well as oil benchmarks, are therefore involved. The owners of these valuation supports - labeled "Benchmarks Administrators" - are thus for the first time appointed and regulated *as private regulators*: obliged to register and sometimes to be authorized by the public authority (the FSMA in Belgium), they must meet transparency requirements (e.g. publication of methodologies) and guarantee a governance system that prevents potential conflicts of interest (e.g. the Steering Committee mentioned in chapter IV).

This type of public regulation, similar to that which affected credit rating agencies in the wake of the financial crisis (White, 2010), is aimed more at framing than guiding private regulation. Primarily built around a requirement for transparency, it is content to limit the risks of "manipulation" of these valuation supports. The aim is therefore "negative": to prevent certain deviant behaviors. Although more ambitious, the suggestions by legal experts already mentioned to consider stock index providers as "investment advisors" are in line with the same logic (Mahoney & Robertson, 2021). However, this first strategy on the part of the public authority can take a more assertive form, with a "positive" objective: in this case, the aim is to

prescribe certain behaviors to private regulators. This is notably the case as regards the power of stock market index providers over sustainable finance. Despite the importance of green investment funds and the role of index providers in this process (Jahnke, 2019), the clientelist attitude of private regulators has led to the design of "tailor-made" green indices, adapted to the needs of asset managers (Fichtner et al., 2023). The resulting situation is thus characterized by the coexistence of numerous green indices, carrying a plurality of quality conventions (Penalva Icher, 2009), which is not conducive to redirecting capital flows towards sustainable activities (as we suggested for the Belgian case in the chapter II). To remedy this problem, the European Commission has tabled a proposal aimed at clarifying this aspect of private regulation, by imposing certain guidelines on the designers of green indices. That said, this initiative by the public regulator remains cautious and focused on the issue of transparency:

> The current ESG rating[406] market suffers from deficiencies and is not functioning properly, with investors and rated entities' needs regarding ESG ratings are not being met and confidence in ratings is being undermined. [...] Hence, the Commission committed in the renewed sustainable finance strategy, to take action to improve the reliability, comparability and transparency of ESG ratings. [...] This proposal does not intend to harmonize the methodologies for the calculation of ESG ratings, but to increase their transparency. ESG rating providers will remain in full control of the methodologies they use and will continue to be independent in their choice, to ensure that a variety of approaches are available in the ESG ratings market (European Commission, 2023a).

Secondly, the public authority may adopt a form of regulation that competes "on its own turf" with existing private regulation. In this case, the aim is to direct capital flows in a different way than the owners of the valuation supports, but using the same channels of influence: not through legal constraints, but by convincing market participants (i.e., through a "private code"). Once again, it is in the field of sustainable finance that public authorities have recently shown themselves to be proactive. In recent years, the bond market has also been impacted by the sustainable finance movement, but in a different way than the stock market. This is because, as it has been mentioned earlier, the form of the bond has certain specificities that matter: in particular, its provisional dimension - the bond has a maturity - makes it possible to associate certain bonds with certain investment projects (which is not possible for stocks, which always relate to the entire company). This is the case for "green bonds", which devote the money borrowed by the issue of the security to a sustainable investment. Non-existent before 2007, they have experienced tremendous growth: the annual issue volume has risen from 50 billion dollars in 2014, to 160 in 2017 and 522 in 2021 (figures from the Climate Bonds Initiative). From the outset, similarly to the case of ESG indices, the definition of the conditions for

[406] ESG ratings are used to build green indices.

obtaining the "green" label was debated, with several institutions proposing their certification (Ehlers & Packer, 2017). A new step was taken in 2016 when Moody's proposed refining the binary assessment (green or not) by *rating* the "greenness" of bonds on a scale ranging from GB1 to GB5. The next year, Standard & Poor's followed suit with a similar system ranging from E1 to E4. In 2023, the European Commission has reached an agreement to "launch" a green bond classification that will compete with those already created, notably by the traditional rating agencies:

> The [European Green Bond] Regulation, which is an integral part of the European Green Deal, will establish an EU *voluntary* high-quality standard for green bonds. The European green bond standard (EUGBS) will be available to companies and public entities that wish to raise funds on capital markets to finance their green investments, while meeting tough sustainability requirements (European Commission, 2023b; emphasis added).

In other words, financial market participants will be able to choose whether to buy or sell green bonds labeled by rating agencies or green bonds labeled by the EU. The outcome of this battle between financial conventions will depend not only on the number of companies willing to issue green bonds, but also on whether these competing conventions meet the various "felicity conditions" identified in the chapter VI. The public authority does not guarantee adherence to its regulation by legislative means, but rather submits it to the suffrages of the financial community, competing with the power of private regulators that preceded it. In the case of the valuation supports studied in this work, they have not been subjected to this form of competition. Despite *Financité*'s calls to the contrary (see the chapter II), the public authorities did not produce and publish a green stock market index. Nor have they competed with price-reporting agencies in proposing an alternative oil price, even if some of the recommendations of the report commissioned by the G20 suggested greater interventionist ambition (IEA et al., 2011). As industry professionals frequently point out, the cost of expertise to be developed by public authorities to compete with companies already established in the financial field complicates this second form of public regulation[407].

Thirdly, the public authority can introduce a constraint that bypasses existing private regulation. The aim is to make financial markets more stable or sustainable by changing the rules of the game in such a way as to render private regulation ineffective. A law requiring all investment funds to allocate at least 30% of their resources to a predefined sample of stocks would seriously undermine the influence of stock index providers; in the best-case scenario,

[407] For example, it is hard to imagine serious public competition to the Bloomberg Terminal.

they would “only” regulate the remaining 70% of passive funds. In the same way, a ban on buying and selling crude oil at a price based on another price would wipe out most of the regulatory power of price-reporting agencies. Such interventions seem unlikely. Indeed, they do not correspond to the spirit of Western regulations - both American and European - of the last thirty years.

And yet, this third type of public regulation of the financial system already exists. In 2022, the European Central Bank adopted two measures that seriously undermine the regulatory power of rating agencies. On the one hand, its own financial securities purchasing policy, historically linked to rating agencies[408], includes a climate-related criterion: “the share of assets on the Eurosystem’s balance sheet issued by companies with a better climate performance will be increased compared to that by companies with a poorer climate performance”, *regardless of the credit rating of the bonds concerned*. Given the size of the assets held by the Eurosystem (7,951 billion euros at December 31, 2022), this decision has important repercussions for the power of credit ratings. On the other hand, its lending policy to commercial banks also incorporates a climate criterion, at the direct expense of the power of credit ratings. To obtain a loan, commercial banks pledge a financial security to the ECB, which must meet certain criteria; these criteria have historically been linked to credit ratings (in a similar way to the example in note 406), but are now also climatic:

The Eurosystem will limit the share of assets issued by entities with a high carbon footprint that can be pledged as collateral by individual counterparties when borrowing from the Eurosystem [- *regardless of the credit rating of the bonds concerned*] (ECB, 2022).

Once again, the apparent technicality of this public regulation should not lead us to think of it as a nested measure: commercial banks borrow very large sums from the ECB (1,324 billion euros at December 31, 2022) and therefore determine their own decisions to buy and sell securities according to their eligibility for the ECB. In the end, this measure seemed too ambitious to some members of the ECB executive committee, who managed to scale it back, much to the dismay of environmental organizations (Dafermos et al., 2023). Nevertheless, this example shows that public authorities are able to “override” private regulation, even when the owners of such central valuation supports as rating agencies are involved. The table below summarizes the three intervention strategies of public regulators in a financial environment already populated by private regulators. The last column shows the impact that public regulators

[408] For example, the 2016 corporate sector purchase program (CSPP) involved the purchase of 324 billion euros worth of securities that “have a minimum first-best credit assessment of at least credit quality step 3 (rating of BBB- or equivalent) obtained from an external credit assessment institution”.

hope these three types of intervention will have on the direction of capital flows on financial markets.

Interaction between public and private regulation	European examples	Reorienting capital flows
Public oversight of private regulation	✓ Transparency standards for benchmark administrators (EU BMR) ✓ Methodology for green indices	Nil - very low
Competition between public and private regulation	✓ Standard for green bonds	Very low - low
Bypassing private regulation	✓ Climate criterion for monetary policy	Very low - medium

Table 20 – Three types of interactions between public and private regulation

Yet this impact on flows is generally limited, as European public regulators are keen to respect the principle of "market neutrality" (van't Klooster & Fontan, 2020). If private regulation is characterized by clientelist passivity and public regulation by this prudence, does the current situation pave the way for the economic transformation called for by the latest IPCC report (IPCC, 2022)? To conclude by putting forward a possible answer to this very broad question, we draw on a typology recently proposed by two leading authors of the "critical macrofinance" movement, Daniela Gabor and Benjamin Braun (2023). They envisage four ways in which the state can become part of the contemporary macroeconomic environment. The first is "carbon shock therapy": this does not involve any proactive intervention, and is content to react, by tightening fiscal and monetary policies, to the restructurings that will be imposed by the manifestations of climate disruption. This approach is not favored by the authors, as its predicted effects are chaotic and unfair.

