



Université catholique de Louvain

LOUVAIN – EUROPE POLITICAL SCIENCE INSTITUTE

SCHOOL OF POLITICAL AND SOCIAL SCIENCES

The individual in policy change:
Policy learning in the liberalization of network industries in Belgium

Stéphane MOYSON

Thesis submitted in fulfillment of
the requirements for the degree of
Ph. Doctor in Political and Social Sciences

Co-Directors: Prof. David AUBIN (Université catholique de Louvain)

Prof. Eric MONTPETIT (Université de Montréal)

June 2014



Université catholique de Louvain

LOUVAIN – EUROPE POLITICAL SCIENCE INSTITUTE

SCHOOL OF POLITICAL AND SOCIAL SCIENCES

The individual in policy change:
Policy learning in the liberalization of network industries in Belgium

Stéphane MOYSON

Thesis submitted in fulfillment of
the requirements for the degree of
Ph. Doctor in Political and Social Sciences

Co-Directors: Prof. David AUBIN (Université catholique de Louvain)

Prof. Eric MONTPETIT (Université de Montréal)

June 2014

*To Anne-Catherine - for her (inconditional) support,
for her (unlimited) patience,
and, above all, for her love.*

MEMBERS OF THE JURY

Prof. Christian DE VISSCHER (Université catholique de Louvain, Belgium), President of the Jury

Prof. David AUBIN (Université catholique de Louvain, Belgium), Co-director of the PhD Committee

Prof. Eric MONTPETIT (Université de Montréal, Canada), Co-director of the PhD Committee

Prof. Jan VAN DAMME (Katholieke Universiteit Leuven, Belgium), Member of the PhD Committee

Prof. Christopher WEIBLE (University of Colorado, Denver, USA), Member of the PhD Committee

Prof. Stéphane NAHRATH (IUKB & Université de Lausanne, Switzerland), External Member of the Jury

Prof. Nathalie SCHIFFINO (Université catholique de Louvain, Belgium), External Member of the Jury

ACKNOWLEDGMENTS

David Aubin was my Supervisor at the Université catholique de Louvain. He has supported me since the beginning of my master thesis in 2007 and, believe me, this has been a more-than-full-time job. In addition to his rich intellectual input, his strategic advices in developing the project, the “area of comfort” he organized around me for conducting my research, and his kindness, let me highlight two of his qualities. First, he is a very refined and cultivated person with whom it is stimulating to have discussions on various topics far beyond the scope of political science. Second, he is a very trustworthy person. He committed to support my projects in 2007 for the first time and, I must say, he has always been present since this moment. Thanks, also, for having welcomed Anne-Catherine so warmly in the offices. This contributed to the implementation of my PhD project. This was also very appreciated by Anne-Catherine herself. Thanks, finally, to Ariane for the time David spent on my PhD rather than at home. I hope that this time was not too significant.

Eric Montpetit was my Co-Supervisor at the Université de Montréal. His recommendations on policy learning, web surveys, and data analysis were insightful. The two scientific stays that he allowed me to have at the Université de Montréal were also very valuable. Regards, also, to all Members of the Department of Political Science and particularly to Jean-Philippe and Penelope, who made my stays unforgettable. They will remain very good friends. Anne-Catherine and I hope to welcome them in Europe as soon as possible.

Christopher Weible and Jan Van Damme agreed very spontaneously to be Members of my PhD Committee. They were very active Members of this Committee by providing substantial feedback on my dissertation and by connecting me to relevant research networks. It remains very stimulating to work with them and I am more than certain that this feeling will perdure over time. To Jan: In the medium term, I commit to examine the organizational determinants of policy learning with multilevel models. To Chris: I commit to work on still better measures of policy learning.

Stéphane Nahrath and Nathalie Schiffino kindly agreed to be the external Members of my Jury. The comments that they provided about my dissertation were thorough and constructive. I can sincerely write that, with the Committee Members, they made of the private defense three of the best hours I have spent at the University since 2003. Collaborating with them in the context of other research projects was also an honour that I appreciated very much.

At the Université catholique de Louvain, I have been surrounded by several very qualified and friendly Colleagues of the Louvain-Europe Institute. I would like to thank them. I hope (and I am sure) that those who are still carrying on their PhD project will succeed. Regards to my Colleagues of the Centre Montesquieu, especially those who shared a corridor with me and had to bear my noisy music: Monica Garcia, François Lohest, Emmanuelle Mathieu, Caroline Montuelle, Jean-Pierre Muhingisa, Maxime Petitjean, François Randour, and Diane van Gils. Special regards to Christian de Visscher who also agreed to chair the Jury of my PhD defense and to Virginie de Moriamé for her kind presence. I could also rely on five very crucial people at the Louvain-Europe Institute, namely: Annick Bacq, Cécile Cléda, Brigitte Lambeau, Karine Verstraeten, and Françoise Welvaert. How many times did I ask them to solve me a problem by... yesterday? Impossible to enumerate here. There is a constant, however: they always succeeded. Finally, I would like to dedicate this dissertation to Olivier Maiscocq. He was a brilliant scientist and a friendly guy. He left us too quickly. Where he is, I hope

that he will read that. At the Université catholique de Louvain, I also benefited from the recommendations of Pierre Baudewijns, Céline Bugli, Vincent Dupriez, and Claire Dupuy. Still at Louvain-la-Neuve, I am also very grateful to the friendly staff of the “Petit Gourmand” and “Lamidoré”. Their support was not only gastronomic but also social.

Steven Van de Walle is the Director of the postoc project in which I am involved at the Erasmus University Rotterdam since September 2013. I benefited from the time he gave me to conclude my PhD project conveniently. It is really fulfilling to work as a researcher under his supervision. Special thanks, also, for the understanding of the other members of the project – Sandra Groeneveld, Shelena Keulemans, and Nadine Raaphorst – as well as for the support of the other Colleagues in the room T17-46 – Ziya Aliyev, Dion Curry, Sebastian Jilke, and Joris van der Voet.

I am also grateful to my Friends from the Collège Notre-Dame de Basse-Wavre as well as from the Master of Political Science at the Université catholique de Louvain. I did not see them enough the last years. This is my fault and I hope I will improve myself on this respect. Special regards to Gaetano Termine. Thanks to him, my first research experiences were really exciting. He contributed that way to the beginning and fulfilment of this PhD project.

With this dissertation, I also hope that I deserve the affection, energy, and time that my family has devoted to me for years. I write “deserve” because I can sincerely claim that I grew up supported and loved by very good parents. My brother, Christophe, is very kind and his availability for me has been without limit. In the future, I hope that my Father and I will still work together; that I will still have enriching discussions when commuting with my Mother in the train or anywhere else; and that I will have new opportunities to have trips and many other activities with Christophe.

I am happy to have very good relations with my family-in-law. I acknowledge the support that they have provided to me, first of all by being present for Anne-Catherine when my PhD project kept me away from her, but also by welcoming me, discussing with me, or having fun with me. Amaury’s jokes and thoughtfulness as well as Nicolas and Hélène’s encouragements were very important as well. The end of my PhD does not mean, however, that I will give up on some basics: trips to Dunkerque with Martine, “movings” to the Mont Noir with Luc, as well as brown potatoes and Nutella.

Last but not least, the presence and support of Anne-Catherine were constant, lovely, and decisive for my PhD. I acknowledge the sacrifices she made to allow me going on with my project. I am forever grateful to her. I take advantage of this opportunity to make two solemn commitments. First, I promise that I will try to better manage to preserve our evenings and weekends. Second, she can rely on me to benefit from the same presence and support for her own projects, whatever they will be. To conclude, I am fortunate that Anne-Catherine has already accepted a demand that, nevertheless, I will repeat here: I hope that we will get married as soon as our respective projects allow it!

***For any quality that this dissertation can present, the role of those people was crucial.
I thank them very much for that.***

Stéphane,
17th April 2014

KEYWORDS

Advocacy Coalition Framework

Energy

Interest

Liberalization

Multilevel regression

Network industry

Policy learning

Policy preference

Public utility

Railways

Theory of Reasoned Action

Trust

Web survey

ABSTRACT

Policy learning is an important factor of policy change and designates the relatively enduring alterations of policymakers' beliefs, attitudes and behavioral intentions with respect to policies. While there is a considerable amount of knowledge about the influence of institutions, organizations, and networks on policy learning, little research has been conducted about the individual conditions of this mechanism. Based on an analytical framework combining the Advocacy Coalition Framework's concepts (at the collective level) and the Theory of Reasoned Action's concepts (at the individual level), this research focuses on the individual conditions of policy learning, in particular policymakers' interests and trust.

The test of the research hypotheses is mainly based on the analysis of the data from a web survey conducted among 1256 policymakers from the Belgian rail and electricity sectors. The use of multilevel regression models to analyse the data of the survey allows to control the influence of aggregate-level effects and to focus on the individual-level conditions of policy learning. The research focuses on the evolution of policymakers' preferences with respect to a policy (here, the European liberalization policy process) as an operational measure of policy learning.

The research shows that policymakers' preferences do not evolve very much over time. They do evolve, however. To explain this, key factors are policymakers' perceptions about the impacts of the policy on their personal interests and the interests of their organization: policymakers will adapt their policy preferences according to these perceptions. Nevertheless, much room remains for other determinants of policy learning. This includes socio-psychological factors, like the climate of trust that policymakers perceive in the policy subsystem in which they are involved. This climate can prompt them to recognize more easily the negative effects that policy changes have on them and consequently inclines their policy preferences to evolve more negatively. The results also suggest that policymakers use heuristic-based modes of reasoning for adapting their preferences about policies. For example, when they give much importance to their interests, they seem to expect more negative impacts from policy changes and their policy preferences also evolve more negatively. In other words, those policymakers weigh expected losses more and expected gains less than other comparable policymakers.

The research contributes to the Advocacy Coalition Framework in two respects. First, it advances a refined conceptual apparatus to account for the individual-level aspects of the policy process (based on the triptych: beliefs, attitudes, and behavioral intentions). Second, it considers individual determinants of policy learning. In particular, it focuses on policymakers' interests of which the role in policy learning has been less seriously considered by existing research.

LONG ABSTRACT

Policy decisions are, of course, a matter of political power: they result from the contest between frames and counter-frames about the nature and severity of the public problems, their causes, the responsibilities for their occurrence or escalation, as well as the appropriate political solutions that should be implemented to solve them. Those frames, however, are ideational constructs, co-elaborated and shared by small to large coalitions of policymakers from the government, public administration, and various public and private organizations. The content of policies is a stylized synthesis of the beliefs held by the individual members of those coalitions. Hence, policies also depend on policymakers' beliefs and preferences. Those evolve over time because policymakers are incessantly confronted with changing technological, environmental or human conditions or actively search for new information and experience through study, deliberation, or trial-and-error. The evolution of beliefs, attitudes and resulting behavioral intentions of individual policymakers with respect to policies is often called "policy learning". This mechanism is at least as crucial as power, in policy changes.

Political science has generated a considerable amount of knowledge about the influence of institutions, organizations, and networks on policy learning. Little research has been conducted about the individual conditions of this mechanism. What do individual policymakers believe? How does this contribute to the formulation of their preferences with respect to policies? Why do these policy preferences evolve – or not – over time? These questions are at the centre of this research on the individual conditions of policy learning.

The analytical framework of this research may be viewed as a connection between the frameworks of two theories: the Advocacy Coalition Framework and the Theory of Reasoned Action. The Advocacy Coalition Framework has become a classic theory of the policy process, considering the role of policy learning therein. The Theory of Reasoned Action is a framework organizing the relations among the conscious mental constructs of individuals – beliefs, attitudes, perceptions, and behavioral intentions – as well as between mental constructs and real behaviours. In the Advocacy Coalition Framework, policy learning is viewed as the alterations to the system of policy beliefs characterizing each policymaker. In this research, this policy belief system is situated in the more general Theory of Reasoned Action's framework. Shortly said, the Theory of Reasoned Action framework will be used to detail the individual-level aspects of the Advocacy Coalition Framework.

Two network industries in which the European liberalization policy process has been implemented – the Belgian rail and electricity sectors – serve as the empirical cases for testing the hypotheses of this research. Network industries involve the construction, management, and use of a network for delivering to final customers some goods or services produced elsewhere. The European liberalization process is a major policy change in Member States' network industries. First, it has drastically increased the importance of the European authorities in the regulation of those industries. Second, it has confined the monopoly of public authorities to the management of physical networks, whereas the production and delivery of goods (e.g., electricity) and services (e.g., railway transportation) has progressively been opened to competition. The evolution of national policymakers' preferences with respect to the European liberalization process, between the beginning of the process (the early 1990s) and the moment of the survey (2012), is used as an

operational measure of policy learning in this research. The test of the research hypotheses is mainly based on the analysis of the data from a web survey conducted among 1256 policymakers from the Belgian rail and electricity sectors. At the aggregate level, the preferences of the policymakers with respect to the liberalization policy mainly depend on the sector and the type of organization which they are members of. The use of multilevel regression models to analyse the data of the survey allows to control the influence of these aggregate-level effects and to focus on the individual-level conditions of policy learning.

The research focuses on the evolution of the degree of favourableness – the preferences – of policymakers with respect to policies (here, the European liberalization policy process). In particular, two indicators of this dependent variable are examined: Preferences change direction and Preferences change intensity. Preferences change direction indicates to which extent policymakers' preferences evolve favourably or disfavourably over time, with respect to a policy. By contrast, Preferences change intensity measures the total amount of policymakers' preferences change (independently on the direction). Preferences change direction and Preferences change intensity are used as two indicators of policy learning, in this research.

The results show that policymakers' preferences do not evolve very much over time. They do evolve, however. To explain this, key factors are policymakers' perceptions about the impacts of the policy on their personal interests and the interests of their organization: policymakers will adapt their policy preferences according to these perceptions. Nevertheless, much room remains for other determinants of policy learning. This can include political beliefs or ideology, but also socio-psychological factors, like the climate of trust that policymakers perceive in the policy subsystem in which they are involved. This climate can prompt them to recognize more easily the negative effects that policy changes have on them and consequently inclines their policy preferences to evolve more negatively. The results also suggest that policymakers use heuristic-based modes of reasoning for adapting their preferences about policies. For example, when they give much importance to their interests, they seem to expect more negative impacts from policy changes and their policy preferences also evolve more negatively. In other words, those policymakers weigh expected losses more and expected gains less than other comparable policymakers.

The research contributes to the Advocacy Coalition Framework in two respects. First, it advances a refined conceptual apparatus to account for the individual-level aspects of the policy process (based on the triptych: beliefs, attitudes, and behavioral intentions). Second, it considers individual determinants of policy learning. In particular, it focuses on policymakers' interests of which the role in policy learning has been less seriously considered by existing research.

TABLE OF CONTENT

Introduction	17
Chapter 1. Policy learning	23
1.1. Conceptual approach of the research	23
1.2. Beliefs, behavioral intentions, and concrete behaviors	25
1.3. Human learning	31
1.4. Approaches of policy learning	35
1.4.1. Managerialist approaches: organizational learning	38
1.4.2. Transfer, diffusion and convergence approaches	41
1.4.3. Social learning approaches: puzzling and learning.....	44
1.4.4. Synthesis and connection to the present research	49
Chapter 2. Analytical framework of the research	55
2.1. Collective-level concepts: the Advocacy Coalition Framework	55
2.2. Individual-level concepts: the Theory of Reasoned Action in a policy context	63
2.3. Two indicators of Policy preferences change: Direction & Intensity	70
2.4. The role of interests and trust in policy learning.....	73
2.4.1. Interests.....	75
2.4.2. Trust	83
Chapter 3. The European liberalization policy process in the Belgian rail and electricity sectors	90
3.1. Some regulative landmarks	92
3.2. Connections with the analytical framework of the research	95
Chapter 4. Data measurement, collection, and analysis	100
4.1. Data measurement	102
4.1.1. Measurement validity.....	103
4.1.2. Measurement reliability.....	105
4.1.3. Measurement of the dependent variable and its two indicators	108
4.1.3.1. Preferences change.....	109
4.1.3.2. Enduring change	113
4.1.3.3. Synthesis and example	113
4.1.4. Measurement of the covariates	115
4.1.5. Measurement of the explanatory variables	121
4.1.5.1. Interests.....	121

4.1.5.2.	Trust	125
4.2.	Questionnaire.....	126
4.3.	Survey	129
4.3.1.	Population	130
4.3.2.	Penetration rate.....	132
4.3.3.	Organizational participation rate.....	134
4.3.4.	Individual response rate	136
4.3.5.	Description of the sample	139
4.4.	Data analysis	146
4.4.1.	Multilevel regression analysis	147
4.4.1.1.	Multilevel regression analysis: general presentation.....	148
4.4.1.2.	Multilevel regression analysis in this research	152
4.4.2.	Statistical testing.....	156
4.4.2.1.	Test of variables: significance, effect size, and power	157
4.4.2.2.	Test of models: fit statistics	160
4.4.3.	Graphical presentation of the results.....	164
Chapter 5.	Results	166
5.1.	Dependent variable	166
5.1.1.	Past and current preferences	168
5.1.2.	First indicator of the dependent variable: Preferences change direction.....	170
5.1.3.	Second indicator of the dependent variable: Preferences change intensity.....	172
5.1.4.	Intercept-only models of Preferences change direction and intensity	173
5.2.	Covariates.....	175
5.2.1.	Descriptive analysis.....	176
5.2.2.	Multilevel regression analysis	182
5.2.3.	Discussion of the results	186
5.3.	Interests.....	195
5.3.1.	Descriptive analysis.....	195
5.3.2.	Interests: subjective versus objective	201
5.3.3.	Multilevel regression analysis	204
5.3.4.	Test of the hypotheses and other results.....	215
5.3.5.	Discussion of the results	219
5.4.	Trust	223
5.4.1.	Descriptive analysis.....	224

5.4.2.	Multilevel regression analysis	227
5.4.3.	Test of the hypotheses.....	232
5.4.4.	Discussion of the results	233
5.5.	Interests and trust combined	234
Conclusion		238
	Conclusions related to theory and practice	243
	Limitations and future research	246
References		251
List of Tables		271
List of Figures		273
Appendices		275
	Invitation sent by email to the subsystem members to participate to the survey	276
	Internal consistency of the construct variables of the research	277

When some consensus exists that many people are confronted with a same problem and that a collective solution would be better than a sum of individual initiatives, it is common to rely on public authorities to address this problem. In this case, public authorities define the causes and consequences of the problem. They also try to design and implement a solution. Those outputs are the basic components of what is commonly called a public policy.