The second insertion modality is the "weak derisking state": the aim is to direct private capital towards certain more sustainable economic sectors by assuming part of the risk. In other words, the state closes the gap in risk-adjusted returns between gray and green investments, so that the latter can be financed. When motivated by ecological considerations, the three interactions between public and private regulations we have considered fit into this logic of action: they aim to reassure private investors by ensuring the transparency of green information or by supporting the value of green securities (e.g. through ECB purchases). Gabor and Braun believe, however, that integrating climate criteria into monetary policy opens the way to more dirigiste state intervention, which has frightened European central bankers:

> Away from the world of market neutrality where bond purchases were dictated by relative market shares and bond collateral haircuts by private credit ratings, central banks have to engage with corporate behavior and carbon footprints at the company-level [...]. Central banks as climate policymakers morph into *quasi-central planners*, which conflicts with the independence premise underpinning the inflation targeting regime. This explains why both the Bank of England and the European Central Bank developed, and then quickly abandoned, tilting strategies [...]. The politics of inflation targeting pushes central banks away from the central planning demands of climate policy-making into weak derisking (Ibid: 19).

According to these authors, the first two forms of state involvement are too cautious in relation to the IPCC's recommendations. They therefore advocate two alternatives that go beyond the framework of financial markets, thus demonstrating their narrowness. The third possibility is that of the "robust derisking state": rather than reassuring financial market participants, it aims to guarantee the profitability of certain investments directly in the industrial fabric. This takes the form of tax credits or preferential-rate loans granted to manufacturers to develop promising transition sectors such as cleantech. The State does not replace private capital, but bypasses the financial markets to intervene directly with industrial players. Finally, the fourth modality is the "Big green state": the state takes the place of private capital and plans the transformation of economic activities (through targeted investments and, above all, divestments). Whereas the "robust derisking state" marks the departure from financial markets, the "Big green state" is characterized by the departure from markets, replaced by planning logic.

These last two modalities fall outside the scope of this thesis, which is concerned with financial markets. However, they are important to mention in this conclusion for two reasons. Firstly, they remind us that financial markets are just one way of financing the economy, and therefore deserve to be frequently re-evaluated in terms of what they allow (globalization of savings, competition between capital seekers, etc.) and what they do not allow (centralized definition of an investment and disinvestment trajectory). On the other hand, by forcing us to "step outside" the framework of financial markets, they allow us to adopt a point of view outside the markets, and thus to avoid confining this final discussion to an internal critique of financial regulation. What's more, in the face of the bleak prospects of backward private regulation and skittish public regulation, they offer alternatives more likely to bring us closer to the path advocated by climate scientists.

Appendix

I. Comics trip: “Le voyage du capital”

From January to April 2023, my uncle and I took part in the “Dessine ta thèse” (Draw your thesis) contest[409], in which we were asked to explain the content of my current thesis in 10 strips. Over and above the competition result (5th place), we greatly appreciated the experience. The effort to “put into drawing” the main insights nourishes my work on two levels. On the one hand, these illustrations facilitate the dissemination of my research, both within and outside academic circles. As one of the particularities of my “sociological field” is the technical nature of its operation, this popularization device will soften the presentation of my results during sharing sessions at my research center or at less specialized colloquia. On the other hand, the effort of popularization required by the creation of the comic strip has led me to “go to the essentials”, that is to identify a common thread running through my work. This synthesizing approach now enables me to explain more clearly to colleagues the reasons behind my approach; moreover, it has forced me to take a closer look at my own research, leading me to identify certain avenues for further study at the end of my thesis.

[409] See the contest website: https://dessine-ta-these.com/ (page consulted on January 2, 2024).

LE VOYAGE DU CAPITAL

UNE PLONGÉE ILLUSTRÉE AU COEUR DU SYSTÈME FINANCIER

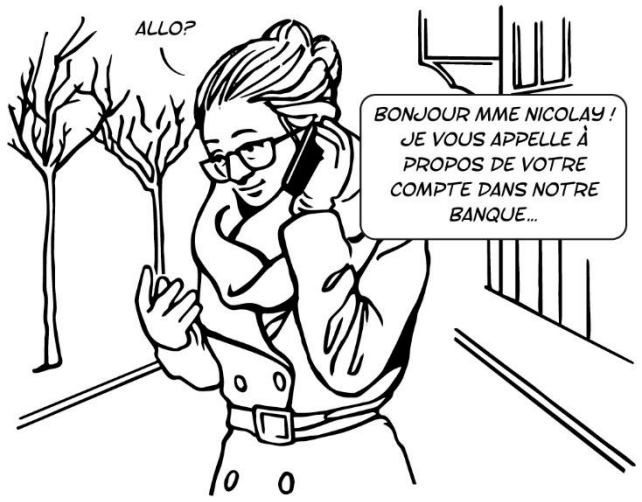
Scénario basé sur la thèse de
Tom Duterme

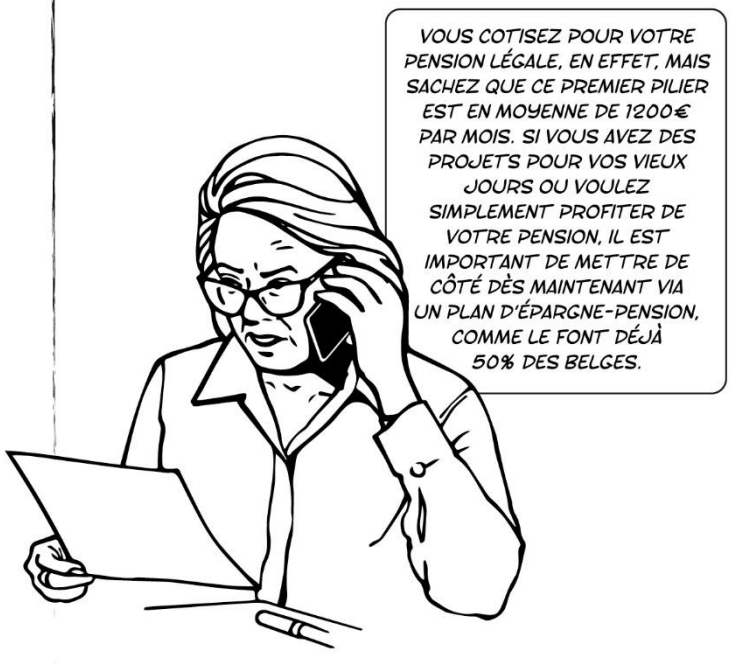
Illustrations de Claude Duterme

VALENTINE N'AVAIT EU AUCUN MAL À TROUVER UN EMPLOI. AVANT MÊME LA FIN DE SES ÉTUDES, ELLE ÉTAIT EMBAUCHÉE À L' ATHÉNÉE CHARLES JANSSENS.

GRÂCE À SES PREMIERS SALAIRES, ELLE A PU S'INSTALLER DANS UN CHARMANT APPARTEMENT À DEUX PAS DE L'ÉCOLE, AVEC SON CHAT ABOU.

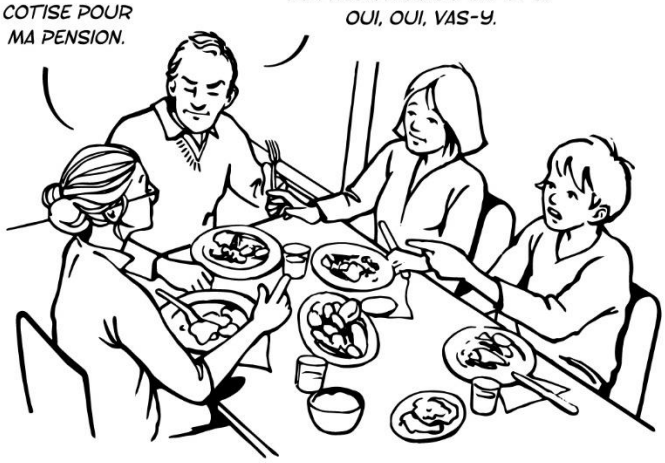
PLUS, ELLE ÉTAIT ASSURÉE D'ÊTRE NOMMÉE L'AN PROCHAIN. BREF, ELLE AVAIT LA VOIE LIBRE POUR SE LANCER DANS LA VIE SANS TROP SE TRACASSER. DU MOINS PENSAIT-ELLE...





MA BANQUE M'A APPELÉE POUR QUE JE COTISE POUR MA PENSION.

VU COMMENT C'EST PARTI, T'AS INTÉRÊT, OUI... PUIS, JE TE MONTRERAI, ÇA TE PERMET DE PAYER MOINS D'IMPÔTS. OUI, OUI, VAS-Y.

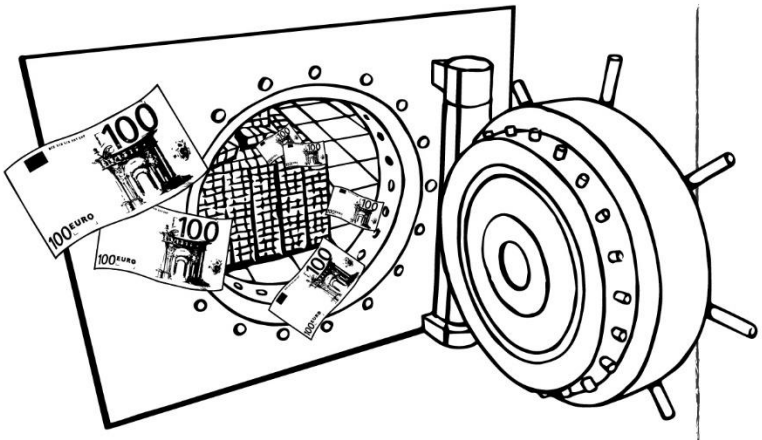


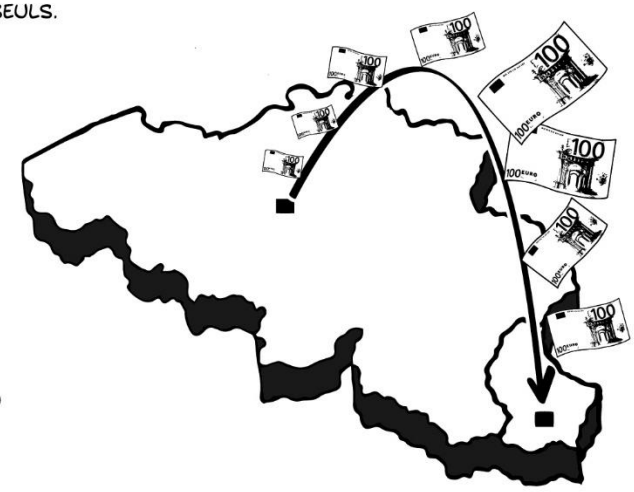
VALENTINE OPTE FINALEMENT POUR L'ÉPARGNE-PENSION « ÉQUILIBRÉE ». LA « DYNAMIQUE » PARAISSAIT RISQUÉE, TANDIS QUE LE TAUX D'INTÉRÊT DU PLAN « STABILITÉ » ÉTAIT QUASIMENT AUSSI BAS QUE CELUI DU COMPTE D'ÉPARGNE.

C'EST AINSI QUE DÉBUTE LE PÉRIPLE DES 100 € (MENSUELS) DE VALENTINE AU COEUR DU SYSTÈME FINANCIER... OÙ DONC VONT-ILS ATTERRIR ?!

LE SUSPENSE EST MAXIMAL...

ILS VONT D'ABORD REJOINDRE LES COTISATIONS D'AUTRES BELGES QUI ONT CHOISI L'ÉPARGNE-PENSION « ÉQUILIBRÉE ». ET ILS RISQUENT DE NE PAS SE SENTIR SEULS. 800 MILLIONS € LES ONT PRÉCÉDÉS*.





* EN BELGIQUE, LE TOTAL DES ÉPARGNES-PENSION DES DIFFÉRENTES BANQUES VAUT 25,5 MILLIARDS € (CHIFFRE 2021)

CES 800 MILLIONS € CONSTITUENT LES RESSOURCES DU FONDS D'ÉPARGNE-PENSION « ÉQUILIBRÉ » QUI EST PROPOSÉ PAR LA BANQUE DE VALENTINE, MAIS GÉRÉ PAR UNE AUTRE SOCIÉTÉ, EXPERTE EN LA MATIÈRE, BASÉE AU GRAND-DUCHÉ DE LUXEMBOURG.

LE FONDS DE PENSION « ÉQUILIBRÉ » N'EST PAS LE SEUL GÉRÉ PAR CETTE SOCIÉTÉ.
MAIS COMME IL EST ASSEZ VOLUMINEUX, IL N'EST PAS TRAITÉ PAR LES SOLUTIONS STANDARDISÉES ET BÉNÉFICIE DU SUIVI PERSONNEL D'UN « PORTFOLIO MANAGER » EXPÉRIMENTÉ, SYLVAIN.

BONJOUR. JE SUIS SYLVAIN, LE GESTIONNAIRE RESPONSABLE DU FONDS DE PENSION « ÉQUILIBRÉ » DE LA BANQUE DE VALENTINE

SA MISSION ?
PLACER 800 MILLIONS € DANS DES TITRES SUFFISAMMENT LUCRATIFS POUR PAYER TOUT LE MONDE (LUI, SON BOSS, LES ACTIONNAIRES DE SA BOÎTE ET QUELQUES PERSONNES DE LA BANQUE DE VALENTINE) ET REVERSER LEUR PART AUX BELGES QUI ONT COTISÉ PENDANT QUARANTE ANS (IDÉALEMENT GONFLÉE DE QUELQUES POURCENTS).

SYLVAIN A UN SACRÉ POUVOIR, ET IL LE SAIT.

J'AI UN SACRÉ POUVOIR ET JE LE SAIS.

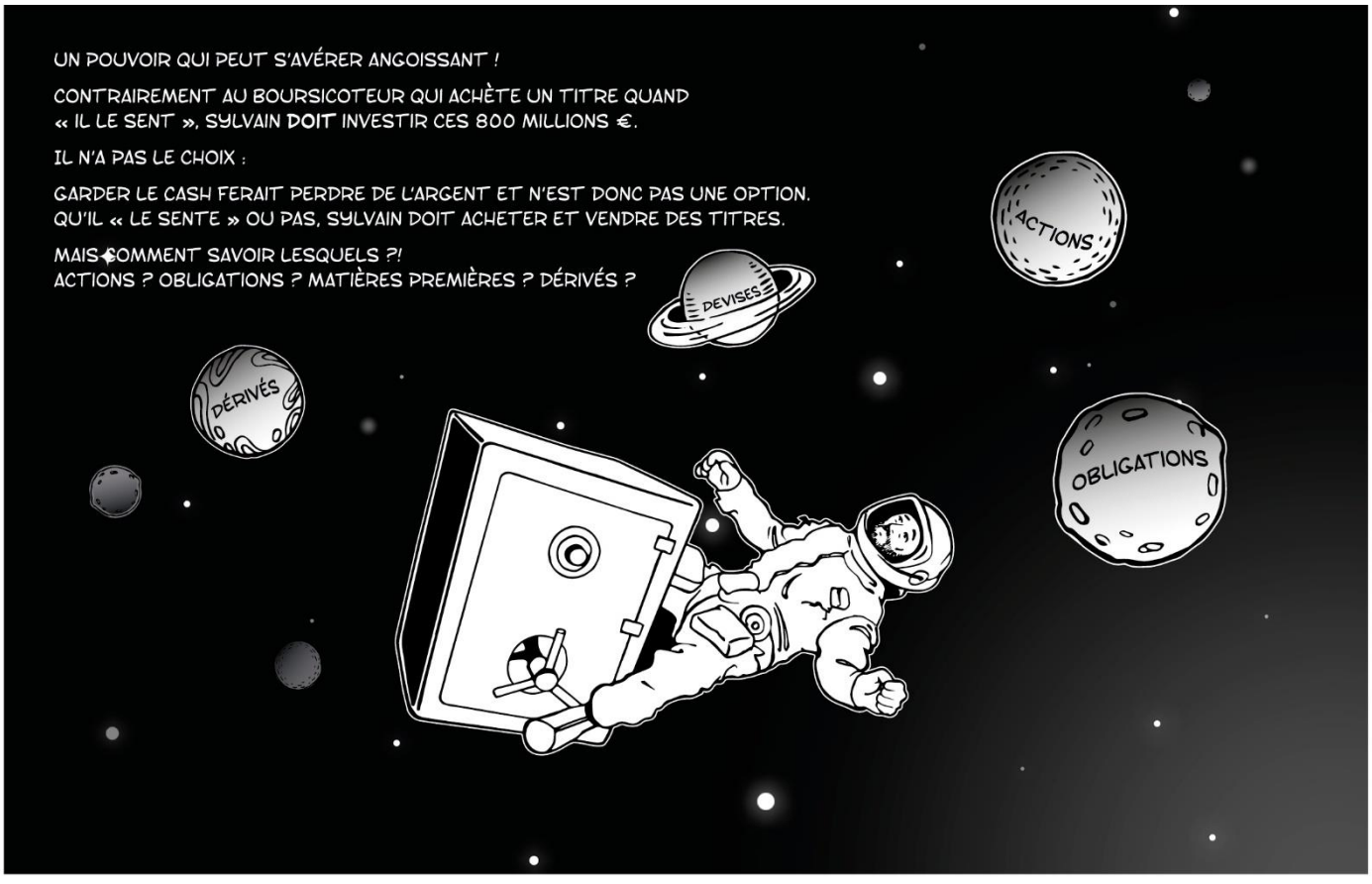
UN POUVOIR QUI PEUT S'AVÉRER ANGOISSANT !