Network industries typically result from a long history of successive public policies. Network industries involve the construction, management, and use of a network for delivering to final customers some goods or services produced elsewhere. Electricity, for example, is a good produced in several places (nuclear power plants, wind turbines, etc.) and then delivered through an electricity network to organizations and citizens. The rail network is used to move trains containing passengers or goods from one point to another. Originally, railway transportation resulted from several local and private initiatives to solve problems related to the mobility of merchandise and people. Likewise, local electricity networks emerged in different places to address local needs. In both cases, however, consensus progressively grew that the problems addressed by those local initiatives were common to many people; public authorities should be able to implement better solutions. In many European countries, as a result, the rail and electricity sectors turned out to be entirely managed by national public authorities during the 20th century. To this title, the liberalization policy process of network industries undertaken by the European Union since the 1990s has been a major policy change in two respects. First, it has drastically increased the importance of the European authorities in the regulation of network industries. Second, it has confined the monopoly of public authorities to the management of physical networks, whereas the production and delivery of goods (e.g., electricity) and services (e.g., railway transportation) has progressively been opened to competition.

Our modern societies are complex. Public authorities as well. Policies are not designed by an isolated, uniform government. They result from many parts of the Government, including different ministries or political cabinets, but also more or less independent agencies, public companies and other public organizations. The course of policy decisions is also influenced by a myriad of private companies and other stakeholders, interests groups or lobbies. A policy subsystem is the set of people who, given their position and action, exert a substantial influence on policy decisions in a given geographical and functional policy sector, like the Belgian rail and electricity sectors. Subsystem members or policymakers come from various institutions and organizations. Those structures influence their individual action. Policymakers are also related to each other with inter-organizational links: they share knowledge, produce expertise and coordinate their action within networks. Political science has generated a considerable amount of knowledge about the influence of institutions, organizations, and networks on the course of policy decisions. However, many individual behaviours fall outside the theoretical expectations related to the influence of structures. For example, some “policy entrepreneurs” may have well-entrenched policy opinions, attitudes and behaviours that do not fit the average or official stance of the structure they belong to. Less radical differences among individuals are more frequent and need to be accounted for so as to understand the course of policymaking.

Policies are, of course, a matter of political power: they result from the contest between frames and counter-frames about the nature and severity of the public problems, their causes, the responsibilities for their occurrence or escalation, as well as the appropriate political solutions that should be implemented to solve them. Those frames, however, are ideational constructs, co-elaborated and shared by small to large coalitions of policymakers. Their content is a stylized synthesis of the beliefs held by the individual members of those coalitions. Hence, policies depend on ideas and their evolution. Policymakers' beliefs and preferences evolve over time because policymakers are incessantly confronted with changing technological, environmental or human conditions. New technologies, for example, allow humans to exploit resources more effectively. With respect to the environment, resources have limited stocks and their use may lead to scarcity or pollution. Human conditions, like culture, also evolve. Consequently, policymakers' beliefs and preferences about the state of the world and about policies are constantly challenged. Policymakers not only face changing conditions. They may also actively search for new information and experience through study, deliberation, or trial-and-error. As a result of new challenges and active knowledge development, policymakers' beliefs and preferences change over time. On the other hand, policymakers can also defend existing beliefs, sometimes despite contradictory information. The evolution of beliefs, attitudes and resulting behavioral intentions of individual policymakers with respect to policies is often called "policy learning".

What do individual policymakers believe? How does this contribute to the formulation of their preferences with respect to policies? Why do these policy preferences evolve – or not – over time? These questions are at the centre of this research on the individual conditions of policy learning. As an operational measure of policy learning, the research will focus on the evolution of the degree of favourableness of policymakers with respect to policies (their "policy preferences"). In particular, two indicators of this dependent variable will be examined: Preferences change direction and Preferences change intensity. Preferences change direction indicates to which extent policymakers' preferences evolve favourably or disfavorably over time, with respect to a policy. By contrast, Preferences change intensity measures the total amount of policymakers' preferences change (independently on the direction). Preferences change direction and Preferences change intensity are used as two indicators of policy learning in this research.

The research will show that policymakers' preferences do not evolve very much over time. They do evolve, however. To explain this, key factors are policymakers' perceptions about the impacts of the policy on their personal interests and the interests of their organization: policymakers will adapt their policy preferences according to these perceptions. Nevertheless, much room remains for other determinants of policy learning. This can include political beliefs or ideology, but also socio-psychological factors, like the climate of trust that policymakers perceive in the policy subsystem in which they are involved. This climate can prompt them to recognize more easily the negative effects that policy changes have on them and consequently inclines their policy preferences to evolve more negatively. The results also suggest that policymakers use heuristic-based modes of reasoning for adapting their preferences about policies. For example, when they give much importance to their interests, they seem to expect more negative impacts from policy changes and their policy preferences also evolve more negatively. In other words, those policymakers weigh expected losses more and expected gains less than other comparable policymakers.

The Advocacy Coalition Framework is a major building block of the analytical framework of this research. The Advocacy Coalition Framework has become a classic theory of the policy process, considering the role of policy learning therein. The research contributes to this theory in two respects. First, it advances a refined conceptual apparatus to account for the individual-level aspects of the policy process (based on the triptych: beliefs, attitudes, and behavioral intentions). Second, it considers individual determinants of policy learning. In particular, it focuses on policymakers' interests of which the role in policy learning has been less seriously considered by existing research.

Policy learning is crucial in the policy process. It may happen that policymakers' mental constructs have little influence on some events, for example when they conform to an order from their hierarchy. However, most of their behaviors depend, at least in part, on their perceptions and beliefs. Faced with common opportunities and constraints, several policymakers will adopt different behaviors with respect to a policy, depending on their beliefs and perceptions. As a result, policy learning, the evolution of these mental constructs, is a determining factor of the policy process. It should be clear that the influence of this cognitive process is not limited to policy change, as such, but plays a role in most of the other stages of the policy process. This includes the implementation of new policies, which may be facilitated or impeded by the attitude of policymakers. This applies to the implementation of the European liberalization policy of the rail and electricity sectors in Member States. Policy learning is also related to the evaluation of policies. Policy learning influences policy change but is also important in policy stability, policymakers being able to adopt obstructive behaviors in accordance with beliefs and perceptions unfavourable to a new policy. Policy learning is not only essential from an analytical perspective but has also normative implications. For example, policy learning is often viewed as an important determinant of political progress. The relation between learning, increase in intelligence, and increase in effectiveness, however, is not straightforward. Beliefs and preferences may change without increased intelligence. In addition, due to the bureaucratic form of governments, increases in intelligence do not necessarily involve increases in effectiveness.

Little research has been conducted about the individual conditions of policy learning. Learning being the result of new information and experiences, it is essentially a causal *mechanism* which explains the course of mental constructs (about policies). It depends on many variables and may follow many paths of causality. For example, a nuclear catastrophe which is associated with the failure of a nuclear policy most often leads policymakers to revise their beliefs about this policy. There are many individual conditions, however, which explain why the preferences of some policymakers will change very much, whereas the preferences of other policymakers from the same organization will only change a little. Among the policymakers who will revise their preferences, some previous proponents of nuclear energy will advocate the maintenance of nuclear power plants even more strongly, whereas other policymakers will advocate their removal. On the other hand, policy learning also depends on the will of individual policymakers to search for, or to resist, new information and experiences.

Two categories of individual-level conditions of policy learning are investigated in this research: several conditions related to policymakers' interests as well as several conditions related to policymakers' trust. The research focuses on the role of interests for two reasons. The first reason is theoretical: there is much debate on the role of interests in social and political attitudes. Rational choice studies are often based on the assumption that the rational maximization of interests is the

actors' basic attitudinal and behavioral motivation. Another consistent body of literature, however, calls this assumption into question. The present research aims to contribute to this debate by looking at the influence of interests on attitudinal change (policy learning). Most importantly, a new approach to view and to measure policymakers' interests is put forward. This approach is based on policymakers' self-reported perceptions collected thanks to the survey on which this research is based. Most existing studies deduce actors' interests on the basis of the position they hold in society or in a given organization. The second reason for the investigation is practical. To practitioners, the results give an idea of how much the impacts of a policy on policymakers themselves should be taken into account in the steering of policies. In addition, the influence of personal and organizational interests on policy learning will be distinguished and compared. Each type of interest offers different kinds of levers to policy practitioners.

The reasons for investigating the role of trust in policy learning are based on similar arguments. Many rational choice studies use trust to understand why actors' social and political attitudes sometimes do not directly conform to their interests. In long-term interactions and policy processes, individuals are actually used to capitalize on trust and trustworthiness to adopt attitudes and behaviors that do not seem to fit with their short-term interests but serve them relatively more in the long term. Social psychology adds that trust and trustworthiness create favourable contexts, explaining why policymakers could become favourable to policies that do not really serve their interests. The reasons for investigating the influence of trust on policy learning are practical as well. If policy practitioners know that confident policymakers are more susceptible to adhere to government programs over time, it is of practical importance to create the conditions of trustworthiness. If, on the contrary, trust does not play a role, trustworthiness deserves the practitioners' attention less. Several types of trust will be distinguished: trust in general, trust in politicians, as well as contextual trust in the other policymakers of the same policy subsystem.

Two network industries in which the European liberalization policy process has been implemented – the Belgian rail and electricity sectors – serve as the empirical cases for testing the hypotheses of this research. The evolution of national policymakers' preferences with respect to the liberalization process, between the beginning of the process (the early 1990s) and the moment of the survey (2012), is used as an operational measure of policy learning in this research. Two indicators of this dependent variable will be distinguished: Preferences change direction and Preferences change intensity. The test of the research hypotheses is mainly based on the analysis of the data from a web survey conducted among 1256 policymakers from the two policy subsystems associated with the Belgian rail and electricity sectors. At the aggregate level, the preferences of the policymakers with respect to the liberalization policy mainly depend on the sector and the type of organization which they are members of. The use of multilevel regression models to analyse the data of the survey allows to control the influence of these aggregate-level effects and to focus on the individual-level conditions of policy learning.

This dissertation is composed of five chapters. The *first chapter* concerns policy learning. This chapter presents a review and synthesis of several existing traditions of research on policy learning: the managerialist approaches, the transfer, diffusion and convergence approaches, as well as the social learning approaches. The present research makes use of the Advocacy Coalition Framework, a well-known theory of policy learning and change, to conceptualize the policy process. The Advocacy Coalition Framework views policy learning in terms of social learning. The implications of this, as well

as the overall post-positivist approach of the research, are discussed. The first chapter also includes a discussion on the approach to the concepts in this research.

The *second chapter* of the dissertation is dedicated to the analytical framework of the research. It includes the introduction of the relevant literature and the formulation of the hypotheses relating interests and trust to policy learning. In the first two sections, the analytical framework of the research is presented. It may be viewed as a connection between the frameworks of two theories: the Advocacy Coalition Framework and the Theory of Reasoned Action. The Theory of Reasoned Action is a framework organizing the relations among the conscious mental constructs of individuals – beliefs, attitudes, perceptions, and behavioral intentions – as well as between mental constructs and real behaviours. In the Advocacy Coalition Framework, policy learning is viewed as the alterations to the system of policy beliefs characterizing each policymaker. In this research, this policy belief system is situated in the more general Theory of Reasoned Action framework. Shortly said, the Theory of Reasoned Action framework will be used to detail the individual-level aspects of the Advocacy Coalition Framework. The dependent variable of the research and its two indicators are defined in the third section. In the final section, the hypotheses relating interests and trust to policy learning are deduced from existing theories and studies.

The *third chapter* of the dissertation presents the empirical context of the research – the implementation of the liberalization policy process the Belgian rail and electricity sectors. The first section presents several regulative landmarks of the liberalization process in both sectors. The next section relates this empirical context to the analytical framework of the research. It includes: the identification of the policy subsystems associated with each of the two sectors; the consideration of the European liberalization policy as an “external event” in the form of an “obligated transfer” with respect to the two national policy subsystems; the identification of the “core aspects” of the liberalization policy with respect to which the evolution of policymakers’ preferences will be analysed; and the identification of six types of organization in each subsystem according to the positive or negative consequences that the liberalization policy has had on them.

The *fourth chapter* of the dissertation is dedicated to the methodological aspects of the research. The first section of this chapter explains how the dependent variable of the research and its indicators are measured, as well as the explanatory variables related to interests and trust. This section also formulates several propositions about the possible influence of five covariates on the dependent variable. The covariates include three socio-demographic characteristics – the Gender, the Age, and the Education level – as well as two presumed predispositions to policy learning – Political interest and Satisfaction with democracy. The validity and reliability of the measurement methods are also discussed. In the two next sections, the questionnaire disseminated during the survey, as well as the survey itself are presented. The latter includes: the population, the penetration rate, the organizational participation rate, the individual response rate, and finally, a short description of the sample. The last section of the methodological part is dedicated to the statistical methods used to analyse the data collected with the survey, in particular multilevel regression analysis.

The *fifth chapter* of the dissertation presents the results of the research. The first section provides several descriptive statistics about the dependent variable. It also includes intercept-only models of the dependent variable. In multilevel analysis, these models allow for a view on the

amount of variation of the dependent variable related to each level of analysis: the subsystem, the type of organization or the individual policymaker. The second section is dedicated to covariates. After several descriptive statistics, their influence on policy learning is modelled with multilevel regression models and then discussed. In the three next sections, the same kinds of analyses are performed and interpreted for the explanatory variables related to interests and trust.

This research is motivated by the long-term objective of developing more knowledge on the individuals conducting policy processes and their actual influence on policies. To attain this objective, it is necessary to develop a better knowledge of the individual conditions explaining why individual policymakers do or do not revise their policy beliefs and preferences over time. This is the particular objective of the present dissertation in the context of this larger research program.

Chapter 1. Policy learning

This part of the dissertation is dedicated to the analytical framework of the research. This framework should be viewed as an extension of the Advocacy Coalition Framework (Jenkins-Smith & Sabatier, 1993b; Sabatier & Jenkins-Smith, 1999, 1993b; Sabatier & Weible, 2007) with the Theory of Reasoned Action (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 2010). The theory of Reasoned Action is a framework organizing the relations among the conscious mental constructs of individuals – beliefs, attitudes, perceptions, and behavioral intentions – as well as between mental constructs and real behaviours. The Theory of Reasoned action was applied to various empirical fields such as health, economics, social interactions, marketing, etc.

The Advocacy Coalition Framework is a classic theory of the policy process considering the role of policy learning therein. In the Advocacy Coalition Framework, policy learning is viewed as the alterations to the system of policy beliefs characterizing each policymaker. In this research, this belief system is viewed as part of the larger Theory of reasoned action framework. In particular, the “policy core policy preferences” of policymakers, in the Advocacy Coalition Framework, will be assimilated with “behavioral intentions”, in terms of the Theory of Reasoned Action .

The first four sections of this part present the conceptual material used to elaborate the analytical framework for the research. In the *first section*, Goertz (2006)’s approach to concepts is presented. This general approach will be used in the present research to define and operationalize concepts. In the *second section*, the relevant components of the Theory of Reasoned Action are explained . In the *third section*, the literature on human learning is briefly presented. The Theory of Reasoned action does not explicitly address the evolution of mental constructs in terms of learning, whereas the existing approaches on policy learning do. Hence, some explanations about human learning are necessary to make the link with the fourth section of this chapter. In his *last section*, the existing approaches of policy learning are presented and compared.

In the remainder of this dissertation, for the sake of clarity , the Advocacy Coalition Framework and the Theory of Reasoned Action will often be referred to with their initials: ACF and TRA, respectively.

1.1. Conceptual approach of the research

This research is grounded on Goertz (2006)’s approach of concepts in the social sciences. In this approach, a **concept** is a theory about the important properties – the ontology – of a phenomenon under consideration. General properties indicate how the phenomenon is similar to other phenomena and specific properties indicate how it is different from other phenomena. The concept specifies the relations that bind those important properties together. The properties of a concept – often called secondary-level dimensions – also have causal relations with other

phenomena. These relations are analysed by theories. Hence, the choice of the important properties of a concept depends upon the theoretical context (Goertz, 2006).

A concept is a **multilevel structure**. The three levels of a concept are the basic level, the secondary-level dimensions, and the third-level indicators. Most often, the basic level of the concept refers to the positive side of all its secondary conditions, to signify what the concept is. It is of equal importance to signify what the concept is not. The negative pole of a concept is operationalized as zero on all or several of the secondary-level dimensions. The continuum between the negative and positive sides of these dimensions should be given substance. Of particular importance is to theorize whether this continuum is continuous or dichotomous. The continuum for some secondary-level dimensions may be continuous while for other dimensions it may be dichotomous. This affects the signification of the concept, at the basic level (Goertz, 2006).

Two approaches may be distinguished for structuring **the relationships between the properties at a same level of a concept** (Goertz, 2006). In the “*necessary and sufficient conditions*” approach, a certain value (typically, non-null) on each of the properties is necessary for the phenomenon to occur. In the “*family resemblance*” approach, the concept results from a rule about sufficiency but with no necessary condition requirements. “In a dichotomous setting, the family resemblance rule almost always takes the form of ‘m or n’ . The phenomenon falls into the concept category if the number of secondary-level dimensions present exceeds a certain threshold (m)” (Goertz, 2006, p. 36).

These two approaches are well understandable in terms of set theory and classical logic. In the necessary and sufficient conditions approach, the concept is situated at the intersection of properties and these properties are linked by an “AND” term. The properties are absolutely not substitutable. In the family resemblance approach, the concept results from the union of its properties and these dimensions are linked by an “OR” term. The properties are perfectly substitutable. Hybrid approaches exist as well. The approaches for structuring the relationships between the properties of a concept are applicable to the secondary-level dimensions of a concept as well as to the indicators of a secondary-level dimension.

Finally, the theoretical **relationships between the properties of different levels of a concept** should be explained. . The relationships are ontological when the properties at the lower level *are* the properties of the upper level. The relationships are causal when the properties at the upper level cause the properties at the lower level or, inversely, the properties at the lower level cause the properties at the upper level. Finally, the relationships may be neither ontological nor causal when the properties at the lower level are only the sign that the properties at the upper level are present (Goertz, 2006).

The basic level and secondary-level dimensions of the concepts used in the present research will be presented and discussed in the conceptual and theoretical part of this dissertation. The third-level indicators used to measure these concepts will be presented in the section on data measurement of the methodological part (see the section 4.1). Particular attention will be paid to policy learning in the next section, before a discussion of the theoretical relations hypothesized between its dimensions and some of its individual conditions.