CONTRAIREMENT AU BOURSICOTEUR QUI ACHÈTE UN TITRE QUAND « IL LE SENT », SYLVAIN **DOIT** INVESTIR CES 800 MILLIONS €.

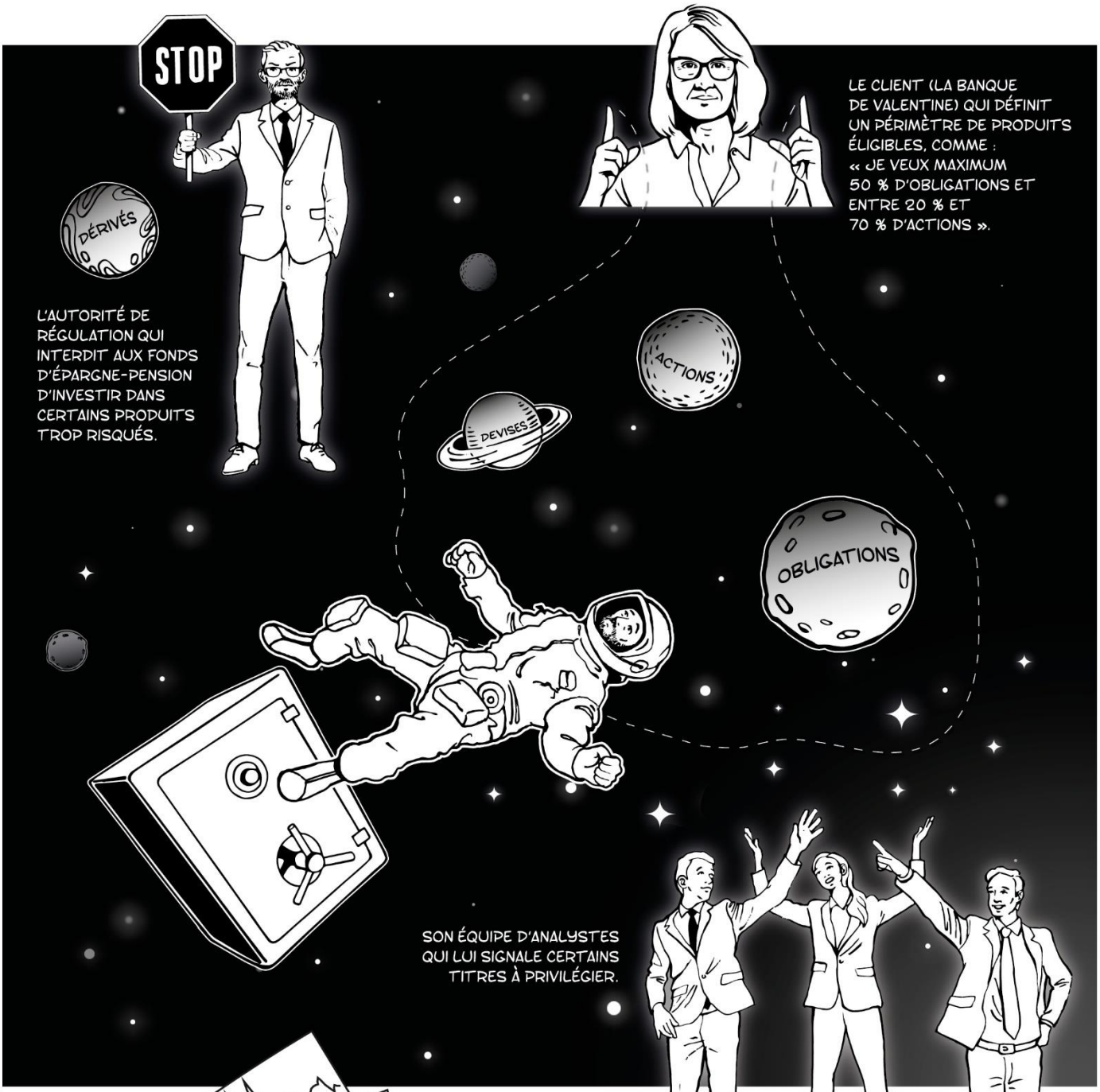
IL N'A PAS LE CHOIX :

GARDER LE CASH FERAIT PERDRE DE L'ARGENT ET N'EST DONC PAS UNE OPTION.
QU'IL « LE SENTE » OU PAS, SYLVAIN DOIT ACHETER ET VENDRE DES TITRES.

MAIS COMMENT SAVOIR LESQUELS ?!
ACTIONS ? OBLIGATIONS ? MATIÈRES PREMIÈRES ? DÉRIVÉS ?



BON, N'EXAGÉRONS PAS. EN RÉALITÉ, SYLVAIN N'A PAS ACCÈS À LA GALAXIE FINANCIÈRE ENTIÈRE. TROIS ACTEURS LIMITENT SON POUVOIR DE DÉCISION. ET SI SYLVAIN AIME SE PLAINDRE DE LEURS INTERVENTIONS QUI MUSÈLENT SON INGÉNIOSITÉ, FORCE EST DE CONSTATER QU'ELLES LUI FACILITENT LA VIE EN RÉDUISANT L'INCERTITUDE… ET EN LUI FOURNISSANT UNE BELLE EXCUSE EN CAS DE CONTREPERFORMANCE!



QUAND BIEN MÊME. IL DEMEURE QUE SYLVAIN A À CHOISIR PARMI DES MILLIERS DE TITRES DONT LA VALEUR EST INCERTAINE ET NE CESSE DE VARIER AU FUR ET À MESURE DES ACHATS ET VENTES DES AUTRES PROFESSIONNELS DES MARCHÉS FINANCIERS.
SA CAPACITÉ À IDENTIFIER LES TITRES DONT **LE PRIX VA AUGMENTER**; VOILÀ CE QUI LUI ASSURERA LA RECONNAISSANCE DE SA DIRECTION, DE LA BANQUE CLIENTE ET DES « ÉVALUATEURS INDÉPENDANTS DES FONDS D'INVESTISSEMENT » D'UNE PART, ET SON BONUS ANNUEL D'AUTRE PART.

OR, PAR DÉFINITION, LES TITRES DONT LE PRIX VA AUGMENTER SONT CEUX QUI SERONT BEAUCOUP ACHETÉS PAR LES **AUTRES** ACTEURS FINANCIERS. SYLVAIN DOIT DONC SE METTRE À LA PLACE DE CES AUTRES ACTEURS POUR PENSER COMME EUX.

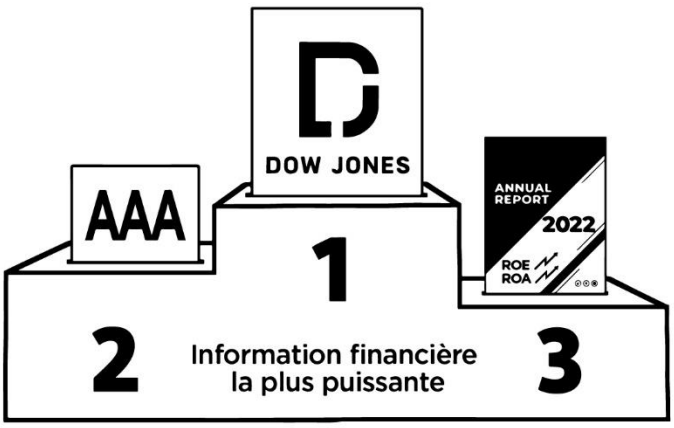
SAUF QU'EUX… FONT PAREIL !

C'EST POURQUOI TOUS LES PROFESSIONNELS FINISSENT PAR BASER LEURS DÉCISIONS SUR QUELQUES INFORMATIONS, RÉPUTÉES POUR INFLUENCER « LE MARCHÉ » (C'EST-À-DIRE CES PROFESSIONNELS).

ON PARLE DE **PROPHÉTIE AUTO-RÉALISATRICE**.