1.2. Beliefs, behavioral intentions, and concrete behaviors

This research is concerned with policymakers confronted with the compulsory implementation of a policy – the European liberalization policy implemented in the Belgian railways and electricity sector. The research aims to know why these policymakers support the policy and why this support evolves over time. How are the mental constructs organized that lead to be supportive or obstructive toward a behavioral object (here, a policy). And what is the relation between those mental constructs and concrete behaviors? An individual-level conceptual framework is required, that organizes the relations between mental constructs, individual behaviors, and collective action.

The **“Theory of Reasoned Action”** (TRA) (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 2010) was designed to relate mental constructs to concrete behaviors. Useful presentations of this theory may be found in Hale, Householder, and Green (2003) and in Miller (2005). The theory was applied in many empirical fields (Trumbo & O’Keefe, 2004) including risk-information processing (Griffin, Neuwirth, & Dunwoody, 1995), argument (Stewart & Roach, 1998), community commitment (Jeffres, Dobos, & Sweeney, 1987), or health (Rise & Wilhelmsen, 1998). This theory is equipped with a very clear analytical framework that will be used and adapted to this research for organizing the relations among mental constructs as well as between mental constructs and concrete behaviors.

This framework was chosen for at least **four reasons**. First, it explicitly deals with the conceptual definition of different mental constructs such as beliefs, attitudes, and behavioral intentions, as well as their relations with concrete behaviors. Learning is an individual-level process that involves the evolution of mental constructs. Hence, defining an analytical framework of those mental constructs is important to determine what evolves as a result of learning and on which aspects of the process this research focuses on. Second, the theory is concerned with conscious mental constructs and the “reasoned” relations between those constructs. This is not to say that unconscious constructs have no influence (on the importance of those constructs see, for example, the recent work of Lodge & Taber, 2013). But they are not at the center of the approach. This is a good thing because the present research also focuses on conscious mental constructs to understand how policymakers support a policy over time. Third, the TRA is widely used and has been empirically applied in many fields of the social sciences (well over 1000 empirical applications counted by Fishbein & Ajzen, 2010). Hence, its validity is not called into question anymore. Most importantly, it relies on a conceptual framework that is commonly acknowledged. Fourth, the TRA was explicitly used by Sabatier and colleagues to create the Advocacy Coalition Framework. The Advocacy Coalition Framework is used in the present research to organize the relations between the concepts at the collective level. Hence, using the TRA to organize the individual-level framework is consistent with the collective-level concepts of the research.

The TRA grounds on **three major theoretical streams**: the expectancy-value theory, the attribution theory, and the cognitive consistency theory. According to the expectancy-value theory (Fishbein, 1967, 1968; Fishbein & Ajzen, 1972; Ajzen, 2012), attitudes with respect to a thing, a person, an event, or a behavior depend on values and beliefs with respect to this attitudinal object. Let’s consider whether a policymaker from the Belgian railways will have an obstructive or a

supportive behavior with respect to the liberalization policy¹. Beliefs inform the individual about what outcomes to expect from the attitudinal object – for example, “supporting the liberalization policy will contribute to the implementation of this policy” or “the liberalization policy will improve the well-being of commuters”. Values provide the individual with normative information related to these outcomes – for example, “the well-being of commuters is important”. In turn, the articulation of values and beliefs determine the attitude of the individual with respect to the attitudinal object – in our example, a supportive behavior toward the liberalization policy. Attribution theory (Heider, 1958) is concerned with how the individual makes sense of the social world by attributing explanations to behaviors. Later major developments of the attribution theory include E. E. Jones and Davis (1965)’s correspondent inference theory and H. H. Kelley (1967)’s covariation model. According to the attribution theory, we look at two sources of information to attribute explanations to behaviors: internal attributions rely on characteristics internal to the individuals, such as personality traits. External attributions explain behavior with factors external to the individual, such as an event, a circumstance, or the general context (McLeod, 2010). The consistency (also known as “cognitive dissonance” or “balance”) theory (Festinger, 1957; Festinger, Riecken, & Schachter, 1956; Heider, 1958; Insko, 2012) is based on the idea that we feel uncomfortable, our beliefs are “dissonant” or inconsistent with each other. Hence, we are continuously in search of a general equilibrium among our beliefs. Of course, these theories are much more complex. But the point is that they provide the basic conceptual language and the basic ideas of the TRA.

The three theoretical streams in which the TRA is rooted acknowledge that mental constructs can evolve. The expectancy-value theory recognizes that beliefs and – to a lesser extent – values evolve when the individual is confronted with (sometimes contradictory) new information, as a result of new experiences and interactions. In consistency theory, new information obliges the individual to find a new equilibrium among beliefs. In attribution theory, learning new information about others’ and environment’s characteristics leads the individual to attribute new explanations to behaviors.

In the TRA, if an individual has a positive attitude toward a behavior and perceives (the norm) that significant others would like to see him performing this behavior, it is likely that this individual will actually accomplish this behavior, because he has a high intention to do so. The acknowledgement that the perceived behavioral control also influences behavioral intentions results from a later development of the TRA. These basic ideas require a clear definition of five important concepts: a behavior and a behavioral intention, an attitude, a perceived norm, and the perceived behavioral control.

A **behavior** is an observable action performed by an individual and characterized by four criteria: the action performed, the target at which the action is directed, the context in which it is performed, and the time at which it is performed (Fishbein & Ajzen, 2010). For example, the present research is concerned with the set of policymakers’ behaviors with respect to the implementation of the liberalization policy, the Belgian rail and electricity sector, between the early? – mid? – late? nineties and today.

Behavioral intentions, defined as the readiness to perform a behavior, are an excellent predictor of actual behaviors. According to the reasoned action model, behavioral intentions include

¹ This general behavior, itself, may include a large variety of more concrete actions, like the issuing of (un)favourable reports, the behavior in various policy-related meetings, etc.

two, or only one of the following dimensions. First is the willingness to perform the behavior. Second is the degree of expectation that the willingness to perform the behavior will actually turn into the behavior. In the present research, behavioral intentions are limited to the first dimension: the willingness to perform the behavior. Behavioral intentions depend, in turn, upon two other types of mental constructs: perceived norms and attitudes.

Attitudes are the manifestation of individuals' degree of favorableness with respect to any psychological object like a person, a good, a service or an idea. In particular, attitudes allow individuals to decide whether a possible behavior is good or not. More specifically, attitudes determine the degree of willingness to perform a behavior, which is an important component of behavioral intentions. Hence, attitudes are strong determinants of behavioral intentions. An attitude may be defined as "a latent disposition or tendency to respond with some degree of favorableness or unfavorableness to a psychological object. The attitude object can be any discriminable aspect of an individual's world, including a behavior. [...] Attitudes are evaluative in nature, ascribing to individuals a position on a unitary evaluative dimension with respect to an object, a dimension that ranges from negative to positive through a neutral point" (Fishbein & Ajzen, 2010, p. 76).

Attitudes result from a network of beliefs related to the behavior. There are two categories of beliefs on behaviors: predictive beliefs and evaluative beliefs. Predictive beliefs concern the predicted outcomes of the behavior. For example, "I believe that supporting the liberalization policy in a meeting with colleagues will actually influence the decision-making process in favor of this policy". In this case, the belief informs the policymaker about the actual impact of his behavior. Evaluative beliefs concern, as such, the evaluation of the predicted behavioral outcomes. Evaluative beliefs allow to determine whether the predicted outcome of a given behavior is desirable or not. Predictive beliefs and evaluative beliefs result from a network of many other beliefs related to each other. Together, predictive beliefs and evaluative beliefs allow to take a stand with respect to a given behavior, to define an attitude and to choose resulting behavioral intentions. For example, "I believe that the liberalization policy is a right-wing policy (predictive belief) and I believe that right-wing policies are good policies (evaluative belief). In addition, I believe that supporting the liberalization policy will actually contribute to the implementation of this policy (predictive belief). Hence, I will try to behave in such a way to support the liberalization policy (behavioral intention)".

In addition to the limited ability of the individual to access and handle information, which is referred to as his "bounded" rationality (Simon, 1972), his beliefs are based on "heuristics" (Tversky & Kahneman, 2000; Burns, 2004). Heuristics are decision rules of general application which facilitate the treatment of various situations and problems. One example of heuristic behavior is called "risk aversion": for reasons probably related to the survival instinct, it was shown that human beings, in general, dislike risk and overestimate the degree of risk situations involve. Risk aversion, for example, has many applications in economics (e.g., LeRoy & Werner, 2000; Ross, 1981). Predictive beliefs determine a reasonable probability that, following a given behavior, things will happen as expected. Being based on heuristics, predictive beliefs may be biased. Bias measures the distance between a prediction and the reality. Risk aversion, for example, tends to exaggerate the probability the most negative possible consequences of a behavior will occur. Evaluative beliefs are also based on heuristics. Heuristics can allow the individual to associate a general degree of desirability to risk. For example, "the majority of times I took risks in my life, this was followed by negative consequences. Hence, in general, I should tend to choose conservative behaviors in life; risk is not desirable for me".

However, as evaluative beliefs do not formulate predictions on the consequences of the behaviors, they may not be biased (contrary to predictive beliefs). As this example shows, heuristics themselves are beliefs based on many other beliefs, past experiences, and information.

Perceived norms are rules about how to behave. They are subjective because they are drawn by the individual from his observation of the environment or his interactions with others. As a result of this observation and interactions, the individual constructs a network of beliefs that inform him about the behaviors that are desirable in certain groups, institutions or in society as a whole. An example of a subjective norm could be: "I should support the liberalization policy as I observe that my organizational leaders would like me to support this policy". Like attitudes, perceived norms are based on two types of beliefs, informational and motivational ones. On the one hand, informational beliefs provide the individual with information regarding the norms in his environment – "[I believe that] my organizational leaders would like me to support the policy". On the other hand, perceived norms depend upon the motivational beliefs of the individual to comply with the perceived norm – "I would like to conform to my organizational leaders". According to this motivation, perceived norms influence behavioral intentions. It is the combination of these informational and motivational beliefs that makes perceived norms "normative".

The Theory of Reasoned Action gives the **primary role to beliefs**. Attitudes as well as perceived norms are mental constructs which result from a network of beliefs. In particular, in each case, the combination of two types of beliefs allows to define the construct. On the one hand, evaluative or motivational beliefs have a valutive dimension which indicates the individual how to behave. On the other hand, predictive or informational beliefs provide the individual with the probable outcome of his behavior (predictive beliefs) and with the perceived expectations of others (informational beliefs). To conclude, this is not to say that such things as emotions or unconscious phenomena do not play a role. For example, emotions do play a role in the construction of evaluative or motivational beliefs. Unconscious phenomena certainly alter the relation that is expected by the TRA between behavioral intentions and real behaviors. Rather, this is to say that the TRA, and the present research, focus on beliefs to explain behaviors.

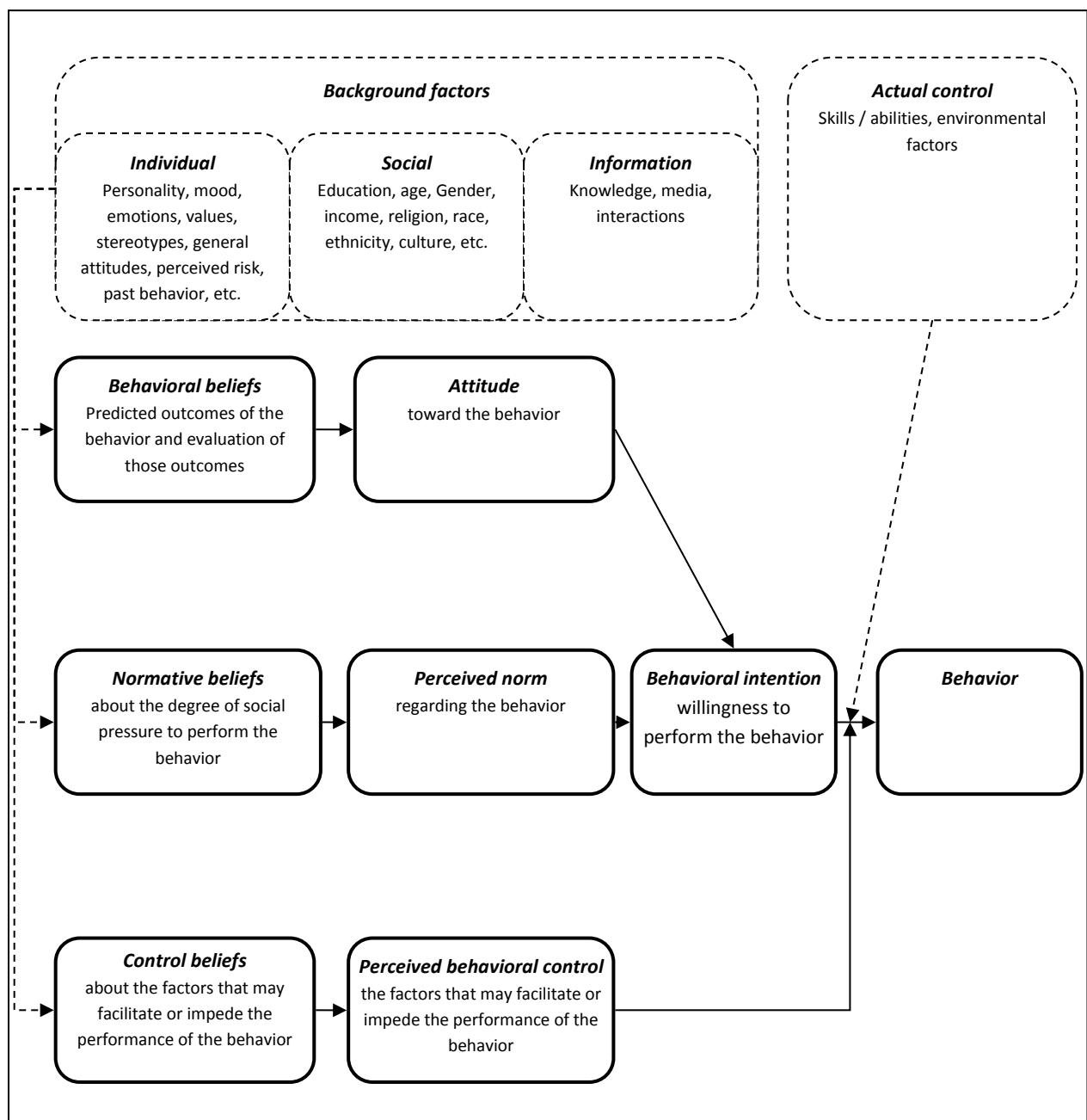
The integration of **perceived behavioral control** results from a later major development of the TRA, called "theory of planned behavior" (Ajzen, 1991; Ajzen, 2012). This concept, rooted in self-efficacy theory (Bandura, 1977, 1997), may be defined as the individual's perceived ease or difficulty in performing a particular behavior. Again, perceived behavioral control results from a network of "control" beliefs. These beliefs inform the individual about the factors that may impede or dampen the performance of the behavior. For example, a positive control belief could be, "I am in good shape this morning ... [hence my supportive policy behavior during this afternoon's meeting will be effective]". A negative control belief could be, "due to my schedule, I will probably miss the meeting... [hence I will not be able to support the policy]". Control beliefs are a measure of the confidence in the feasibility, probability or likelihood of performing a behavior. Consistently with the overall TRA, perceived behavioral control is a conscious construct. It is the part of behavioral control that is raised to the part of the mind that is aware.

Attitudes, perceived norms and perceived behavioral control taken together, determine behavioral intentions and, in turn, behaviors. Perceived behavioral control also has an influence on the relation between those intentions and actual behaviors. Basically, when behavioral control is

perceived as higher, it is more probable that the behavioral intention will turn into an actual behavior. As explained above, attitudes, subjective norms, and perceived behavioral control result from complex networks of beliefs. Together, these concepts and ideas are at the core of the TRA. The theory, however, recognizes that beliefs do not emerge from nothing. On the contrary, many “background factors” provide the source of information and experience that allow beliefs to emerge (and change). Individual factors include characteristics like personality, mood, emotions, values, stereotypes, e general attitudes, perceived risk, past behaviors, etc. Social factors are such aspects as education, age, gender, income, religion, race, ethnicity, culture, etc. General knowledge, the media or interactions are informational factors that provide the individual with new data and experiences to constructs his beliefs. A special category of background factors includes all the aspects which determine the “actual control” of the individual on his behaviors (in contrast to the perceived behavior). Another way to look at background is to say it brings together all the factors which influence behavioral intentions and behaviors, except conscious beliefs. Background factors are represented with dashes in Figure 1.

Finally, despite a misconception due to the use of the term “reasoned action”, it should be clear that the **TRA does not assume rationality**. As clearly stated by Fishbein & Ajzen (2010, p. 24), “this has never been our position. [...] our theoretical framework does not assume rationality, and it encompasses both deliberative and spontaneous decision making. The processes [...] whereby people arrive at their intentions represent a “reasoned” approach to the explanation and prediction of social behavior, only in the sense that people’s behavioral intentions are assumed to follow in a reasonable, consistent, and often automatic fashion from their beliefs about performing the behavior. This does not mean that people are assumed to always be logical or rational. The beliefs they hold need not be veridical; they may be inaccurate, biased or even irrational. However, once a set of beliefs is formed, it provides the cognitive foundation from which attitudes, perceived norms, perceptions of control – and ultimately intentions and behaviors – are assumed to follow in a reasonable and consistent fashion”. Hence, the links among beliefs and between beliefs and final behavior is neither intentional nor rational.

Figure 1: Analytical framework of the Theory of Reasoned Action (from Fishbein & Ajzen, 2010, p. 22)



The most important contribution of the TRA is the clear demonstration that **beliefs turn into concrete behaviors**. This contribution is very important in the context of the present research, because it proves that the study of individual beliefs is determining to understand concrete action, for example in the context of the policy process. Some research has even showed that not only is the TRA useful for connecting beliefs to individual behaviors, but also to collective action (Brunsting & Postmes, 2002).

As mentioned above, the TRA was subject to many empirical tests and theoretical developments. As a result, the relations among constructs and behaviors have been much refined and are even supported by mathematical formulas. In addition, general or domain-specific meta-

analyses were conducted early (Sheppard, Hartwick, & Warshaw, 1988) or later (e.g., Schulze & Witmann, 2003 in addition to many other domain-specific meta-analyses). Of course, some aspects of the theory were subject to criticism. Often, this criticism points to one or other external factor that moderates or mediates the links between conscious mental constructs and between those constructs and behaviors. To take only one example, Bagozzi, Wong, Abe, and Bergami (2000) show that the relations between beliefs and behaviors vary according to the cultural orientation and social setting, in the context of fast food restaurant consumption. But the point of this long history of empirical testing and theorizing building is that the basic ideas of the theory are widely confirmed. Hence, its basic framework and ideas may be safely used in this research.