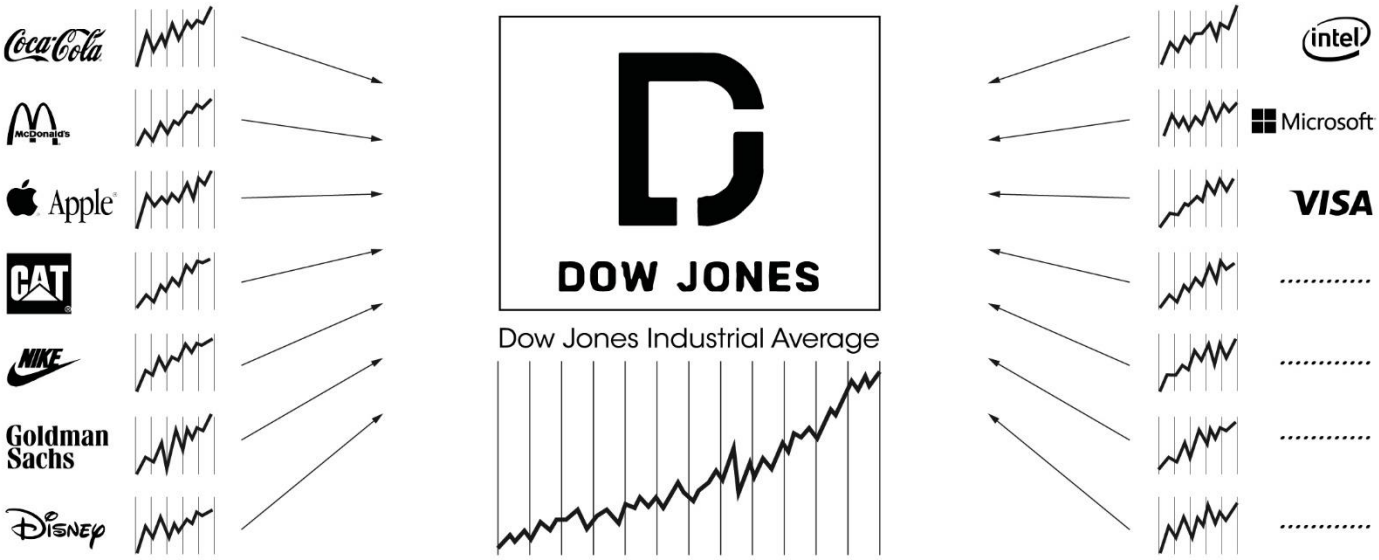
PARMI CES INFORMATIONS, IL Y A LES INDICATEURS DE PERFORMANCES FINANCIÈRES DES ENTREPRISES DONT LES ACTIONS (TITRES DE PROPRIÉTÉ) ET OBLIGATIONS (TITRES DE DETTE) SONT ÉCHANGÉES EN BOURSE.
MAIS IL Y A AUSSI DEUX AUTRES INFORMATIONS DONT L'IMPACT EST MOINS SOUPÇONNÉ, MAIS PEUT-ÊTRE PLUS IMPORTANT ENCORE…

CE SONT LES INDICES BOURSIERS ET LES NOTATIONS DE CRÉDIT.



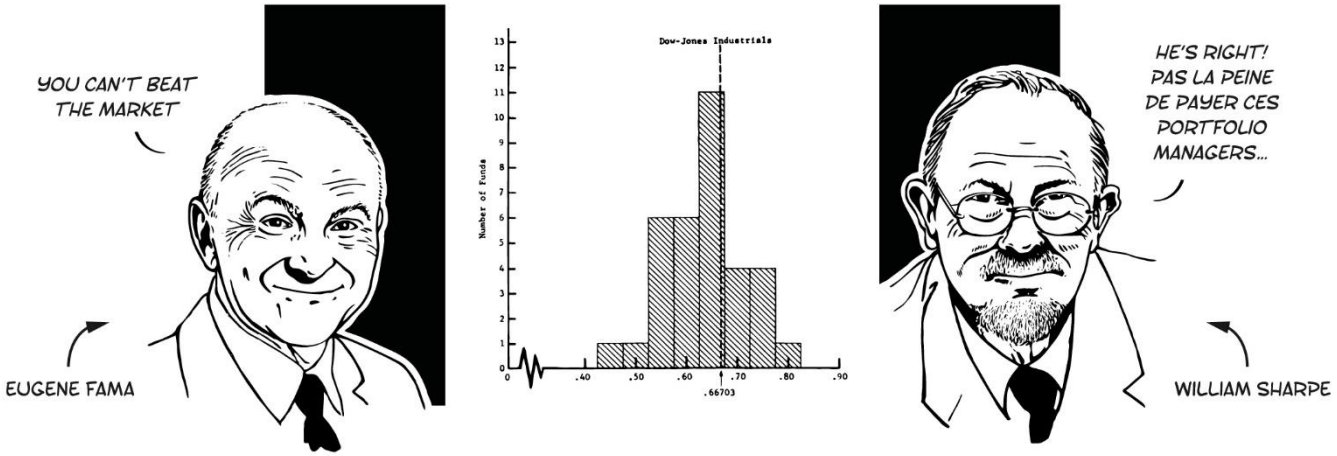
QU'EST-CE QU'UN INDICE BOURSIER ?
EN PRINCIPE, SIMPLEMENT UNE MOYENNE (PONDÉRÉE) DU PRIX D'UN ÉCHANTILLON D'ACTIONS.
LE DOW JONES EST PAR EXEMPLE CALCULÉ À PARTIR DU PRIX DES ACTIONS DE TRENTE GROSSES ENTREPRISES ÉTATS-UNIENNES.

MAIS, EN PRATIQUE, IL EST DEVENU BIEN PLUS QUE CE REFLET DE L'ÉVOLUTION DES PRIX…

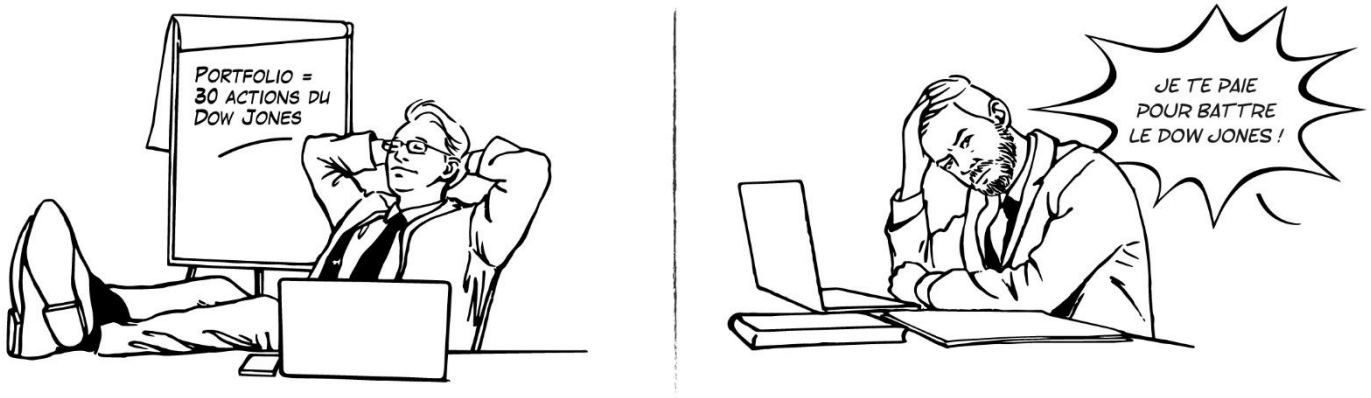


DANS LES ANNÉES 1960, DES UNIVERSITAIRES PROCHES DES MILIEUX FINANCIERS ONT MONTRÉ QUE LE RENDEMENT OBTENU PAR LA GRANDE MAJORITÉ DES « PORTFOLIO MANAGERS » (LES PRÉDÉCESSEURS DE SYLVAIN) ÉTAIT INFÉRIEUR AU RENDEMENT GÉNÉRÉ PAR L'ÉVOLUTION GÉNÉRALE DES COURS BOURSIERS. QUEL LIEN AVEC LES INDICES ?

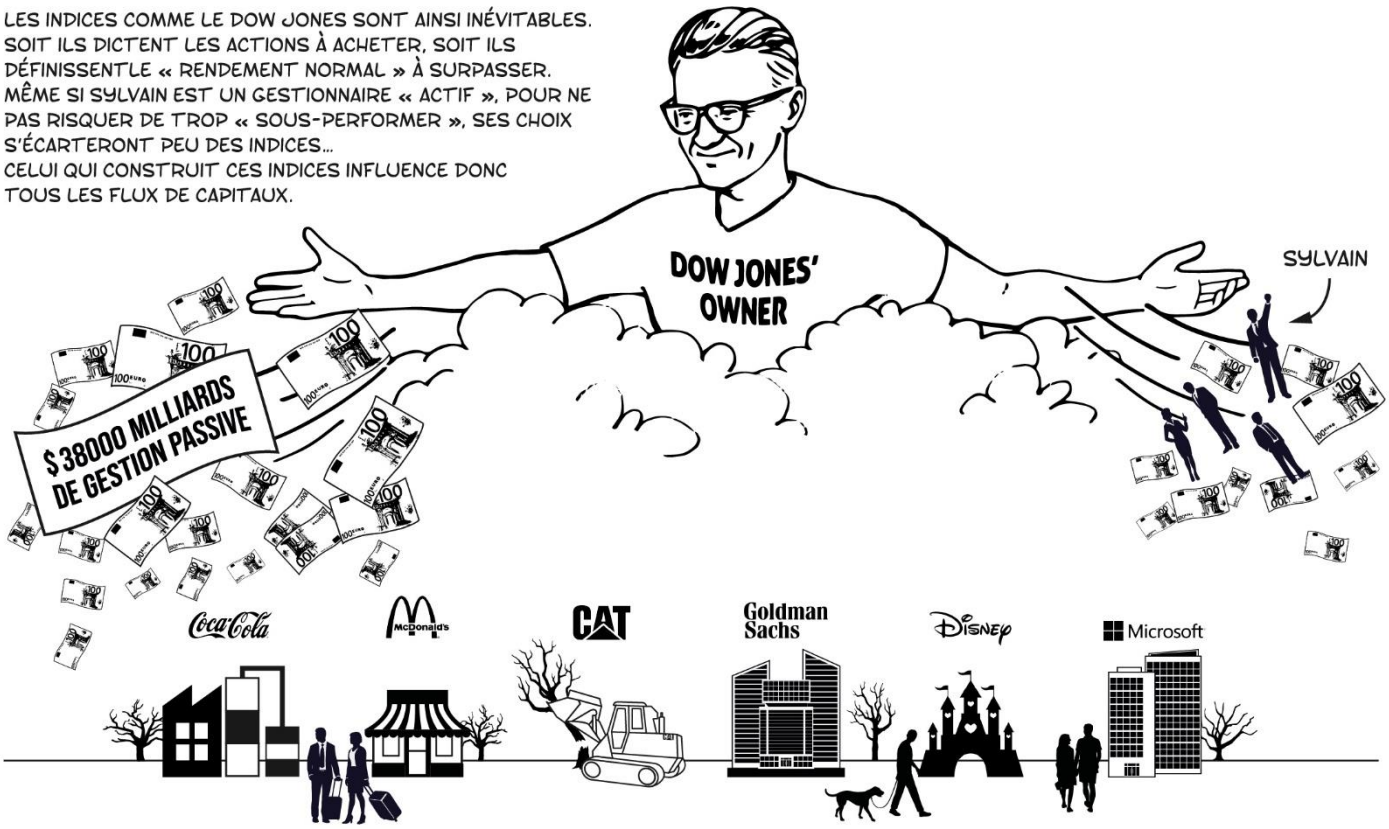
DEVINEZ CE QUI A ÉTÉ UTILISÉ POUR MESURER CETTE « ÉVOLUTION GÉNÉRALE DES COURS ».



À PARTIR DE LÀ, LES « PORTFOLIO MANAGERS » ONT DÛ CHOISIR ENTRE DEUX TYPES DE GESTION. LA « GESTION PASSIVE » SUIT LA RECOMMANDATION DES UNIVERSITAIRES ET SE CONTENTE D'INVESTIR DANS « TOUT LE MARCHÉ », C'EST-À-DIRE DANS LES ACTIONS DES ENTREPRISES INCLUSES DANS UN INDICE BOURSIER. LA « GESTION ACTIVE » S'EFFORCE DE FAIRE VALOIR UNE EXPERTISE EN **SÉLECTIONNANT** CERTAINS TITRES ANALYSÉS, CENSÉS MIEUX PERFORMER QUE... L'INDICE BOURSIER !



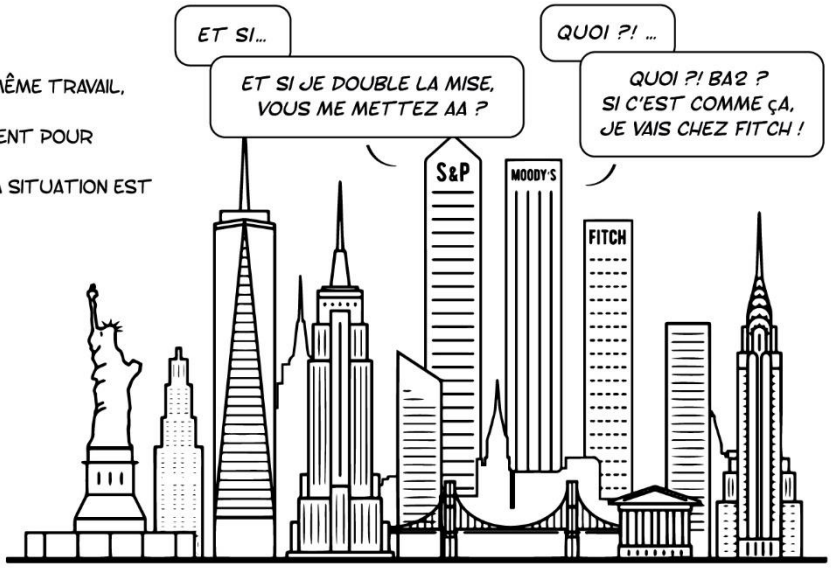
LES INDICES COMME LE DOW JONES SONT AINSI INÉVITABLES. SOIT ILS DICTENT LES ACTIONS À ACHETER, SOIT ILS DÉFINISSENT LE « RENDEMENT NORMAL » À SURPASSER. MÊME SI SYLVAIN EST UN GESTIONNAIRE « ACTIF », POUR NE PAS RISQUER DE TROP « SOUS-PERFORMER », SES CHOIX S'ÉCARTERONT PEU DES INDICES...
CELUI QUI CONSTRUIT CES INDICES INFLUENCE DONC TOUS LES FLUX DE CAPITAUX.



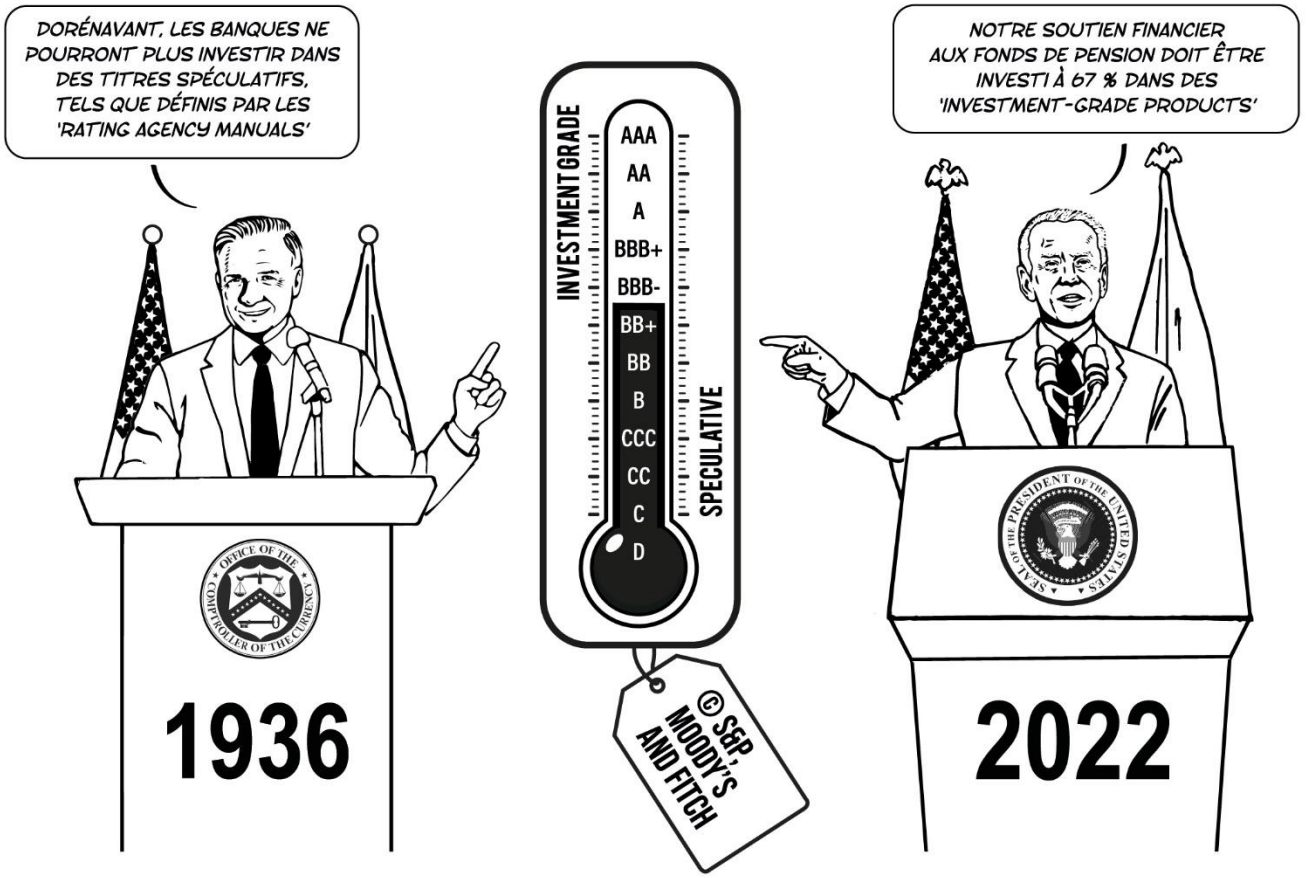
JUSTE DERRIÈRE LES INDICES BOURSIERS, SUR LA DEUXIÈME MARCHE DE NOTRE PODIUM, ON TROUVE UNE INFORMATION QUI NE CONCERNE PLUS LES ACTIONS, MAIS LES OBLIGATIONS. ALORS QUE L'ACTION EST UN TITRE DE PROPRIÉTÉ DONNANT DROIT À UNE PART DES PROFITS FUTURS DE L'ENTREPRISE, L'OBLIGATION EST UN TITRE DE DETTE DONNANT DROIT À UN REMBOURSEMENT.
SON PRIX DÉPEND DONC DE L'ESPÉRANCE QUE L'EMPRUNTEUR REMBOURSE.