1.3. Human learning

The present research focuses on the intention of policymakers to have a supportive or an obstructive behavior with respect to the liberalization policy. Most importantly, the research has a dynamic view on policymakers' beliefs and intentions; it is concerned with the evolution of policymakers' behavioral intentions over time. Hence, it is concerned with changing mental constructs and with learning.

Human learning may be defined as the enduring acquisition or modification of conscious mental constructs². Hence, the concept of learning is composed of two necessary and sufficient ontological dimensions. First, learning is the alteration of conscious mental constructs. Second, this alteration must be relatively permanent³. Learning is incremental; it builds on and is shaped by what we already know. Hence, learning is a process and a mechanism, rather than a collection of knowledge. The null value of the learning concept is called "non learning". It occurs when mental constructs do not change or when the change is too volatile or instable to be enduring. This general and open definition of learning is a fairly good common denominator to many definitions of learning in the psychological sciences (Schacter, Gilbert, & Wegner, 2010; Corsini, 1999; VandenBos, 2007).

The dimension of constructs alteration is itself two-dimensional, because the learning mechanism includes two steps: a step of deconstruction and a step of construction. Major cognitive theorists early stressed the importance of both learning steps (Lee, 2002). For example, Piaget (1970, 1977) explains that knowledge structures (or "schemata") are questioned when confronted with new information and experience, and then reformulated to assimilate, accommodate, and ultimately find an equilibrium with this new reality. Both steps may be analytically distinguished, even if they are inter-related in reality. Both steps do not need to occur in each learning cycle: sometimes learning only involves the deconstruction of existing mental constructs. Sometimes, learning only involves the assimilation of new constructs without questioning existing constructs. Sometimes, learning only

² The ability to learn also characterizes some animals (Pearce, 2008) or even some machines (Alpaydin, 2004; Mitra & Datta, 2008), which is dealt with in specific literature. This research focuses on human learning.

³ The continuum of those two dimensions – for example, whether the alteration of knowledge is viewed as dichotomous or continuous – will be theorized later in this document, with regard to policy learning.

involves the assimilation of new constructs. Most often, however, newer constructs question older ones and a new equilibrium must be found. When learning only involves the deconstruction of existing mental constructs, it is often called “unlearning”.

At the theoretical root of the Theory of Reasoned Action (TRA) lies the recognition that mental constructs are susceptible to change as a result of learning. However, the theory was not designed to explicitly address the learning process. At the core of reasoned action approaches are the ideas that mental constructs are related to each other as well as to behaviors. Learning theories are concerned with the evolution of mental constructs as a result of new information and experience. Few studies investigate the relations between the TRA and learning processes. Exceptions include studies that try to explain the intention to learn and the concrete learning strategies as a result of attitudes and perceived norms (e.g., Addison & Chou, 2003; Pryor, 1990). But these studies do not focus on the learning processes that lead the behavioral intention to change over time.

The present research is concerned with the learning processes that lead to changes in behavioral intentions over time (with respect to policies). Hence, the reasoned action framework should be articulated within the framework of a learning process. Illeris (2009)’s comprehensive approach” of learning provides such a framework. The “main areas” of the understanding of human learning distinguished by Illeris are applied to the reasoned action framework in Figure 2. The central area is about learning itself. The *content* of learning may vary according to the kind of mental constructs which evolve. Consistently with the TRA, the present research is concerned with the evolution of beliefs, attitudes, perceived norms and, ultimately, behavioral intentions. Learning is neither compulsory nor automatic. Rather, it depends upon many **conditions and barriers**. In fact, looking at the conditions of learning is to adopt a dynamic view on the background factor of beliefs in the TRA. In this view, the examination of background factors becomes longitudinal. It involves defining the moment when the background factors are present or absent and to operationalize their influence on beliefs over time (rather than at one single moment). Illeris’ conditions of learning, which may be “internal” or “external”, are actually very close to Ajzen and Fishbein’s background factors, which may be “individual” or “social and informational” ⁴. Finally, learning engenders different types of **effects** in various contexts, such as education, organization, games, business, but also politics and policies.

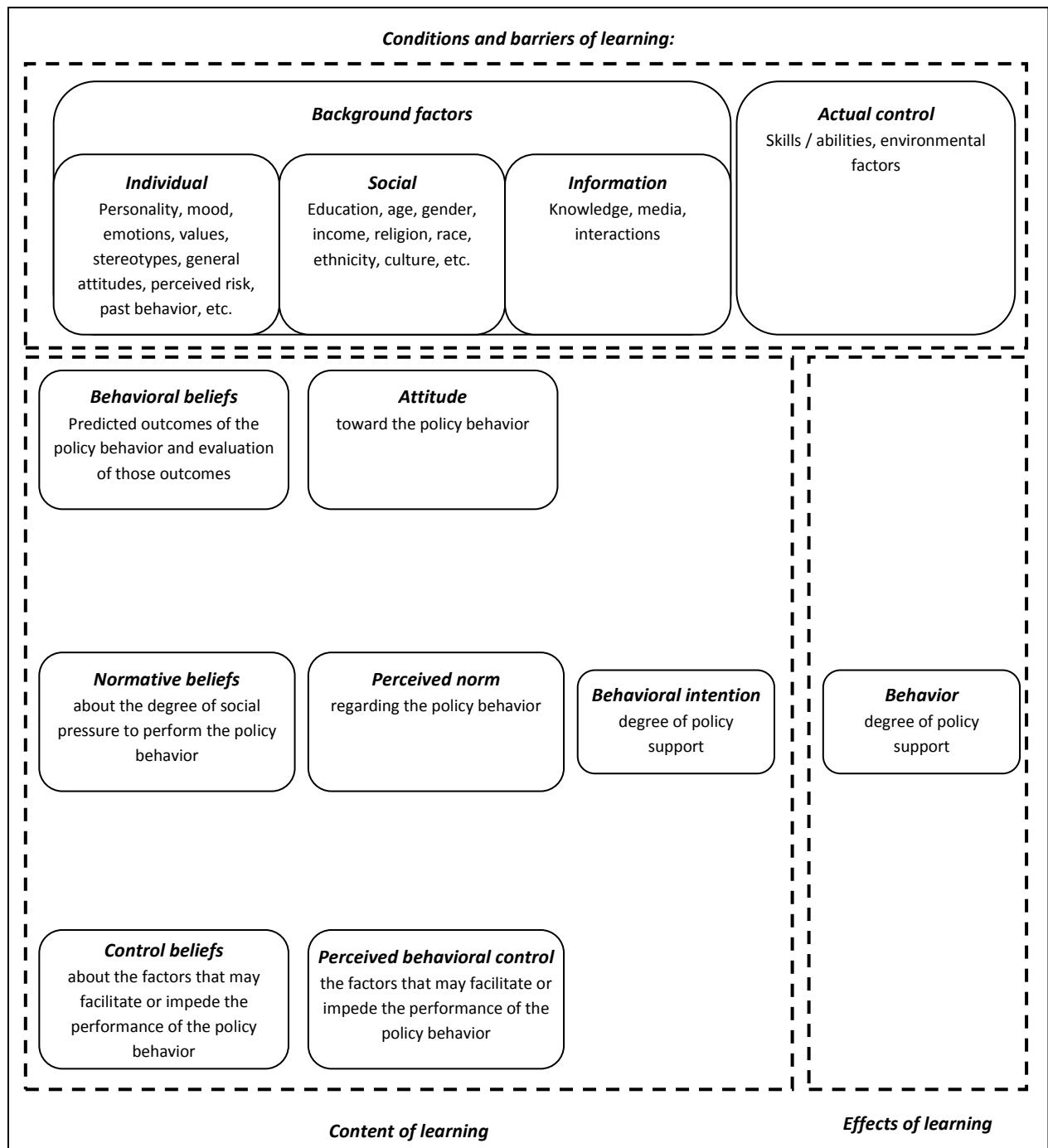
Four types of learning may be distinguished according to the relations that the process involves between new and existing beliefs. *Cumulative* (or “mechanical”) learning concerns the acquisition of beliefs which have an isolated existence with regard to existing beliefs. Such beliefs are acquired during early childhood, more often than during adulthood. But even in later stages of life, the acquisition of such things as the PIN code of a telephone illustrates cumulative learning (“I believe that the PIN code of my telephone is 1234”). *Assimilative* learning (or “learning by addition”) concerns the acquisition of beliefs which must be linked to existing beliefs. Such beliefs take meaningful sense only when they are related to other beliefs. For example, the belief that railways are a federal competence in Belgium is better memorized and understood when connected to beliefs providing information about what a federation is. *Accommodative* (or “transcendent”) learning

⁴ They are illustrated in Figure 2. The “basis” brings together those “areas of knowledge and understanding which [...] must underlie the development of a comprehensive and coherent theory construction. These include all the psychological, biological and social conditions which are involved in any learning” (p. 8).

involves the modification of existing beliefs: “this type of learning implies that one breaks down (parts of) an existing [belief] and transforms it so that the new situation can be linked in. Thus one both relinquishes (unlearning) and reconstructs something, and this can be experienced as demanding or even painful, because it is something that requires a strong supply of mental energy” (Illeris, 2009, p. 13). For example, contradictory information may provide the individual with new beliefs about the actual content and consequences of the liberalization policy. Thus, learning does not necessarily increase knowledge: it may also involve the deconstruction of existing knowledge. Finally, in some situations, when learning involves very important changes in existing beliefs, learning is said to be “significant” (Rogers, 1969), “expansive” (Engeström, 1987), “transitional” (Altheit, 1994) or “*transformative*” (Mezirow, 1991). “This learning implies what could be termed personality changes, or changes in the organization of the self, and is characterized by simultaneous restructuring of a whole cluster of schemes and patterns in all of the three dimensions of learning” (Illeris, 2009, p. 14). For example, following much information and experience about the liberalization policy, a policymaker may come to the conclusion (to the belief) that this policy had truly negative consequences and that he should take another professional orientation to stop his contribution to the policy.

In terms of **agency**, learning is firmly recognized as an individual-level process (Simon, 1991; Argyris & Schön, 1996; Popper & Lipshitz, 2004), but it may be analyzed at different levels of aggregation such as the group, the organization, the institution or even society (for example, in the context of national innovation systems: Lundvall, 2007). At the aggregate level, there are two alternatives to operationalize learning. On the one hand, learning may simply be conceptualized and operationally be the result of the sum of individual learning processes. On the other hand, the group may become the metaphorical agent of learning and the operationalization of learning at the collective level may account for additional factors like the position of the individuals having learned in the group. The collective measure of learning in this case becomes more specific than the “simple” sum of individual measures. For example, according to Hedberg (1981, p. 6), “it would be a mistake to conclude that organizational learning is nothing but the cumulative result of their members’ learning. Members come and go, and leadership changes, but organizations’ memories preserve certain behaviors, mental maps, norms and values over time”. Consistent with the methodological individualism of the present research, however, I consider that learning measurement should always be, at least, based on an individual-level consideration of the process (on methodological individualism, see below in section 1.4.4). Generally speaking, this debate points to the importance of identifying empirically the agents of learning in any research.

Figure 2: Areas of learning in the Theory of Reasoned Action (adapted from Fishbein & Ajzen, 2010, p. 22)



The general and open definition of **human learning as the process of enduring alteration of mental constructs** is common to many fields in the social sciences. Consistent with Goertz (2006)'s view on concepts, differences arrive when additional important properties are incorporated into the concept of learning, according to the theoretical context. For example, some theories may be interested in the effects of a specific type of learning. In this case, the theory will specify that it points to this specific type of learning. Some theories may be interested in the effect of some conditions on

learning at a given level of analysis. In this case, the theory will specify that it analyzes learning at this specific level. This also holds for the concept of policy learning, which is discussed in the next section.

1.4. Approaches of policy learning

At the *root* of policy learning theories lies the consideration of the relation between ideas and politics. Karl W. Deutsch was arguably the first to express this concern in his book on political communication and control (Deutsch, 1963). As he explained 28 years ago (Deutsch, 1986), this book results from his encounter with the mathematician Norbert Wiener, who showed him the importance of information in communication and control processes (Wiener, 1948, 1950). Deutsch introduced in his relatively rationalist theory of government the role of “feedback” and “steering” to explain (and enhance) governmental “learning capacity”. Before Deutsch, the role of the learning process, as such, was not explicitly taken into consideration to explain the course of the policy process.

Politics is classically considered as one the archetypical realms of power relations within institutions. At a similar period, two very classically-cited political scientists put forward two parallel major forms of progress about the relation between ideas and political power (Zito & Schout, 2009, p. 1103). On the one hand, Heclo (1974) emphasized that politics is not only about power but also about ideas and the management of uncertainty. For institutions to operate or for policies to be made, knowledge must be created, assimilated, and organized to reduce uncertainties. On the other hand, Walker (1969; 1974) showed that the management of ideas also allows exerting power. Controlling ideas means controlling uncertainties. In other words, it is of primary importance to elucidate the process which “leads actors to select a different view of how things happen (“learning that”) and what courses of action should be taken (“learning how”)”. Having pointed out the connection between learning and power relations in politics, Heclo and Walker also defined the *raison d’être* of the policy learning literature and the main motivation for its development. In the end, apart from institutions and interests, policy learning theories offer a view on a complementary force guiding the policy process: ideas (Berman, 2013). In addition to the actual evolution of public problems within society, their treatment by public authorities evolves in relation with two streams: a political one and a policy one (Kingdon, 1995). Policy learning is concerned with the policy stream.

This being said, there are other approaches which give a role to ideas and cognition in the policy process⁵. Despite their differences, four other *distinctive characteristics* are also shared – to various degrees – by policy learning theories.

⁵ Sabatier and Schlager (2000) reviewed the approaches that give a role to cognition in the policy process. They call “cognitive minimalist” those approaches which give a role to ideas after having explored the role played by other factors. According to them, those approaches are illustrated by Goldstein and Keohane (1993) and (King, Keohane, & Verba, 1994). They call “cognitive maximalist” those approaches which examine the role of ideas before examining the role of any other factor of the policy process. In their view, these approaches include the “policy frames” theory (Rein & Schön, 1991; Schön & Rein, 1995), the “narrative policy analysis” (Radaelli, 1999; Roe, 1994), the “cultural theory” (Douglas, 1982; Thompson & Ellis, 1997), and the “*référentiels*” theory (Faure, Pollet, & Warin, 1995; Jobert & Muller, 1987; Muller, 2000, 2005; Muller &

First, in terms of agency, policy learning theories also find their roots in the careful consideration of the relation between society and the state. The state-society frontier is neither static (Hall, 1993b) nor impermeable (Sabatier & Jenkins-Smith, 1993b). Political and policy-relevant ideas (and power) do not only exist in the state but also among experts, scientists, stakeholders, and citizens. The notion of “State” itself is quite vague: what and who is and is not part of the state? Ideas circulate within the State but also between the State and society. For these reasons, the policy learning literature is intimately related to the development of the notion of “policy network”. Research on policy networks underlines that the actors who make politics and policies have more diverse origins than was forwarded by the so-called “iron triangles” approach (Milton & Wise, 2005)⁶. They come from the public and private sector, from different organizations and institutions, and include elected officials, citizens, professionals, experts, pressure groups, etc. Those actors have a fair number of ideas in common and partake in a web of relations (Heclo, 1978; Katzentstein, 1978; Lemieux & Ouimet, 2000; Marin & Mayntz, 1991; Parsons, 1995)⁷.

Second, flowing from psychological research, the “behavioral turn” highlights that actors are not fully rational, their knowledge is incomplete, and they are constrained by their environment. These factors obviously affect policy learning.

Third, the relation of the actors with their environment is dynamic and socially construed. The relation between the researcher and the actors he or she analyzes is also concerned. Cognitive activities of the actor (and the researcher), such as policy learning, are affected by this social construction. In other words, according to constructivism, if policy learning focuses on the role of ideas in politics, it must not neglect the role of power and (inter-)subjectivity. In conclusion, with learning, we can explain the behavior of decision-makers with a “combination of social conflict, rational analysis, institutional incentives and symbols” (Zito & Schout, 2009).

Fourth, policy learning theories consider the policy process over time. Indeed, “one of the principal factors affecting policy at time-1 is policy at time-0” (Hall, 1993b, p. 277) This point is important because ideas have two contradictory forces on politics. On the one hand, their relative stability imposes some inertia. On the other hand, ideas are collected, selected, assembled, arranged, and then communicated, advocated or abandoned. In both cases, those processes are dynamic and their influence on policymaking may be captured only by considering (quite long) periods of time in the analysis of the policy process (Dunlop, 2013; Sabatier, 1993)⁸.

Surel, 1998). Finally, they consider that the following theories give a balanced important cognitive and non-cognitive aspects of the policy process: the “streams” theory (Kingdon, 1984, 1995), the “punctuated equilibrium” theory (Baumgartner & Jones, 1993; True, Jones, & Baumgartner, 2007), and the “social construction” approaches (Schneider & Ingram, 1993, 1997). Finally, they consider that the advocacy coalition framework (Sabatier & Jenkins-Smith, 1993b) also lends a balanced importance to cognitive and non-cognitive factors. This theory will be discussed in further detail later in this dissertation; however, because it includes a conceptualization and theorization of policy learning, it will be used as a basis for the analytical framework of the research.

⁶ The “iron triangles” approach is rooted in the observation of the mutually beneficial relations among Congress, bureaucracy, and interest groups in US Federalism. An often-cited example of the iron triangle exists among Congress members, the Department of Defense, and defense contractors (e.g., Adams, 1981).

⁷ It is symptomatic of the connection between policy learning approaches and policy networks that Hugh Heclo was at same time an important contributor to first category of approaches (Heclo, 1974) as well as to the second one (Heclo, 1978).

⁸ Despite their longitudinal consideration of the policy process, policy learning theories should not be confused with the stages approaches of the policy process. Those approaches admittedly also consider the policy process over time: they distinguish stages such as the public definition of a problem, the formulation of a policy to solve this problem, the

Three research traditions related to the roots of policy learning analysis may be distinguished. They are presented in the next three sections. Their distinction flows from a review of existing reviews (Bennett & Howlett, 1992; Freeman, 2006; Grin & Loeber, 2007; Parsons, 1995) as well as from more recent work. Managerialist approaches are interested in the increase of the government's organizational knowledge, intelligence, and effectiveness in resolving problems. Managerialist approaches come from organizational science and theories. "Convergence and diffusion" approaches are interested sequences in which political choices are made in one or several institutional settings, after similar choices have been made in one or several other institutional settings. Those approaches look at the lessons drawn in some institutional settings on the basis of the information and the experiences from other institutional settings. Finally, "social learning" approaches consider policymaking as a process of "puzzling" within and among individual policymakers.

In the next sections, each research tradition is presented by discussing four aspects of learning in each case. First, the *agency* is important because each tradition does not focus on the same types of actors. Second, the *content* (structure and topics) of learning differs from one tradition to the other. Third, the *intention(s)* that guide(s) motivation learning may be different or even be non-existent. Fourth, the degree of *rationality* that characterizes the learning process to attain the intended effect may be more or less important. Given that each research tradition is itself composed of several approaches, these aspects may also vary within them. The last section compares the three research traditions with regard to these four aspects. It allows to justify why the Advocacy Coalition Framework, which is used to construct the collective-level conceptual apparatus in this research, is particularly adapted to the research question and empirical context.

To conclude, it should be underlined that, in Mahoney & Goertz (2006, p. 228)'s terms, this literature review is based on a "stylized" synthesis which characterizes and contrasts the dominant trends of each research tradition with regard to the four above-mentioned aspects. It is not thought of as an exhaustive overview of existing research findings, nor it is intended to present all nuances about agency, content, intentions, and rationality of learning. It is easy to find examples of studies which perfectly fit the synthesis, notably because each research tradition has been discussed in comparison to others for a long time. Finally, the conditions of learning are deliberately not discussed in this part but rather in the theoretical part of the dissertation.

implementation, and finally the evaluation of the policy. According to Jenkins-Smith and Sabatier (1993b), however, these approaches are based on heuristics to describe the policy process rather than on causal theoretical models to explain this process. By contrast, policy learning theories try to look at ideas as an explanatory factor of the policy process. In addition, stages approaches are not realistic enough. First, in real-life conditions, policy stages often intertwine. For example, the public definition of the problem may be redefined while the policy is elaborated. Second, in the stages approach, the top-down view on the policy process is often privileged over the bottom-up view. It is true that public officials have a strong influence on the policy process. By considering a broader agency, however, policy learning theories show that other actors like pressure groups, researchers, or citizens from private and public organizations may also have a substantial influence on policies. Third, stages approaches often restrict the role of ideas in the policy process to the evaluation stage, whereas policy learning theories show that they are important throughout the policy process (Jenkins-Smith & Sabatier, 1993b). The stages heuristic, however, is a useful analytical tool for the researcher to order the policy process. For example, some applications of Sabatier's advocacy coalition framework re-introduce the stages heuristic. It is useful to identify when actors use resources to control the policy process, for example when the agenda is set or when the policy is formulated (Weible, Sabatier, & McQueen, 2009, p. 133).

1.4.1. Managerialist approaches: organizational learning

Managerialist approaches of policy learning are grounded in organization theory and result from the development and dialogue of two tendencies. A first tendency, in political science, was to consider the role of learning in the broader body of research adopting a business perspective on government action. A second tendency, in organizational science, was to adopt a learning perspective on the behavior of organizations.

The consideration of the role of learning in the business approach of governmental action is best illustrated by the 1970's and later work of Metcalfe (Metcalfe, 1993; Metcalfe & Richards, 1987, 1992), who underlines the importance of learning processes for governmental innovation. Etheredge and Short (Etheredge, 1981, 1985; Etheredge & Short, 1983) also propose the concept of "government learning" to name "the process by which governments increase their intelligence and sophistication and in this manner enhance the effectiveness of their actions".

In his own words, Metcalfe (Metcalfe, 1993, p. 292) participates in the "worldwide movement to upgrade public administration by using management concepts, tools and techniques, many of which were originally developed in business". He points to the role of learning in governmental action and considers that the role of this "individual-level" process is for institutions to manage the environment. "It should be concerned with designing adaptable systems rather than producing blueprints for specific reforms. [] But conventional political processes often block learning because ideology overrides evidence or vested interests resist policy evaluation and change" (Metcalfe, 1993, pp. 107-108; cited by Parsons, 1995, p. 595).

Governmental learning (Etheredge, 1981) is concerned with the State's capacity to improve the services it provides to society. Governmental learning is intended to provide the State with "(a) an increased capacity for differentiation, (b) an increased capacity for organization and hierarchical integration, and (c) an increased capacity for reflective thought, perspective on the form and nature of the contents of thought, and the choice of structuring principles" (Etheredge & Short, 1983, p. 42). This content is concerned with organizational processes (Bennett & Howlett, 1992). Organizational sophistication is indeed the behavioral objective of governmental learning. Etheredge and Short also recognize, however, the "valuative" and "political" dimension of learning. In their view, learning also allows to deal with inconsistencies among the values held and between those values and the larger valuative framework. This is an important condition for learning to improve the organizational capacity of the government (Brown & Kenney, 2006).

In terms of agency, society and government are well-distinguished entities and their approach focuses on learning by the government. The agents of government learning are state officials, i.e. junior and senior civil servants in public services. Whether state officials are considered at the individual or the organizational level is not clear. But Etheredge and Short may be credited to be among the first explicitly considering that learning involves relations between the individual and the organizational level (Blindenbacher & Nashat, 2010).

The effects of governmental learning include a growth in intelligence and an increase in effectiveness. The relation between learning and effectiveness, however, is not straightforward: "some [problems] demand a great deal of inquiry and research, while others do not; [...] some hold

out the promise that policy changes will be likely to come about as a result of an increase in knowledge, while others do not. Thus, for example, if no problem is perceived, little research will be done; new technologies can cause a 'stampede' of studies; while poorly defined problems may or may not be studied, but will have little possibility that any study undertaken will be policy relevant" (Etheredge & Short, 1983; cited by Bennett & Howlett, 1992, p. 286). In addition, due to the bureaucratic form of governments, increases in intelligence do not necessarily involve increase in effectiveness. Of course, many resources may cause the government to gain effectiveness (power, relations, money, etc.). In the view of Etheredge and Short, however, there is governmental learning only when the causal link is proven with effectiveness.

A second important tendency is the adoption of a learning perspective on the behavior of organizations. Reviews of the field include Easterby-Smith, Crossan, and Nicolini (2000); Easterby-Smith and Lyles (2011); or Argote (2013). Organizational learning is concerned with all organizations. However, when accounting for several factors specific to the public sector (for example, cultural: Moynihan & Landuyt, 2009), the contribution of organizational learning theory to the understanding of public organizations and policies is straightforward (Gilson, Dunleavy, & Tinkler, 2009; Common, 2004).

Cyert & March (1963, p. 84)'s book and contention, that it is through "organizational learning processes (that) ... the firm adapts to its environment", is often considered the foundational contribution to the field. Following external shocks, the organizational is more or less likely to adapt according to the expected consequences of the shock and adaptation. In their view, however, learning is conditioned and concerned with rules, procedures and routines. In addition, learning is primarily a purely rational process.

Argyris and Schön (1978; a second edition of the book was published in 1996) provide two important refinements to the organizational learning theory. First, they show that learning is not necessarily rational; learning depends on many conditions, for example psychological or political. Second, they distinguish three levels of organizational learning to characterize those organizations whose members learn a little or learn more significantly. Single-loop learning involves "the detection and correction of error. When the error detected and corrected permits the organization to carry on its present policies or achieve its present objectives, then that error-detection-and-correction process is single-loop" (p. 3). Double-loop learning occurs "when error is detected and corrected in ways that involve the modification of an organization's underlying norms, policies and objectives" (p. 3). Finally, deuteuro-learning occurs when organization members learn "about the previous context of learning. They reflect on and inquire into previous episodes of organizational learning, or failure to learn. They discover what they did that facilitated or inhibited learning, they invent new strategies for learning, they produce these strategies, and they evaluate and generalize what they have produced" (pp. 3-4). In other words, deuteuro-learning is learning about how to learn. In terms of effects, single-loop learning is defensive strategy, whereas double-loop learning provides the conditions for adaptation and change. Single-loop learning "pollutes" (Argyris, 1985; cited by Parsons, 1995, p. 595).

In the eighties, organizational learning underwent a strong development in the organizational sciences, including, in addition to other important works (e.g., Daft & Weick, 1984; Fiol & Lyles, 1985), Hedberg (1981)'s contribution about organizational unlearning. Organizational unlearning is

basically the application of individual-level unlearning concepts to the organizational level. Unlearning is the deconstruction of organizational routines and maladaptation to allow for innovation. Organizational unlearning has received a great deal of interest in organization studies. All in all, however, the theoretical contribution of this concept to the field is not very clear to several contemporary organizational scientists, among other reasons because of the intimate relation between unlearning and learning. In addition, the definition of the concept is not well established, with disagreements about whether or not unlearning involves discarding something, whether or not it involves judgment on what was discarded, and whether or not it involves replacing what was discarded by something else. The concept is sometimes even used to refer to the assimilation of “wrong” knowledge (Lee, 2002; Starbuck, 1996; Tsang & Zahra, 2008).

The popularization of organizational learning outside the boundaries of organizational science has much to do with the 1991 special issue of “Organization Science”, in which Epple, Argote, and Devadas (1991), Huber (1991), March (1991), and Simon (1991) refined the conditions, content, and effects of organizational learning, based on similar ideas. A more recent development of organizational learning, with respect to agency, is the consideration of inter-organizational learning (e.g., Hartley & Allison, 2002; Otto, 2004). This development meets the initial ambition of policy learning theories to consider a large community of people whose ideas are susceptible to influence of the course of the decision-making process. However, managerialist approaches remain focused on learning by organization members.

Rather, the following points may be outlined that characterize managerialist approaches of policy learning. In terms of agency, managerialist approaches have a natural focus on organization members. Recent studies, however, tend to consider inter-organizational learning and then, learning by the members of other organizations. Consistently with the governmental learning approach, however, there is often a strong division between the members of public organizations and civil society. Managerialist approaches also share an early consideration of the relations between individual and collective learning: learning is recognized as an individual-level process but the content and conditions of organizational learning are specific. In terms of content and effects, the focus of managerialist studies is on such things as organizational adaptation and processes. Those constructs involve the evolution of the organizational knowledge performance with respect to a criterion like the resolution of a problem or scientific evidence. Finally, there was an early recognition that organizational learning is not purely rational. Rather, the process depends on conditions and barriers as psychology, interests or politics, which bias the treatment of information with respect to the performance criterion that should be attained. Most often, however, organizational learning studies do not point to the fact that the definition of the performance criterion itself may be interested and political.

1.4.2. Transfer, diffusion and convergence approaches

Several approaches of policy learning use concepts like policy transfer (Dolowitz & Marsh, 2000, 1996), policy diffusion (Marsh & Sharman, 2009), or lesson-drawing (Rose, 1991, 1993), and policy convergence (Bennett, 1991; Knill, 2005) to refer to processes through which decisions are made in one governmental setting according to decisions previously made in another one. The main federative principle of all these approaches is to consider, as a unit of analysis for the measurement of policy transfer, governmental settings (rather than particular individuals, networks or organizations). These approaches are grounded, in two research traditions: first, the study of the diffusion of policy innovations within and between particular states and cities in American federalism (e.g., Berry & Berry, 1990; J. Walker, 1969); second, in a sociological tradition of diffusion research “primarily interested in the take-up of information and ideas, practices and technologies among individuals, and principally among networks of peers” (Rogers, 1995, 2003).

Policy transfer, policy diffusion, and policy convergence are related concepts and approaches (Benson & Jordan, 2011; Freeman, 2006; Knill, 2005; Marsh & Sharman, 2009). One sequence in which one (set of) decision(s) influences another (set of) decision(s) is often called policy transfer, while policy diffusion refers to a general spreading process, i.e. a set of policy transfers. Policy diffusion may (Elkins & Simmons, 2005) or may not (Radaelli, 2005) result in policy convergence, defined as “any increase in the similarity between one or more characteristics of a certain policy (e.g., policy objectives, policy instruments, policy settings) across a given set of political jurisdictions (supranational institutions, states, regions, local authorities) over a given period of time” (Knill, 2005, p. 5). Hence, policy transfer and diffusion are processes, while policy is the possible effects of these processes (Knill, 2005). In addition, convergence can occur without transfer, when similar responses are given to similar problems simultaneously raised in different institutional settings. Policy transfer literature looks at the content and process of transfer. Policy diffusion literature is interested in the adoption pattern. Finally, policy convergence looks at similarity change (Knill, 2005).

Policy transfer “is not (merely) the geographic clustering of similar policies” (Shipan & Volden, 2012). Rather, it varies according to several dimensions (Benson & Jordan, 2011; Dolowitz & Marsh, 2000). For example, the types of governmental setting considered include State governments but also Regional governments, City governments or local authorities. Peer-to-peer transfer and diffusion processes are most often considered (e.g., T. Jones & Newburn, 2006) but scholars interested in Europeanisation, globalisation, multi-level governance and policy network perspectives have demonstrated that policy transfer also occurs vertically, possibly through networks of policymakers (e.g., Bulmer, Dolowitz, Humphreys, & Padgett, 2007; Betsill & Bulkeley, 2004). The content of transfer may include the “hard” components of policies, like the definition of problems, the objectives or the instruments but also softer aspects like ideas, ideologies and concepts. Finally, the effects of policy transfer may be evaluated with regard to performance criteria. While many performance criteria are possible, the degree of transfer and the degree of resolution of the problem that the transfer was intended to resolve are most often considered. Degrees of transfer range from full copying to simple inspiration. With respect to the resolution of problems, transfer may be appropriate or not, complete or not, uniformed or not, etc. Other performance criteria are possible.

On this respect, Knill (2005) notes that, most often, the performance criterion of policy transfer is not explicitly mentioned, which prevents evaluating the success or the failure of the transfer.

In addition, policy transfer varies according to the degree of coercion, from totally voluntary to entirely coercive ("direct imposition"). On this continuum, Dolowitz and Marsh (2000) and Bulmer et al. (2007) propose ranking the implementation of European norms in EU Member States among "obligated transfers". Obligated transfers are close to, but not equal to, direct imposition. Indeed, "within the European Union, the Court of Justice can force member states to comply with European policy and directives as part of their obligations to the Union (Shapiro, 1992). However, since individual nations voluntarily joined the Union, can any act of the EU be considered coercive in terms of policy transfer? At the same time, each nation has influence over the adoption of all EU policies. As such, they actively and voluntarily shape and adopt the edicts of the Union; it is for this reason it is best viewed as obligated and, to an extent, negotiated transfers" (Dolowitz & Marsh, 2000, p. 15). This point is important because the present research is concerned with an obligated transfer of the European liberalization policy in the Belgian rail and electricity sectors.

In terms of agency, transfer necessarily involves state actors like elected officials, political parties and civil servants in the government in which a policy is transferred. But a variety of other actors may contribute to this process from outside and from within the institutional setting, including pressure groups, policy entrepreneurs/experts, transnational advocacy networks (Stone, 2004), transnational philanthropic institutions (Moyson, 2010; Stone, 2010), think tanks (Stone, 2000), epistemic communities (Dunlop, 2009), supra-national institutions (Bulmer & Padgett, 2004; Jordan & Liefferink, 2004; Jordan, van Hasselt, Berkhout, Huitema, & Rayner, 2012), international institutions like the OECD and global financial organizations (Evans, 2009), and sub-national institutions (Betsill & Bulkeley, 2004).

The conditions that enable or constrain transfer may be programmatic, contextual, as well as related to the demand and the application side (Benson & Jordan, 2011). Programmatic conditions relate to the complexity of a policy that make it more or less unique (Rose, 1993 894; Dolowitz & Marsh, 2000). Contextual factors include the historical background and path dependency, the relative density of institutional structures, the political context or the ideological compatibility among institutional settings (Bache & Taylor, 2003; De Jong, 2009; Page, 2000). On the demand side, policy makers are often unwilling to move beyond the status quo unless they are forced to by unexpected shocks such as a huge failure in an existing policy or a global economic crisis (Stone, 1999). Even where demand is artificially created via coercive transfer, it may not necessarily be sustained due to subterfuge and even overt 'policy resistance' by entrenched interests (Bache & Taylor, 2003). Finally, application factors include the scale and costs involved in institutional adjustment, whether the transferred policy itself must be adjusted, in addition to the technological, logical, economic, bureaucratic and political resources required to address those costs (Benson & Jordan, 2011; Dolowitz & Marsh, 2000).

The relation between policy transfer and learning is, at the same time, obvious and not very clear. It is obvious because, from the beginning, policy transfer has been referred to as a learning process by one institutional setting from another (Dolowitz & Marsh, 1996). Learning from early adopters is widely recognized as a mechanism of policy diffusion, next to competition, imitation, and

coercion (Shipan & Volden, 2008). However, only later was there a consideration of the relation between policy transfer and individual learning processes within institutional settings.

Policy learning and transfer may be more or less rational. It is rational when it is only guided by a performance criterion, for example the resolution of a problem or the effective implementation of a transferred policy. Most often, however, policy transfer is constrained by other factors that bind rationality, including psychology, politics, or material interests.

Lesson drawing has received most of the attention in the literature because it involves an ideal-typical form of learning: perfectly rational and voluntary. As a concept, it translates the will, the effective cognitive ability, and the practical capacity to draw lessons from other institutional settings, in order to meet a given objective (performance criterion) in one's own institutional setting. Succinctly, early (and later) studies considering individual learning processes involved in policy transfer tried to answer the following question: does lesson-drawing exist? These studies provided a positive answer to this question (e.g., Jacobs & Barnett, 2000; Meseguer, 2004; Gilardi, Füglistner, & Luyet, 2009; Volden, 2006).

At the same time, learning can be biased and lessons can be drawn imperfectly or not drawn at all (Dussauge-Laguna, 2012; Shipan & Volden, 2012). "In their analysis of the transfer of urban regeneration policies across British local governments, Wolman and Page (2002; see also Mossberger & Wolman, 2003) reported that 'learning' from other local authorities tends to be 'random and unfocused' (p. 484); with 'no means of assessing the validity of the information they receive' (p. 497); and mainly based on 'people or sources they trusted' (p. 493). They found that officials 'agree that learning from the experience of other local authorities is important', but only a minority think 'it plays a big or significant role in their decision-making'. Similarly, Casey and Gold (2005) remark that, despite the setting in place of the European Employment System's peer review procedure, an increase in cross-national transfers of 'good practices' on labour market policies has not occurred. They further suggest that this has been caused by 'learning problems'. For example, reports on foreign experiences are duly produced but scarcely communicated among key decision makers; or ministries adopt 'ethnocentric views' and ignore policies developed elsewhere because they do not have 'much to teach them'. Weyland (2007) demonstrates that heuristics and biases influenced learning about pension reforms by policymakers in Latin American countries. Learning can be influenced by political considerations like power or ideology, by their personal interests or by their prior beliefs (Gilardi, 2010). "Learning about others' policies and then effectively using lessons learned to solve one's own policy problems is time-intensive and takes a high degree of skill. Time-pressed policy makers, those with limited staff support, and those generalists who have not had the opportunity to gain specialized expertise will not be able to take full advantage of others' policy experiences" (Shipan & Volden, 2012).