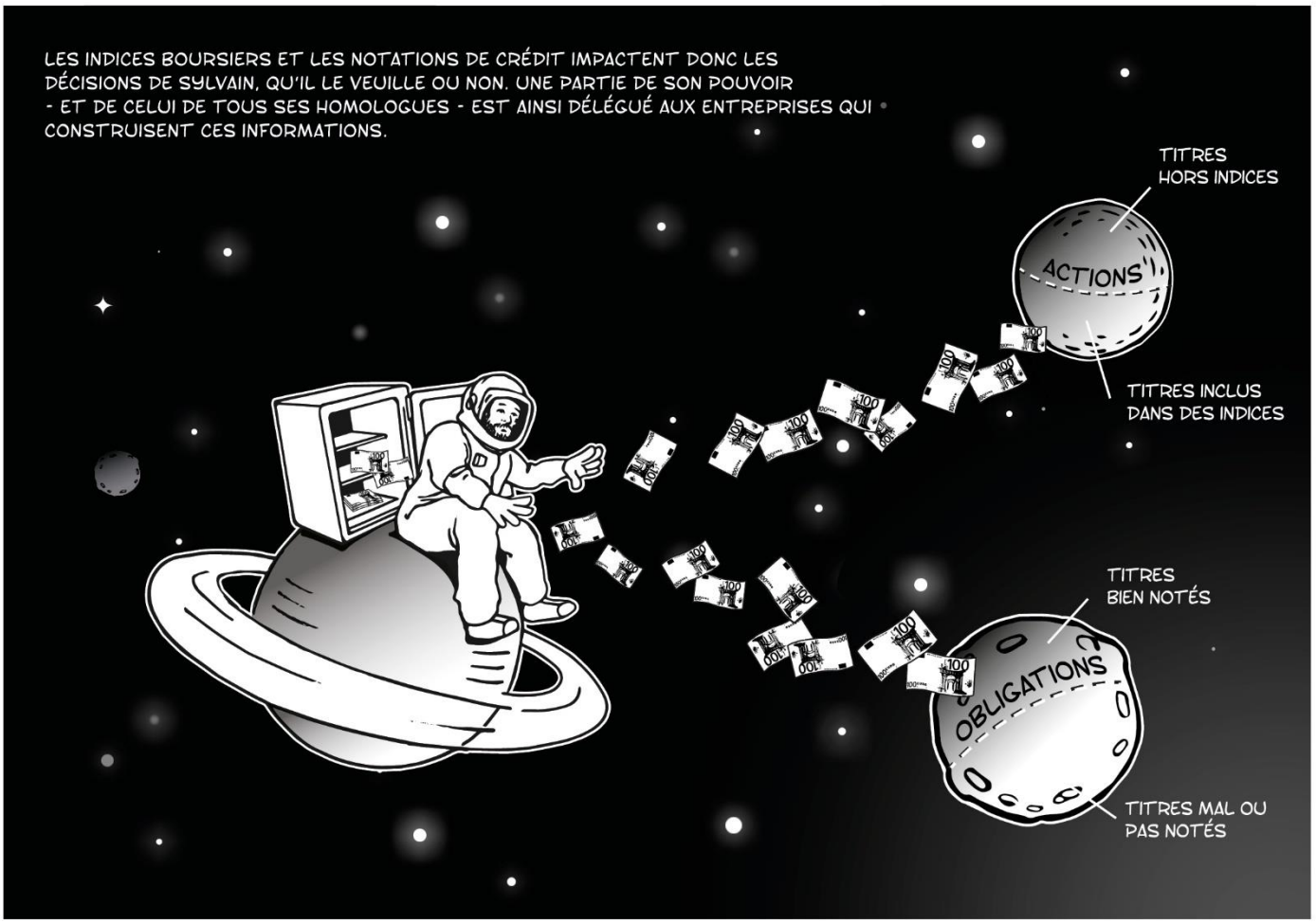
MAIS DIFFICILE DE CONTRÔLER LA SOLVABILITÉ DES MILLIERS D'ENTREPRISES ET ÉTATS EMPRUNTANT SUR LE MARCHÉ DES OBLIGATIONS... C'EST LÀ QUE NOTRE 2ÈME INFORMATION FAIT SON APPARITION : DÈS 1857, DES AGENCES ONT EFFECTUÉ CE CONTRÔLE ET ONT PUBLIÉ - OU PLUTÔT VENDU - DES NOTATIONS CENSÉES REFLÉTER LA FIABILITÉ DES EMPRUNTEURS.

AUJOURD'HUI, TROIS AGENCES FONT AUTORITÉ.
POUR L'ESSENTIEL, ELLES FONT TOUJOURS LE MÊME TRAVAIL, MAIS GAGNENT DE L'ARGENT DIFFÉREMMENT :
CE SONT DÉSORMAIS LES EMPRUNTEURS QUI PAIENT POUR OBTENIR UNE NOTATION.
COMME BEAUCOUP DE CRITIQUES L'ONT NOTÉ, LA SITUATION EST PROPICE AUX CONFLITS D'INTÉRÊTS...



MAIS QU'IMPORTE ! CES AGENCES SONT EN POSITION DE FORCE. TOUT LE MONDE A BESOIN DE LEURS NOTATIONS. L'EMPRUNTEUR POUR QUE SES OBLIGATIONS SOIENT VISIBLES SUR LE MARCHÉ ET L'OPÉRATEUR FINANCIER - TEL SYLVAIN - POUR SAVOIR QUELS TITRES ACHETER. MÊME LES RÉGULATEURS ONT CONTRIBUÉ - ET CONTRIBUENT ENCORE - À LEUR SUCCÈS EN BASANT CERTAINES LOIS SUR LEURS NOTATIONS !





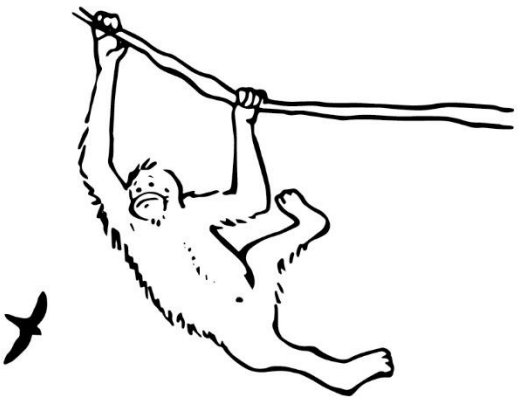
ET SI ON VOUS DISAIT QUE LA MÊME ENTREPRISE ÉTAIT PROPRIÉTAIRE À LA FOIS D'UN DES INDICES BOURSIERS LES PLUS INFLUENTS ET DES NOTATIONS DE CRÉDIT LES PLUS SUIVIES ?
CETTE ENTREPRISE EST STANDARD & POOR'S.
SES DÉCISIONS IMPACTENT NON SEULEMENT SYLVAIN ET LES MILLIERS D'AUTRES 'PORTFOLIO MANAGERS', MAIS AUSSI VALENTINE ET LES MILLIONS D'AUTRES PETITS INVESTISSEURS.

ET LES TRAVAILLEURS DES ENTREPRISES FINANCÉES (OU NON) PAR CES MILLIARDS DE DOLLARS !

ET LES HABITANTS DE LA PLANÈTE, ENDOMMAGÉE PAR DES SOCIÉTÉS TRÈS POLLUANTES, MAIS NOTÉES AAA ET INCLUSES DANS LES PRINCIPAUX INDICES...

TOUS CES ACTEURS SUBISSENT SES DÉCISIONS SANS AVOIR VOIX AU CHAPITRE.
COMMENT RÉVÉLER LE POUVOIR DE CES 'FOURNISSEURS D'INFORMATIONS' POUR EN DÉMOCRATISER LE FONCTIONNEMENT ?