To conclude, in the context of policy transfer and diffusion research, the policy learning concept is most often given special properties related to a special case of transfer: lesson drawing. First, its content is composed of policy components (in a broad sense). Second, its possible effects include the transfer of those components and the resulting diffusion and convergence of policies, as well as the resolution of a problem in the "importer" institutional setting. Third, the source of learning is always composed of information and experience from other institutional settings. Fourth,

it is rational and voluntary. As a result, any factor which diverts policy learning from this ideal-typical form is viewed as a constraining condition or barrier.

However, several studies showed that learning may also occur in the context of other causal mechanisms of transfer and diffusion. For example, in the context of economic competition, policymakers can be motivated to learn how to behave better than in other institutional settings (e.g., Guler, Guillén, & Macpherson, 2002). Dunlop (2009) also showed that policymakers learn by participating in epistemic communities. In such a context, transfer may look like lesson drawing but also like transfer under pressure according to the degree of control that policymakers have on the production of knowledge in the community. Finally, learning can also occur in cases of non-transfer. On the one hand, policy makers may learn “negative lessons” that lead them not to transfer a policy (Dolowitz & Marsh, 2000). On the other hand, convergence may occur without transfer but with learning when policymakers from different institutional settings give similar responses to similar stimuli at the same time, without drawing lessons from each other.

As a result, next to the ideal-typical form of learning involved in lesson drawing, policy learning may also have a broader acceptance and be considered a causal factor in any mechanism of policy transfer. In this case, the content of the policy learning concept becomes less specific, at the same time as its relations with other concepts change. For example, in the ideal-typical form of lessons learning, political beliefs are viewed as constraining background factors. By contrast, when policymakers use policy transfer to legitimate their political action within their institutional settings, political beliefs are part of the learning content⁹.

1.4.3. Social learning approaches: puzzling and learning

Social learning approaches are concerned with the management of uncertainty and the puzzling of ideas by policymakers. According to Heclo (1974, pp. 305-306), in one of the foundational formulations of social learning approaches, “politics finds its sources not only in power but also in uncertainty – men collectively wondering what to do ... Governments not only ‘power’... they also puzzle. Policy making is a form of collective puzzlement on society’s behalf; it entails both deciding and knowing... Much political interaction has constituted a process of social learning expressed through policy”.

In political science, several approaches are concerned with the collective puzzling of ideas involved by the policymaking process. An early contribution to field is the Friedmann (1973)’s model of social learning in planning theory. Introduced later, Haas (1990)’s “epistemic communities” was a model that clearly accounts for the role of knowledge in managing uncertainty in the political process. But the two approaches that are the most clearly associated with social learning are Hall

⁹ Of course, this discussion leaves open the debate about the boundaries of policy transfer theories, especially in the case of learning involved in non-transfer situations.

(1993b)'s "policy paradigms", as well as Sabatier and Jenkins-Smith (1993b)'s "Advocacy Coalition Framework".

Friedmann (1973, 1978, 1984) adds to the theory of planning Dunn (1971)'s basic idea that human knowledge is socially embedded: "the idea that knowledge could be developed and applied to social problems, as to problems in physics, failed to take account of the fact that human learning is fundamentally social. Human knowledge is not external to the social system, it is deeply embedded in it. If, therefore, we are to successfully ameliorate social and economic problems we have to realize that it is at the social level that learning can best take place" (Parsons, 1995, p. 598). Friedmann's social learning is a model which assumes as a premise the "politicized" nature of planning. According to Friedmann, the influence of informal groups like networks, social movements and coalitions on institutions and policies is underestimated. Hence, people with diverse abilities and positions should be empowered in such groups to foster economic and social development. Within these groups, mutual learning is social: it depends on conditions like trust and value commitment and is concerned not only with "objective" knowledge but also with "political" knowledge. This view on planning is recognized as a Utopian project by Friedmann himself but sheds some light on the actual policymaking process (Parsons, 1995). It also positions two important points of later social learning approaches of the policy process. First, policy learning is not only "objective" but also "political". Second, policymakers are not only elected and public officials but also networks of civil society members who are in an appropriate position and active enough to influence the course of policy decisions.

Epistemic communities (Haas, 1990, 1991; Haas, 1992b, 1992a; Haas & Haas, 1995; see also Dunlop, 2013) are groups of "like-minded professionals" unified by a belief system composed of "[1] a shared set of normative and principled beliefs, which provide a value-based rationale for the social action of community members; [2] shared causal beliefs, which are derived from their analysis of practices leading or contributing to a central set of problems in their domain and which then serve as the basis for elucidating the multiple linkages between possible policy actions and desired outcomes; [3] shared notions of validity – that is, inter-subjective, internally defined criteria for weighing and validating knowledge in the domain of their expertise; and [4] a common policy enterprise – that is, a set of common practices associated with a set of problems to which their professional competence is directed, presumably out of the conviction that human welfare will be enhanced as a consequence" (Haas, 1992b, p. 3). The members of epistemic communities are highly specialised experts, sharing some consensual knowledge, especially the elements [2] and [3] of the belief system. As such, they may be considered as the main producers of knowledge in an issue area (Dunlop, 2009). Furthermore, they have an authoritative position and may use other resources to translate their message into institutionalized practices and policies. The epistemic community concept was primarily thought of and used as a way of investigating the influence of international networks of experts on international organizations and the policymakers in their member states. As a result, empirically, epistemic communities most often involve "(1) instructed delegates representing their governments, (2) uninstructed expert consultants who speak for their professions, (3) lobbyists who articulate their clients' values and interests, and (4) members of international organization secretariats interacting with all of these but receiving instructions (in principle) only from their executive heads" (Haas & Haas, 1995, p. 259). But the approach is also useful to investigate epistemic communities at other levels (Parsons, 1995)

In Haas and Haas' view, policy learning refers to the process of informing policymakers' beliefs with respect to the consensual knowledge about complex technical issues embodied by epistemic communities. One particular effect of policy learning is the translation of consensual knowledge into policies. The agents of policy learning are the members of international organization secretariats, as well as the policymakers from the member states of these organizations. Despite the approach's focus on epistemic communities, it must be clear that those communities are not the locus of policy learning¹⁰.

The content of policy learning corresponds to the four key components of the belief system of epistemic communities. The variety of the content of policy learning is best captured "by differentiating between the control enjoyed by decision-makers and epistemic communities over the production of substantive knowledge – or means – that informs policy on the one hand and the policy objectives – or ends – to which that knowledge is directed on the other. The four components identified by Haas can be reclassified quite simply into the foci of means and ends with shared normative beliefs [component 1], cause and effect postulates [component 2] and inter-subjective understandings of validity [component 3] making up the substantive means produced around an issue and the most overtly political component of epistemic communities the common policy enterprise [component 4] equating to the end objectives" (Dunlop, 2013, p. 237). In Haas's view, policymakers' preferences are not part of policy learning. Rather, they are "mediating" conditions that may, in some situations, explain which elements of epistemic communities' knowledge that policymakers choose to translate into policies.

Past empirical applications allow Dunlop (2013) to distinguish five types of learning mechanisms between epistemic communities and policymakers, according to the content, the intentions, and the degree of rationality they are associated with. "Instrumental learning" (e.g., Radaelli, 2009) is concerned with technical knowledge learned rationally from epistemic communities to improve policies. However, the rationality of policymakers is limited. Instrumental learning is the ideal-typical form of learning, the other types of learning being different on one or another aspect. There is learning "as persuasion and socialization" (e.g., Checkel, 2001), where it is observed that policymakers have a limited ability to collect and assemble large amounts of knowledge. Hence, they have to choose what is more accessible or, to be more precise, what is made the most accessible by epistemic communities. Here, the political will of epistemic community members to translate their beliefs into policies is an important condition for the redefinition of policymakers' interests and beliefs. In "learning as calculation" (e.g., Chwiero, 2007; Dunlop & James, 2007), policymakers have a higher degree of control on the content of policy learning. Here, policymakers' values and interests guide the selection and treatment of knowledge coming from epistemic communities. "Learning as legitimacy" (e.g., Lidskog & Sundqvist, 2002) depends both on the epistemic community members and the policymakers. Their use of knowledge, however, is not guided by the search of working solutions for improving policies. Rather, they privilege symbolic information that legitimates what they do. The authoritative argument of epistemic community members is the strongest in this

¹⁰ On the contrary, for epistemic communities to be authoritative in their domain, the knowledge they share must be consensual and, for knowledge to become consensual, it should be at least somewhat stable. To be fair, (Haas & Haas, 1995) also recognize that no consensus remains unchallenged for a long time. In addition, epistemic communities differ from advocacy coalitions and interests because: "if confronted with anomalous data, they would retract their advice or suspend judgement" (Haas, 1990, p. 55). This also contributes to their authority. Finally, the approach also recognizes and shows how the evolution epistemic communities' membership influences the content of the knowledge that they share.

context. Finally, “learning as unreflective” is unintentional (e.g., Hopf, 2010). “Habitual behaviour flourishes in environments where uncertainty is absent. Where an epistemic community has become institutionalised, and has successfully attenuated uncertainty and advisors’ trustworthiness is assured (Hopf, 2010, p. 16), decision-makers may be content to unquestioningly adopt its ideas thereafter” (Dunlop, 2013, p. 239).

Hall (1989, 1993a, 1993b) defines social learning as “a deliberate attempt to adjust the goals or techniques of policy in response to past experience and new information” (Hall, 1993b). In Hall’s view, “(social) learning is indicated when policy changes as the result of such a process” (Hall, 1993b). A well-known contribution of Hall is its distinction among three “orders” of policy change. In first-order policy changes, the settings of the policy instruments are altered (e.g., the rate of a tax). In second-order policy changes, the policy instruments themselves are changed (e.g., deletion of a tax). Third-order policy change means that the whole policy paradigm is changed (e.g., a behaviour is perceived as polluting and a new tax is created to discourage this behaviour). A policy paradigm is the common interpretive framework of a policy. It addresses the nature and definition of the problems the policy should deal with, the goals of the policy, the instruments that should allow to achieve these goals, and the settings of these instruments. As the connection between policy learning and change is straightforward, the orders of policy change may be used to distinguish the different orders of policy learning. In terms of agency, Hall’s paradigms is the probably the most “social” of social learning approaches. Indeed, “decisions about policy instruments and the way they should be set [are] indeed a largely technocratic affair”. But “the significance of the “social” epithet in that third-order change in economic policy making [is] widely debated and socially embedded” (Freeman, 2006). In Hall’s view, social learning involves a much larger community than in Heclo (1974)’s view. Empirical applications which made significant theoretical contributions to Hall’s approach include Hall and Hall and Taylor (1996); Hall and Taylor (1998) and Hay and Wincott (1996), who connected it to institutional theories, as well as Pemberton (2000, 2003), who connected it to policy network and punctuated equilibrium theories.

The Advocacy Coalition Framework (ACF) (Sabatier, 1986, 1987, 1988; Sabatier & Jenkins-Smith, 1993b, 1999; Sabatier & Weible, 2007; see also Weible, Sabatier, & Flowers, 2008; Weible et al., 2009) is one of the most used and discussed theories of policy learning. In Sabatier’s view, the policy process occurs in “policy subsystems”, is composed of policymakers, that is “a set of actors “who are involved in dealing with a policy problem such as air pollution control, mental health, or energy” (Sabatier, 1987, p. 659). Sabatier’s approach being used to draw the collective-level conceptual apparatus of the present research, will be presented in detail later on in this dissertation (see the section 2.1). One important factor of policy change, in the ACF, is policy learning. Policy learning is defined as “relatively enduring alterations of thought or behavioral intentions that result from experience and which are concerned with the attainment or revision of the precepts of the belief system of individuals or of collectivities” (Sabatier, 1993, p. 42).

The policymakers, within subsystems, are the agents of learning. It should be underlined that subsystem members are identified with respect to their influence on policies. Sabatier even stresses the importance to identify “latent” policymakers, i.e. those actors “who would become active if they had the appropriate information” (Sabatier, 1987, p. 659). Hence, consistently with social learning approaches, subsystem members may not only be public officials but also the members of pressure

groups, leaders of private organizations, or even citizens having the will and ability to influence the course of the policymaking process.

The content of policy learning is related to the nature of belief systems. A belief system may characterize an individual policymaker or a collectivity and is “a set of values, goals, perceived causal relationships, and perceived parameter states” (Sabatier, 1987, pp. 663-664). Sabatier views his own conceptualization of the beliefs system of policymakers as “a synthesis of Lakatos (1971)’s distinction between “core” and other elements of scientific belief systems, and Converse (1964)’s contention that abstract political beliefs are more resistant to change than specific ones” (Sabatier, 1993, p. 30). Consistent with those sources, a belief system is composed of three strata of beliefs: deep core beliefs, policy core beliefs, and secondary beliefs. Whether a belief is part of one or other stratum depends on its scope and topic. The resistance to change of beliefs from each stratum also varies. “Deep core beliefs” are fundamental normative and ontological axioms. These axioms are of general application: they exert influence on the positions of the policymaker with respect to any policy. They are very difficult to change (akin to a “religious conversion”). Core policy beliefs are fundamental policy positions resulting from deep core beliefs. They also include the strategies that should be privileged for translating the policy positions into real policies. They are subsystem-wide in scope: they apply to a particular (set of) policies treated in one subsystem. Policy core beliefs are quite stable, but changes can occur if experience proves that they are inappropriate or reveal serious anomalies. Finally, “secondary beliefs are instrumental decisions and information searches necessary to implement policy core beliefs. Usually, they only relate to a given functional or geographical area of the policy subsystem and are moderately easy to change. In practice, policy learning is operationalized as changes in the beliefs system of individuals or of collectivities.”

In the ACF, policy learning is a rational process guided by the will to translate one’s beliefs into policies. Indeed, Sabatier and colleagues have a reasoned action approach to human belief systems and learning. In addition, policy subsystems are composed of policy elites rather the general public. Hence, there are strong grounds for assuming that most actors will have relatively complex and internally consistent beliefs systems in the policy area(s) of interest to them” (Sabatier, 1987, p. 665). Sabatier and colleagues, however, recognize that the rationality of policymakers is bounded. Their model of the individual is “an expected-utility model in which actors weigh alternative courses of action in terms of their contribution to a set of goals, but in which the preferences of reference groups (such as members of one’s coalition) are accorded a more prominent role than in most economic models. Second, rationality is limited rather than perfect (...) in terms of satisficing this, cognitive limits on rationality, limited search processes, and so on. In the same sense, the ACF assumes – consistent with attribution and cognitive dissonance theories – that on salient topics, actors’ perceptions are strongly filtered by their preexisting normative and perceptual beliefs (...). Preexisting beliefs constitute a lens through which actors perceive the world” (Sabatier & Jenkins-Smith, 1999, p. 131). A heuristic-based mode of reasoning that received a lot of echoes in the ACF application is called “devil shift”. The devil shift designates the tendency of policy advocates “to view their opponents as more powerful than they probably are” (Sabatier, 1998, p. 109). The devil shift results from perceptual biases affecting the actors’ wisdom. The ACF “assumes, consistent with prospect theory, that actors weigh losses more heavily than gains (...). A logical corollary is that they remember defeats more than victories. This contributes to the tendency of policy actors, particularly in situations involving frequent conflict, to view opponents as more powerful than they probably are (...)” (Sabatier, 1998, p. 109).

1.4.4. Synthesis and connection to the present research

In the three previous sections, three traditions of policy learning approaches were distinguished: managerialist approaches, transfer and diffusion approaches, and social learning approaches. In this section, they are compared on the three aspects that focused on: agency, content, as well as rationality and intentionality¹¹. This comparison of policy learning approaches serves as a basis to argue why the ACF is chosen in the present research to construct its collective-level conceptual apparatus. It concomitantly allows to situate the approach of policy learning in this research with respect to the other existing approaches.

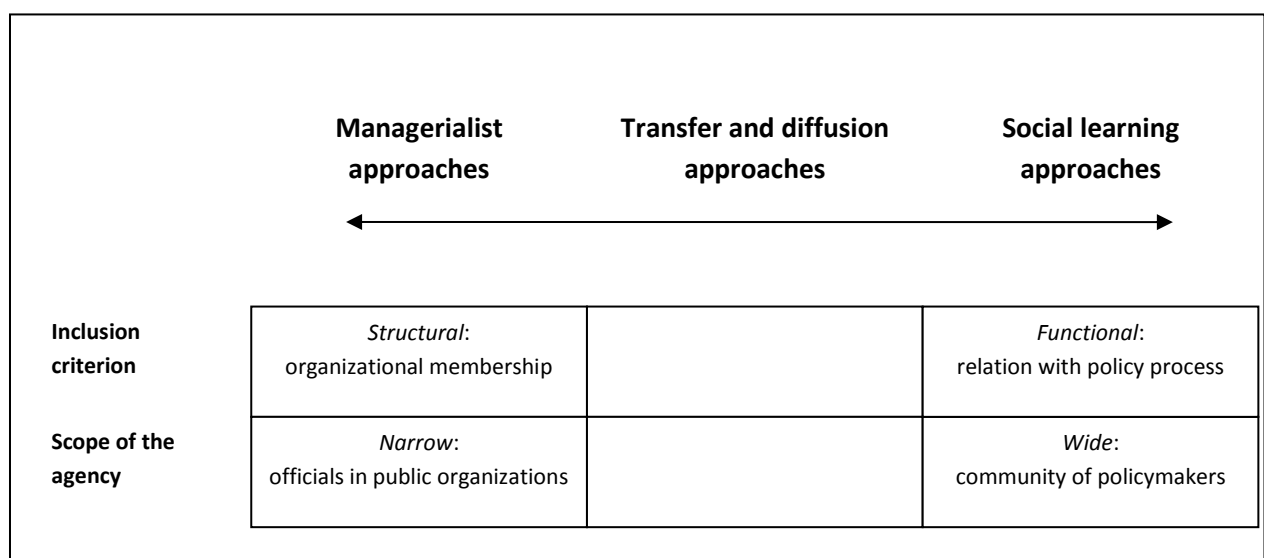
In terms of **agency**, diffusion and social learning approaches are close to each other: they look at policymakers' learning in a policy domain. They define a domain geographically – e.g., the policymakers in a given country, region, or municipality – or functionally – e.g., the policymakers concerned with energy or health – or both – e.g., the policymakers concerned with energy in a given region. In diffusion as well as social learning approaches, policymakers are not only public officials but all the actors having the will and the ability to influence the policymaking process, for example (the members of) pressures groups, private organizations, or citizens. Hence, social learning approaches are not the only approaches to recognize the “social” nature of policy learning. In addition, agency must not be confused with the source of learning. Transfer and diffusion approaches admittedly focus on learning based on information and experiences from other institutional settings. By contrast, social learning approaches are more interested in learning based on information and experience from other actors of the same domain. In the case of transfer and diffusion approaches, this pattern results from the general objective of their research programs which consists in understanding the diffusion and convergence of policies across institutional settings. In the case of social learning approaches, the focus on within-domain learning results more from an empirical tradition. But they are applicable to international empirical contexts. In particular, the approach of epistemic communities deals with this challenge quite explicitly.

Managerialist approaches of policy learning are different. Their anchoring in organizational theory naturally leads them to focus on learning by organization members. In the public sector, this results in a focus on public officials – that is, members of public service organizations – rather than on the whole community of actors having an influence on the policymaking process. This conclusion may be nuanced by the growth of a research body concerned with inter-organizational networks. In those studies, the boundary between the organization and the outside is less strong. In addition, studies concerned with the inter-organizational dimension of organizational learning in the public sector sometimes consider learning agents from private organizations. All in all, however, the radical focus of diffusion and social learning approaches on the whole community of policymakers is more consistent with the original ambition of policy learning theories.

In the end, the three research traditions may be situated on a continuum. At one extreme, managerialist approaches have the most restrictive view on the agency of learning. They focus on

¹¹ It should be recalled that the view offered on the literature is stylized, that is: it insists on the main aspects of each research tradition and on what primarily contrast them with each other. Of course, nearly no empirical analysis of policy learning perfectly fits with this ideal-typical view. It is evident that political science did not wait for Stéphane Moyson to initiate the discussion between the approaches enriching them with the findings and nuances of each other.

(public) organization members. Their view of agency is more related to the structural position of the actor. At the other extreme, social learning approaches have a radical focus on the whole community of people concerned with policies. This view is more consistent with the original ambition of policy learning theories and their anchorage in the policy networks approach. Their view on agency is more related to the functional relation between the actor and the policymaking process, characterized by the will and ability to influence the course of decisions. Between the two extreme sides of the continuum, transfer and diffusion approaches recognize that (learning) policymakers are not only officials in public organizations. But their focus on this aspect of agency is less radical than in social learning approaches. This is illustrated in Figure 3.



In managerialist approaches, learning is only concerned with the adaptation of the organization to the environment necessary to attain its performance criterion (for example, improving citizens' life). Hence, when politics and interests are considered in the analysis, they are viewed more as barriers that prevent policymakers from making use of information and experience rationally to attain the performance criterion.

viewed as competitive, interests are a factor that encourages learning: it is the intention of the learning policymakers to make use of information and experience coming from other institutional settings to improve the situation of their own setting. Coercive transfers are the most complex situations. When confronted with coercive transfer, policymakers' interests are at the same time a factor that encourages or dampens learning (according to the expected consequences of the policy), as well as a component of the content of learning (because the policymaker will learn about the consequences of the policy on his interests).

Social learning approaches are different from each other with respect to the role of politics and interests. The learning content in which Haas is interested is related to the consensual knowledge produced and communicated by epistemic communities. Haas does not deny that interests and politics play a role in the learning process. However, like managerialist approaches, they are viewed as a barrier that diverts learning from its ideal-typical form (instrumental learning). In Hall's approach, social learning is recognized as a socially embedded process, which means that such things as political values and interests play a role in the definition of the public problems and policy objectives. Their position with respect to the content of learning is less explicitly addressed, however. Finally, in the ACF, policymakers are characterized by a belief system. According to Sabatier, belief systems are more "inclusive" than interests: "while belief system models can thus incorporate self-interest and organizational interests, they also allow actors to establish goals in quite different ways (e.g., as a result of socialization) and are therefore more inclusive" (Sabatier, 1993, p. 28). In Sabatier's view, interests are part of the belief system. Hence, they are part of the content of learning.

As illustrated in Table 1, some approaches of policy learning view it as technical, objective or problem-solving but consider that politics and actors' interests sometimes impede this process. By contrast, other approaches consider that policy learning is necessarily political and socially embedded but not especially problem-solving. According to those approaches, policy learning only characterizes the evolution of policymakers' mental constructs. The remaining approaches may not be classified so clearly in one or the other category.

Table 1: Comparison of policy learning approaches with respect to the content of learning

Content of learning	Learning should be technical, objective, and problem-solving	Learning is not especially technical, objective, and problem-solving
	Learning is sometimes impeded by politics and actors' interests	Learning is necessarily political and socially embedded
Approaches	• Managerialist approaches • Lesson drawing • Epistemic communities	• Coercive policy transfer • Social learning • Advocacy Coalition Framework

The *intentions* which guide learning and the degree of *rationality* which characterizes this process vary from one approach to another. They all acknowledge, however, that learning is not perfectly rational in daily-life contexts. In managerialist approaches, the intention motivating learning is to gain knowledge about how to adapt the organization to meet a given performance criterion.

They also recognize that learning is affected by biases resulting from heuristics that facilitate learning in daily-life situations.

In transfer and diffusion studies, lesson drawing is based on an ideal-typical form of learning. In lesson drawing, learning is intended to gain knowledge that will allow to achieve a transfer and/or to solve a problem in one institutional setting. Lesson drawing is viewed as perfectly rational. However, policy learning and transfer may be motivated by other intentions and characterized by bounded rationality. For example, in economic competition, learning is also motivated by the will to perform better than in other institutional settings regarding a given performance criterion. Hence, in economic competition, the rational search for instrumental lessons is biased by the influence of interests and politics. In coercive transfers, learning is motivated by the will to comply with the injunction coming from another institutional setting. It may also be motivated by the will to draw negative lessons or even to disobey to a compulsory transfer.

Haas proposes an ideal-typical form of learning, instrumental learning, in which rationality perfectly guides the search and integration of consensual knowledge from epistemic communities, in new policies. Dunlop's typology, however, contrasts this "instrumental" form of learning with real life forms observed in empirical studies. Like instrumental learning, learning by socialization and persuasion is oriented toward the improvement of policies. Here, however, the rational integration of consensual knowledge is altered by heuristics. For example, policymakers will privilege knowledge components made the most accessible by epistemic community members. In learning as legitimacy, learning is oriented toward the legitimization of policymakers' decisions. Here, interests and politics are a barrier to the rational integration of consensual knowledge. Interestingly, Dunlop's typology also deals with unintentional learning, based on routinized and institutionalized interactions between policymakers and epistemic community members. Unintentional learning is, of course, irrational because it is not oriented toward the realization of a given intention.

Finally, in the ACF, policymakers have a predilection for instrumental rationality but the framework recognizes two "systems of normative reasoning" coexist. On the one hand, policymakers follow a "logic of consequences". This logic proceeds out of rational calculations about how to improve one's understanding of the policy subsystem as well as to translate one's beliefs into the policy decisions made. At the same time, policymakers follow a logic of appropriateness, in which "right behavior means following rules". These rules bound the rational logic of consequences but facilitate the life of the policymaker with the recourse to learning heuristics. As a result of the logic of appropriateness for example, policymakers "will resist information suggesting that their basic beliefs may be invalid and/or unattainable, and they will use formal policy analyses primarily to buttress and elaborate those beliefs (or attack their opponents')" (Sabatier, 1988, p. 133).

The ACF will serve as the conceptual apparatus of this research at the collective-level, for the following reasons. First, this research being interested in the evolution of the opinion of policymakers with respect to a policy, a framework that immediately includes policymakers' preferences as a component of learning is required. The ACF includes a fine conceptualization of policy learning that includes this component. Second, as will be shown later in this dissertation, the community of policymakers having some degree of influence on the implementation of the European liberalization policy process in the Belgian rail and electricity sectors is broad. They come from various organizations. They are certainly not limited to public officials. Social learning approaches are

the most radical in their empirical focus on networks of public and private policymakers from diverse organizations and diverse levels of governments. Third, the individual-level framework of the present research consists of a learning view on the Theory of Reasoned Action (TRA)'s framework. The ACF's model of the individual is based on the TRA. This is confirmed by the focus of the framework on the beliefs of the policymakers. The framework also contends that these beliefs, and the resulting attitudes and behavioral intentions of the policymakers, may evolve (policy learning) and that this evolution may turn into real policy changes, in some circumstances. Hence, the association between the ACF and a learning view on the TRA is particularly consistent¹². Fourth and finally, the approaches of the ACF and the present research are particularly consistent: they are post-positivist (Allison & Hobbs, 2006, p. 76).

Consistent with the ACF and the TRA, the present research will endorse a ***post-positivist approach***. Post-positivist approaches have a particular ontology and epistemology (Mertens, 2005). At the ontological point of view, post-positivism involves some realism. It means that common structures of knowledge may be applied to reality to improve our understanding of this reality. At the same time, this realism is "critical" (rather than "naïve" in pure positivism). It involves the acknowledgment that reality is multiple and socially constructed. In particular, and consistent with the ACF and the TRA, this research endorses methodological individualism (Schumpeter, 1908, 1909; Weber, 1968). Methodological individualism involves two ontological propositions¹³. First, social phenomena should be explained, at least in part, by individual actions. Second, individual actions are, at least in part, the result of intentions. These intentions result from the interpretation of the world by individual actors. This interpretation should be understood by the researcher to explain individual action and, in turn, social phenomena. The ACF and the TRA are consistent with methodological individualism. Consistent with this ontological approach, they apply a common structure – the "belief system" – to understand the interpretative framework of individuals and its influence on attitudes and behaviors, and then to explain social phenomena (e.g., policy change). At the same time, they acknowledge that the content of this belief system may vary from one individual to another. The present research endorses such a post-positivist ontology.

At the epistemological point of view, post-positivism involves that objectivity is given a prominent place in the construction of knowledge. Post-positivism tries to elaborate propositions which are as widely valid as possible, primarily with regard to scientific criteria. Post-positivism, however, is critical. On the one hand, consistent with its ontology, it recognizes that the researcher himself has a particular interpretation of the reality, which can influence his research methods and results. On the other hand, objectivity is socially constructed too. Hence, the post-positivist researcher acknowledges the limitations to the validity of his results, for example from the vantage point of people from other cultures. The ACF endorses a post-positivist construction of knowledge. From the beginning, Sabatier and colleagues encouraged the elaboration and testing of hypotheses that are clearly formulated and of general application. At the same time, they always adopted a

¹² Another supposed effect of the existing connections between the advocacy coalition framework and the theory of reasoned action is the conceptual parsimony it will result in. Indeed, both frameworks already share several components. This is the case of concepts like beliefs and behavioral intentions, which are consistently defined on the same basis in each case. Conceptual parsimony is desirable in science.

¹³ The terms "methodological individualism" were first used by Schumpeter to denote, in one expression, the ideas in the work of Weber. Despite its name, methodological individualism is more an ontological position. Naturally, this position involves the recourse to methodologies which allow to identify the intentions of individuals and relate them to the explanation of social phenomena.

critical stance with regard to the validity of the propositions resulting from the empirical applications of their framework. For example, they continuously encouraged the testing of their framework in various contexts, for example among diverse substantive policy topics or in diverse cultural areas. This resulted in several revisions of the framework. The present research endorses this approach of knowledge construction.

A post-positivist epistemology has methodological implications (Mertens, 2005). Like pure positivism, post-positivism contends that experience is the best way to construct knowledge. Unlike pure positivism, it is reasonably critical with respect to the conditions in which experiences are conducted and, in turn, on their ability to validate theoretical propositions. Quantitative methods primarily look at generalization, whereas qualitative methods are oriented to the analysis of complex mechanisms that require careful observation of a smaller number of empirical cases. Post-positivist epistemology gives a lot of importance to the scope of the validity of theoretical construction. Hence, quantitative methods are more often privileged in post-positivist approaches than in other ones (which does not mean that qualitative methods may not be used in post-positivist research). The present research is based on quantitative methods¹⁴. Furthermore, in the social sciences, quantitative research is often based on quasi-experimental research designs or on correlational surveys. In such cases, the critical stance required by post-positivism with respect to methods involves, for example, the statistical control of covariates. This research is based on a correlational survey and controls relevant covariates¹⁵.

¹⁴ There are other reasons that justify the use of quantitative analysis in this research. As those reasons are more related to methodological issues, they are treated in the methodological part of the dissertation.

¹⁵ In the methodological part of the dissertation, further details will be provided about the statistical control of covariates (see section 4.1.4).

Chapter 2. Analytical framework of the research

Shortly formulated, the analytical framework of this research consists in a connection between the Advocacy Coalition Framework (ACF) and the Theory of Reasoned Action (TRA). The research will draw the benefits from the collective-level concepts of the ACF, which provide useful analytical lenses on the policy process. At the individual-level, the ACF uses the belief system notion to conceptualize the ideas of policymakers, their influence on the behaviour of policymakers, as well as on the policies themselves. The ACF operationalizes policy learning as changes in the belief system of policymakers. I view the ACF belief system as a portion of the system of mental constructs conceptualized by the TRA, a portion that (a) focuses on the beliefs which are susceptible of influencing the behaviour of the policymaker with respect to policies but (b) does not take full advantage of the TRA's distinctions among beliefs, attitudes, norms, and perceived behavioral control. I argue that the connection of the ACF belief system to the overall TRA mental constructs system is appropriate in identifying the individual conditions of policy learning.

In this part of the dissertation, the analytical framework of the research is presented. In the *first section*, the collective-level concepts of the ACF are outlined. They are important because they allow to grasp the empirical context proper to this research and to give a content to the belief system of policymakers. For example, a policy subsystem is defined in reference to its topic. This topic allows to draw the substantive boundaries of the policy domain with which the core policy beliefs of a policymaker are concerned. In the *second section*, the ACF view on belief systems is connected to the TRA mental constructs system. This research being interested in policy learning (belief change), the *third section* provides a clear definition of the policy learning this research is interested in, consistently with existing ACF research and the literature on human learning presented in the previous section of this dissertation. The development of the ACF within the TRA framework will allow giving a clear role to the conditions of policy learning that will then be investigated: interests and trust.

2.1. Collective-level concepts: the Advocacy Coalition Framework

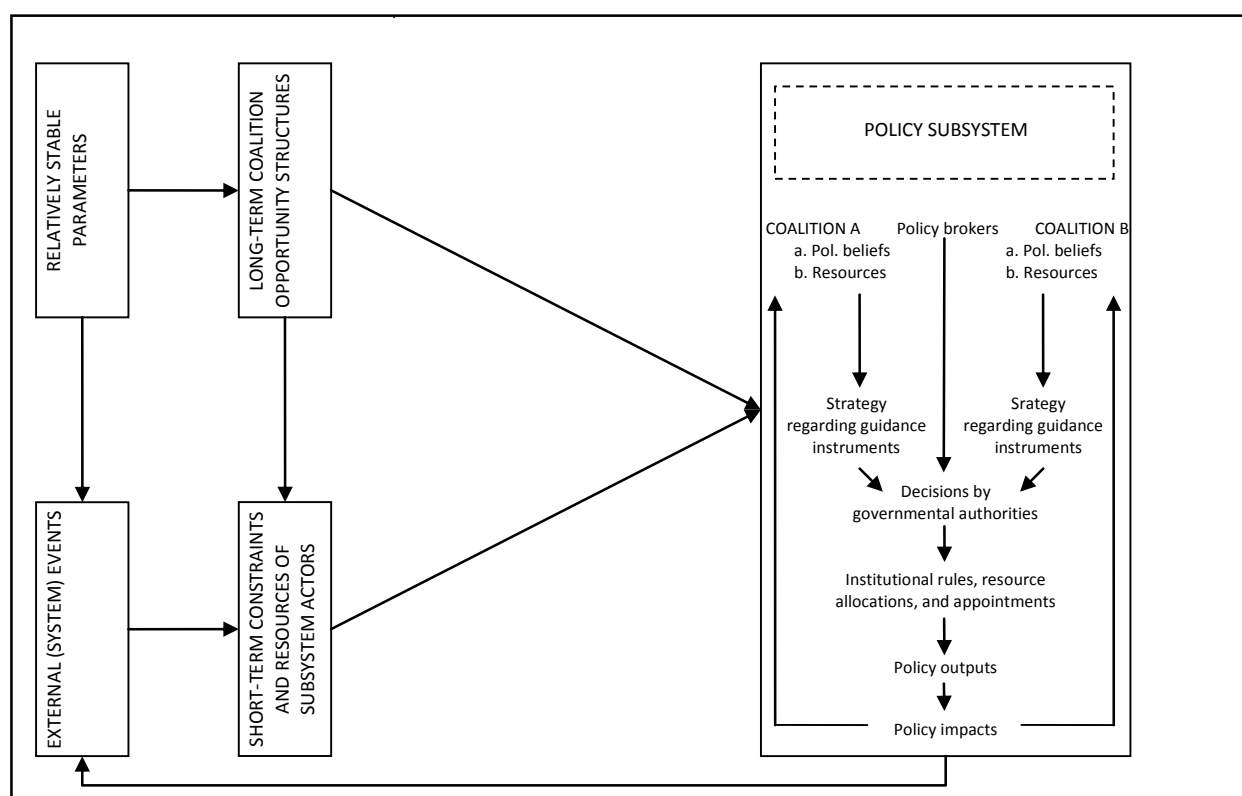
The ACF is an analytical framework and theory of the policy process. The initial version of the ACF was developed by Sabatier, in three publications (Sabatier, 1986, 1987, 1988). Since the mid-1980s, along with Jenkins-Smith, Sabatier developed a collaboration as well as a strategy to promote empirical applications of the ACF. This resulted in the publication of a co-edited book in 1993. In this major contribution to ACF, first a new comprehensive presentation of the framework is included (Sabatier, 1993), before a special section devoted to the role of policy-oriented learning therein (Jenkins-Smith & Sabatier, 1993a). Then follow six applications. The book ends with a first revision of the framework, on the basis of the empirical results found in the applications (Sabatier & Jenkins-Smith, 1993a). A similar version of this revision was also published in the *Journal of Public Policy* (Jenkins-Smith & Sabatier, 1994). The ACF was again revised in 1998-1999. On the one hand, it

resulted in a publication in the *Journal of European Public Policy*, including several considerations about the generalizability of the framework to Europe (Sabatier, 1998). On the other hand, a section of Sabatier's book on the "Theories of the policy process" was devoted to an "assessment" of the ACF, in collaboration with Jenkins-Smith (Sabatier & Jenkins-Smith, 1999). Between 1999 and 2007, at least two syntheses of the ACF were published. A new major revision of the ACF was issued in the second edition of Sabatier's book on the "Theories of the policy process", in collaboration with Christopher Weible (Sabatier & Weible, 2007). Weible et al. (2009) proposed a systematic review of existing ACF applications, in which they discussed empirical and methodological aspects, as well as theoretical implications. The present research relies on the latest version of the ACF.