VOILÀ L'AMBITION DE MA THÈSE DE DOCTORAT.



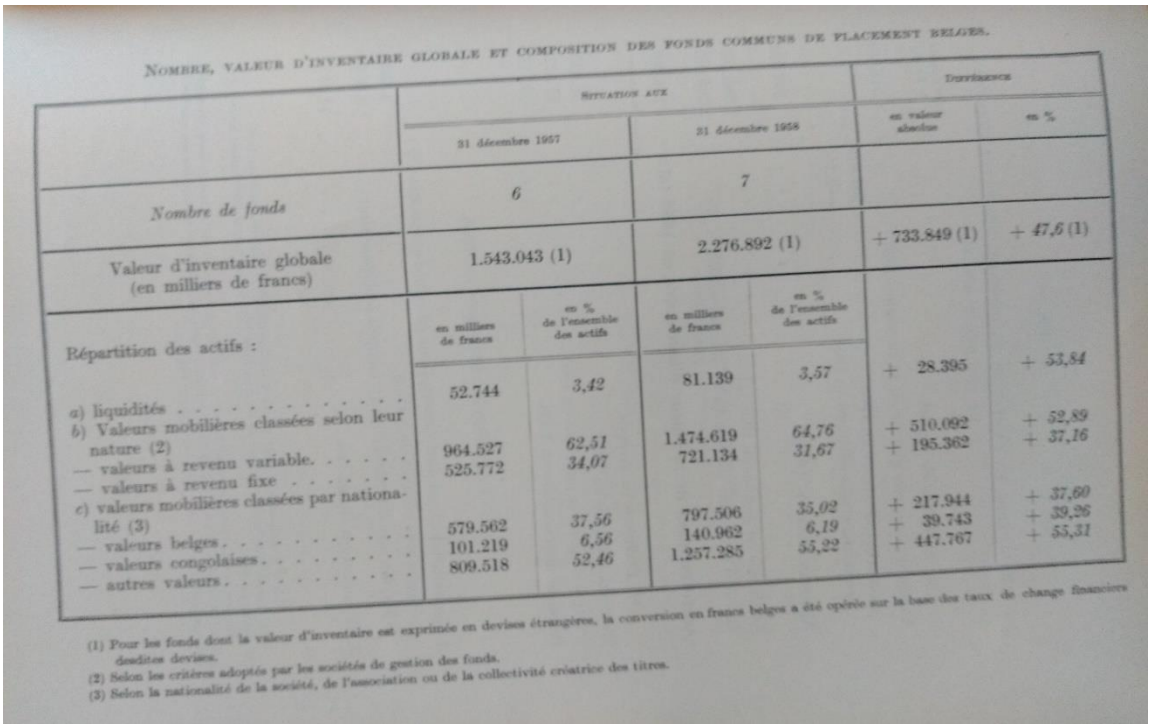
Embarquez à bord d'un vaisseau peu commun :
un billet de 100 euros !

Du compte en banque d'une jeune institutrice
aux confins du système financier mondial,
il vous fait découvrir les voies rapides de l'argent globalisé.
Pour lever les mystères d'un monde
– celui de la finance –
aux impacts sociaux et environnementaux
si problématiques.

Grâce aux dessins de Claude Duterme,
cette petite BD démêle les premiers fils de
la thèse doctorale de Tom Duterme
(aspirant FNRS à l'UCLouvain).

II. Methodological note on Belgian investment funds

This methodological note explains the sources and possible assumptions underlying three Figures in the chapter II: Figures 23, 30 and 31. Figure 23 shows the share of GDP invested in funds by Belgium between 1947 and 2021. For each year, the amount invested by Belgian residents - households, financial companies and non-financial companies - in investment funds (Belgian and foreign) is divided by gross domestic product expressed in nominal terms (i.e., without adjusting for inflation). For the numerator, three sources were used: from 1947 to 1956 (before legislation), the figures are those cited by Francis Requette (1968) and corroborated by Paul Smets (2012); from 1957 to 1997, the figures come from the annual reports of the regulatory authority, the *Commission Bancaire* (see Figure 54 below for an example); from 1998 to 2021, the figures are those of the financial account drawn up by the NBB[410]. As for the denominator (Belgian GDP), two sources were used: from 1947 to 1959, the figures were based on the growth rates proposed by Angus Maddison (2001) and adopted by the *Conseil économique, social et environnemental de Wallonie* (CESE Wallonie)[411]; for the remainder of the period (1960-2021), the data are those of the World Bank[412].



NOMBRE, VALEUR D'INVENTAIRE GLOBALE ET COMPOSITION DES FONDS COMMUNS DE PLACEMENT BELGES.

	Situation aux		Différences	
	31 décembre 1957	31 décembre 1958	en valeur absolue	en %
Nombre de fonds	6	7		
Valeur d'inventaire globale (en milliers de francs)	1.543.043 (1)	2.276.892 (1)	+ 733.849 (1)	+ 47,6 (1)
Répartition des actifs :	en milliers de francs / en % de l'ensemble des actifs	en milliers de francs / en % de l'ensemble des actifs		
a) liquidités	52.744 / 3,42	81.139 / 3,57	+ 28.395	+ 53,84
b) Valeurs mobilières classées selon leur nature (2)	964.527 / 62,51	1.474.619 / 64,76	+ 510.092	+ 52,89
— valeurs à revenu variable	525.772 / 34,07	721.134 / 31,67	+ 195.362	+ 37,16
— valeurs à revenu fixe				
c) valeurs mobilières classées par nationalité (3)	579.562 / 37,56	797.506 / 35,02	+ 217.944	+ 37,60
— valeurs belges	101.219 / 6,56	140.962 / 6,19	+ 39.743	+ 39,26
— valeurs congolaises	809.518 / 52,46	1.257.285 / 55,22	+ 447.767	+ 55,31
— autres valeurs				

(1) Pour les fonds dont la valeur d'inventaire est exprimée en devises étrangères, la conversion en francs belges a été opérée sur la base des taux de change financiers desdites devises.
(2) Selon les critères adoptés par les sociétés de gestion des fonds.
(3) Selon la nationalité de la société, de l'association ou de la collectivité créatrice des titres.

Figure 54 – Sources : Commission Bancaire, Annual report, 1958.

[410] https://stat.nbb.be.
[411] CESE Wallonie, « 75 ans d'histoire économique de Wallonie, 1954-2021 », mars 2021, www.wallonie.be.
[412] https://data.worldbank.org.

Figure 30 shows investment funds in Belgium from 1947 to 2021. Amounts invested by Belgian residents in Belgian and foreign funds come from the same sources as for Figure 23 (Requette, *Commission Bancaire*, NBB). From 1998 onwards, two other categories gradually appear: amounts invested by non-residents in Belgian funds (yellow zone), and amounts invested by Belgian residents in foreign funds not distributed in Belgium (gray zone). For the first category, the figures come from Belgium's financial account: on the assets side of the "Rest of the World" balance sheet, they include fund shares held by non-residents in Belgium (the comparison between this asset item and the liabilities side of the "Total Economy" also provides information on the amounts invested by residents in Belgian funds). As for the second category, its figures result from a comparison between, on the one hand, the amounts invested by residents in foreign funds as derived from the NBB's financial account and, on the other, the "inventory value of foreign funds publicly distributed in Belgium" as provided by the FSMA[413].

Figure 31 shows the allocation of Belgian investment funds from 1957 to 2021. It shows both the proportion of stocks, bonds, cash and fund shares in Belgian fund portfolios, and the proportion of Belgian securities in these same portfolios. These two headings are communicated in the annual reports of the *Commission Bancaire* from 1957 to 1997 (see Figure 54). For the period 1998-2021, the first heading is based on FSMA figures published with the NBB's other financial statistics: these inform us of the types of financial assets held by Belgian non-money-market funds. In order not to neglect the weight of Belgian money-market funds, their net asset value has been added to the "Cash" section in graph 10; this maneuver is only fully correct if these funds invest their entire portfolio in cash, which is rarely the case. The proportion of cash, as represented in Figure 31, is therefore slightly overestimated. Finally, as regards the proportion of Belgian securities for the period 1998-2021, this is estimated from three sources: statistics published by the ABOPC as an appendix to the *Revue bancaire et financière* in 1997, 1998, 1999 and 2001; ECB statistics on domestic corporate shares held by Belgian investment funds from 2009 to 2021, which are taken up and analyzed in recent ECB research (Molestina Vivar et al., 2020); BEAMA statistics, published in its annual reports from 2014 to 2021. Although these different sources allow us to establish with certainty the trend towards internationalization of the investment portfolio of Belgian funds, the figures derived from them must be interpreted with caution, particularly those covering the period 2002-2009.

[413] https://stat.nbb.be.

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