The ACF conceptualizes the policy process within policy subsystems as its main unit of analysis. A policy subsystem includes all the policymakers concerned by a specific policy area. These actors are regrouped by advocacy coalitions according to the political beliefs by which they would like to see their policies inspired. Each coalition coordinates a strategy and mobilizes the resources owned by its actors to activate the guidance instruments that are susceptible to influencing the decisions taken by governmental authorities. Policy brokers are actors who try to compromise the policy beliefs promoted by the different coalitions in the subsystem, for example elected officials, blue ribbon commissions, or courts of justice. The political decisions affect the orientation of the policies within the subsystem. They also affect the institutions, agencies, and actors that administrate this policy area. Finally, they produce politico-administrative outputs and concrete impacts. This contributes to modifying the subsystem (feedback loops internal to the subsystem) in terms of beliefs, actors' configuration, and resources allocation between coalitions. Each subsystem takes place within the system. Some parameters of the system ensure subsystem stability, while some events may alter the constraints and opportunities of subsystem actors. This may lead to policy change, depending upon the use of these events made by subsystem actors. Policy change within subsystems can, in turn, alter the system (feedback loop external to the subsystem).

Finally, it should be underlined that the decade is the time unit of analysis in the ACF. According to the ACF, given the role that policy learning is given in policy change, the decade is the minimum timeframe to for the "enlightenment function" of knowledge to occur and to have an effect on policies. In addition, the ACF argues that knowledge is used, not only during the evaluation phase of the policy cycle, but in all other phases as well. Again, the decade is the minimum time frame to observe a complete policy cycle and evaluates the role of knowledge along it. The components of the well-known "flow diagram" of the ACF appear in Figure 4.

Figure 4: ACF flow diagram (2007 version:Sabatier & Weible, 2007, p. 202)



A **policy subsystem** is defined as “a set of actors who are involved in dealing with a policy problem such as air-pollution control, mental health, or energy” (Sabatier, 1987, p. 659). Given this inclusive definition based on a functional relation with policy, subsystem members or “policymakers” are not only elected officials, civil servants, and interest groups, but also actors like journalists, researchers, policy analysts, or citizens¹⁶. Policy subsystems are also intergovernmental in nature, given that they consider various levels of government. “Conceptualizing a subsystem in intergovernmental terms means both (1) that the subsystem will include actors from multiple levels of government and (2) that the subsystem will be divided into different levels of government and, at each level, into different jurisdictions. The strength of those dividing lines is essentially an empirical question” (Sabatier & Jenkins-Smith, 1993a, p. 217).

The two dimensions of the subsystem concept are its topic and its membership. A policy subsystem depends on the identification of the set of actors involved in the topic associated with this subsystem, for example all the actors involved in energy policy. The issue is complicated by the fact that the empirical content of each conceptual dimension – topic and membership – of policy subsystems has an influence on each other. Indeed, the identification of the membership may lead to include actors primarily concerned with another topic, for example social policy, because their relations with the actors of the energy policy demonstrate that the topics are strongly related to each other. The identification of the membership may also lead to the conclusion that a given portion of the policy area, for example nuclear policy, is in fact treated by a very different set of

¹⁶ In the remainder of this research, the notions of “subsystem members” and “policymakers” are used equivalently.

actors. Hence, the definition of the membership can lead to the redefinition of the subsystem topic, and *vice versa*. Overall, the definition of a subsystem is a very empirical matter. In the end, its substantive and geographical boundaries result from its topic and membership, two dimensions whose empirical content depends on each other. The fundamental rule should be: “focus on the substantive and geographical scope of the institutions that structure interaction” (Sabatier & Weible, 2007, p. 193)

Interactions among subsystems occur along functional and territorial lines (Sabatier, 1998, p. 114). On the one hand, “a subsystem may be nested within another, i.e. the former is a subset of the latter” (Sabatier, 1998, p. 114). For example, the Belgian energy subsystem is nested within the European energy subsystem. On the other hand, “two subsystems may overlap with each other, i.e. they interact with each other frequently enough that a subset of actors is part of both” (Sabatier, 1998, p. 114). For example, the social aspects of energy policy may be treated by a subset of an energy policy subsystem and a social policy subsystem.

When a policy subsystem appears, it is “nascent”. It becomes “mature” when it meets the following necessary and sufficient conditions. First, “the participants regard themselves as a semi-autonomous community who share a domain of expertise” (Sabatier, 1998, pp. 113-114); Second, these participants “seek to influence public policy within the domain over a fairly long period of time, i.e. seven to ten years. This stems from the ACF'S assumption that such an interval is necessary for doing meaningful policy analysis that can deal with learning and real-world impacts” (Sabatier, 1998, pp. 113-114). Third, “there are specialized subunits within agencies at all relevant levels of government to deal with the topic. This follows from (the) assumption that, in the absence of such units, implementation will be exceedingly problematic and coalitions will come to realize this; a persisting subsystem needs to have some “organizational residue”” (Sabatier, 1998, pp. 113-114). Fourth, “there are interest groups, or specialized subunits within interest groups, which regard this as a major policy topic” (Sabatier, 1998, pp. 113-114).

Within subsystems, actors can be organized into **advocacy coalitions**, for example a pro-nuclear energy coalition versus an anti-nuclear energy coalition. An advocacy coalition is composed of actors from various organizations at different levels of government. They share a set of normative and causal beliefs and show a nontrivial degree of coordination over time to implement their strategy(-ies) envisaging one or more changes in governmental institutions perceived to further their common policy objectives. A group of subsystem actors who coordinate but do not share the same beliefs and policy objectives are not an advocacy coalition. Inversely, a group of actors who share the same beliefs and policy objectives but do not show a non-trivial degree of coordination to translate them into governmental-action programs, are not an advocacy coalition either. In other words, both conditions of the concept – shared beliefs and coordinated strategy – are necessary and sufficient. Consistent with the agency of subsystem, coalitions may also include actors from various organizations at one or several levels of government. Within a subsystem, a coalition is said to be “dominant” when the beliefs it advocates have been translated into real policies, whereas “minority” coalitions consider that this objective has not been achieved yet. Despite the importance of the advocacy coalition notion in the ACF, no further details about it will be provided here. Indeed, in the

present research, the empirical analysis of the policy subsystems in the Belgian rail and electricity sectors did not reveal the existence of clear coalitions¹⁷.

Policy making and change in policy subsystems are influenced by three categories of non-cognitive factors: relatively stable parameters, internal events (or “internal shocks”), and external events (or “dynamic system events” or “external shocks”).

Relatively stable parameters are stable over the course of at least a decade. The ACF distinguishes four types of relatively stable parameters. In the case of nuclear policy, the basic attributes of the problem and good include such things as the existence of nuclear power plants and the dependence upon the energy imported from other States. The basic distribution of natural resources includes such things as the presence of fossil fuel sources in the soil of the country. The fundamental cultural values and social structure include such things as the general values of the population with respect to nuclear energy. Finally, the basic legal structure includes such things as the constitutional rules with respect to energy policy or the general organization of the policy process in the country (Sabatier, 1987, p. 656). While the difficulty of changing the [relatively stable parameters] discourages actors from making them the object of strategizing behavior, these factors can certainly limit the range of feasible alternatives or otherwise affect the resources and beliefs of subsystem actors” (Sabatier, 1987, p. 655). They structure the nature of the problem, establish the rules and procedures for changing policy and reaching collective decisions, and broadly frame the values that inform policymaking (Weible & Sabatier, 2006, p. 125). In particular, they structure the coalition’s opportunities.

Coalition opportunity structures refer to “relatively enduring features of a polity that affect the resources and constraints of subsystem actors” (Sabatier & Weible, 2007, p. 200). Coalition opportunity structures are opportunity structures that strongly affect policymaking within subsystems. Coalition opportunity structures originate from a reflection about the generalizability of the ACF outside American pluralism, a particular type of political and institutional system. Since the 2007 version of the framework, coalition opportunity structures have been aimed at conceptualizing and operationalizing institutional variables that structure coalition formation and behavior. It makes explicit what were, before, tacit assumptions about “well-organized interest groups, mission-oriented agencies, weak political parties, multiple decisionmaking venues, and the need for supermajorities to enact and implement major policy change” (Sabatier & Weible, 2007, p. 199).

Coalition opportunity structures vary according to two dimensions: the degree of consensus needed for major policy change and the openness of the political system. The degree of consensus required varies from “less than a majority” to “a consensus” (Sabatier, 1998, p. 121). The range is “(1) from less than a majority (in non-democratic countries and in strong states such as France [...]); (2) to a bare majority (in Westminster systems like the UK and New Zealand); (3) to a supermajority (as in separation-of-powers like the United States); (4) to a consensus (as in Switzerland or the Netherlands)” (Sabatier & Jenkins-Smith, 1999, p. 148). “In general, the higher the degree of

¹⁷ Subsystems can also include “policy brokers”. Policy brokers are subsystem actors who do not make part of a specific coalition. They may be recognizable with their beliefs – generally more moderate than policy advocates and, in any case, not similar to one of the major belief systems – and with their role – oriented toward compromise and “mediating the conflicting strategies from different coalitions” (Sabatier, 1986, p. 40). Indeed, “their principal concern is to find some reasonable solution to the problem which will reduce intense conflict” (Sabatier, 1986, p. 40). As a result of the absence of clear coalitions, the empirical analysis did not show clear policy brokers, in the present research.

consensus required, the more incentive coalitions have to be inclusive (rather than exclusive), to seek compromise and share information with opponents, and generally to minimize devil shift” (Sabatier & Weible, 2007, p. 200). The openness of political system is the function of two variables: (1) the number of decisionmaking venues that any major policy proposal must go through and (2) the accessibility of each venue (Sabatier & Weible, 2007, p. 200). The openness of political system tends to oppose pluralist political systems (high number and more accessible venues) to corporatist political systems (low number and less accessible venues) (Sabatier & Weible, 2007, p. 200).

A typology of the coalition opportunity structures may be retrieved from the combination of its two dimensions. “Pluralist coalition opportunity structures will tend to have moderate norms of compromise and open decision systems. Corporatist structures involve strong norms of consensus and compromise, and relatively restrictive norms of participation. Westminster systems will tend to have weak norms of compromise and relatively restricted norms of participation. Many developing countries will have weak norms of compromise and restricted participation” (Sabatier & Weible, 2007, p. 200). The typology appears in Table 2.

Table 2: Typology of coalition opportunity structures (Sabatier & Weible, 2007, p. 201)

Openness of political system	Degree of consensus needed for major policy change		
	High	Medium	Low
High	Pluralist	Pluralist	
Medium	Recent corporatist	Westminster	
Low	Traditional corporatist		Authoritarian executive

External events vary over the course of a few years or a decade (Sabatier, 1987, p. 657) and occur in the context of stable parameters. They can be caused by decisions made within the subsystem itself, for example when an important decision in the domain of energy drastically changes the socio-economic conditions in which the policy process occurs. They can vary gradually but, in any case, they substantially affect the contextual conditions in which the policy process occurs within the subsystem. There are four types of external events. First, changes in systemic governing coalition refer to an election or a series of elections which change many – or several key – elected officials, which results in a drastic variation in the support or disapprobation with respect to some policy ideas, for example pro- or anti-nuclear beliefs – as in the resources allocated to the translation of these ideas into policies. Second, the policy process in one subsystem may be influenced by the policy decisions and impacts from other policy subsystems, for example a hypothetical European prohibition of nuclear energy. This type of external event should be related to the literature on policy transfer, diffusion, and convergence, presented earlier in this dissertation (see section 1.4.2). Third, changes in socio-economic conditions and technology (Sabatier, 1986), and the changes in public opinion (Sabatier & Jenkins-Smith, 1993, p. 223) may influence the resources and constraints of subsystem members into translating their beliefs into policies. With respect to the former, for example, budgetary problems may impede the construction of a nuclear power plant. With respect

to the latter, the ACF assumes the policy process is conducted by policymakers and that the general public has neither the expertise, nor the time, nor the inclination to be active participants of a policy subsystem. However, public opinion can constitute a substantial constraint if it persists for some time and demonstrates some recognition of value trade-offs (Sabatier & Jenkins-Smith, 1993, p. 223). Public opinion regarding governmental spending priorities and the relative seriousness of various problems is particularly important (Sabatier, 1998, p. 103).

Internal events are very close to external events. Both types of event vary over the course of a few years or a decade and redistribute critical political resources. Internal events, however, are internal because they directly question the core policy beliefs of the dominant coalition of the actors in the subsystem. *A contrario*, they reinforce the beliefs of the minority coalition. For example, in a subsystem where the promotion of nuclear energy is dominantly advocated as a way to limit the energy dependence of the country with regard to other states, the explosion of a nuclear power plant is a typical illustration of an internal event. According to the ACF, the link between the nature of the event and the content of the beliefs of subsystem members is less direct or evident in the case of external events than in the case of internal events (Weible, Sabatier, & Flowers, 2007, p. 205)¹⁸.

External events and internal events redistribute the critical political **resources and constraints** of subsystem members. The resources of subsystem actors and coalitions critically influence their strategic ability to translate their beliefs into authoritative policy decisions (Sabatier, 1986, p. 665). The resources may be, among other things, legal, informational, human, financial or organizational¹⁹. The resources available for each coalition vary over time. "Some of this is intentional. [...] But there is also substantial evidence that some coalitions have a more difficult time maintaining an effective presence over time than others", within subsystems (Sabatier, 1987, pp. 664-665). According to the ACF, "major shifts in the distribution of political resources will usually be the product of events external to the subsystem and largely external to activities of subsystem coalitions (Sabatier, 1993, p. 29). Consistent with the distinction between events – which vary over a decade – and stable parameters – which do not vary over a decade –, resources alter the shorter-term opportunities and constraints of subsystem members, whereas the coalition opportunity structure is a longer-term parameter.

Despite its absence on the flow diagram, the notion of a "**professional forum**" is important in the ACF. At the most general level, a forum is viewed as a "locus of discussion" (Sabatier & Jenkins-Smith, 1993b, p. 53). Professional fora are characterized by a particular degree of openness. Fora may be "open", "closed" or, somewhere in between, "professional". Professional fora "effectively screen participants in a manner designed to foster commonality of language, assumptions, and belief systems. [...] (They admit participants on the basis of professional training and technical competence" (Sabatier & Jenkins-Smith, 1993b, p. 5)). Professional fora can be "successful" (or not). A successful forum is defined as one "(1) in which consensus is reached among previously disagreeing

¹⁸ The introduction of internal events as an "alternative path for policy change", in the 2007 version of the ACF, results from the connection of the framework with the "focusing events" literature (Birkland, 1997, 1998, 2004; Busenberg, 2000). "The ACF differs from the 'focusing event' literature, however, by continuing to draw a distinction between internal and external shocks. The distinction follows the ACF's premise that policy subsystems are the most useful unit of analysis for understanding and explaining policy change. The distinction also helps to identify the type of shock, the response by policy participants, and the potential outcomes (i.e., the possibility for belief and policy change)" (Sabatier & Weible, 2007, p. 204).

¹⁹ Sabatier & Weible (2007, pp. 201-203) elaborate each type of resource.

scientists on whatever technical and policy issues are placed before it, and (2) in which the forum's decisions are accepted by the major coalitions involved" (Sabatier & Jenkins-Smith, 1999, p. 146). In other words, a successful professional forum is a professional forum in which negotiations lead to policy-oriented learning as well as policy change. Sabatier & Jenkins-Smith (1999, p. 146) and Sabatier & Weible (2007) elaborate on the "critical characteristics" for a professional forum to be successful but these will not be detailed here.

One of the main objectives of the ACF is to explain **policy change**. Policy change may be defined as "fluctuations in the dominant belief systems (i.e., those incorporated into public policy)" within a policy subsystem (Sabatier, 1987, p. 682). Actors and coalitions strategize to maintain or to change policy consistently with their core policy beliefs, in such a way to realize their deep core beliefs. In the same way, they militate to maintain or to change secondary aspects which implement their core policy beliefs. Given this, policy change and belief systems "can be analyzed in similar categories" (Sabatier, 1986, p. 42). The content of the core policy beliefs of a subsystem member and the content of the core aspects of a policy correspond. Similarly, the content of the secondary beliefs of a subsystem member and the content of the secondary aspects of a policy correspond²⁰. Policy change is "major" when the core aspects of the policy change, while it is "minor" when only the secondary aspects change (Sabatier, 1998, p. 124). But the ACF does not specify "whether a change in one of the ten topics in the policy core would constitute "major" change, or whether it might require changes in several topics" (Sabatier, 1998, p. 124). Major policy changes are infrequent events. "Like any large-scale, infrequent events, they are difficult to predict" (Sabatier, 1998, p. 118).

Policy change is the result of several factors: the use by advocacy coalitions of power and resources as well as their involvement in analytical debates (Sabatier, 1987, p. 676), policy-oriented learning (Sabatier, 1986, p. 43), external events (Sabatier, 1986, p. 42), turnover in personnel (which can itself result from external events but also simply from death or retirement: Sabatier, 1987, p. 654), or internal shocks (Sabatier & Weible, 2007, p. 204). Policy change is also constrained by relatively stable parameters (Sabatier, 1987, p. 655).

Throughout its development, the ACF has identified several mechanisms of policy change resulting from (a combination of) these factors. Basically, there is a first process resulting from "the efforts of advocacy coalitions within the subsystem to translate the policy cores and the secondary aspects of their belief systems into governmental-action programs" (Sabatier, 1987, p. 670). Second, external and internal events can alter the constraints and opportunities that subsystem members are confronted with. "They (...) present a continuous challenge to subsystem actors to learn how to anticipate and respond to them in a manner consistent with their basic beliefs and interests" (Sabatier, 1987, p. 657). Internal events, in particular, are susceptible to changing the policy beliefs of the dominant coalition. Finally, the attempt by a hierarchically superior unit of government to change the policy core of a "subordinate" level implies a particular process of policy change. Third is the replacement of one dominant coalition by another. "Sometimes a tremendous surge of public concern with a problem leads to a process of competitive policy escalation by elected officials (or political parties), and thus the virtually overnight replacement of one coalition by another (Sabatier, 1998, p. 119). Fourth is a process in which the minority coalition increases in importance and attempts to take advantage of a window of opportunity opened by an external perturbation. But the

²⁰ Deep core beliefs are fundamental normative and ontological axioms. Their domain of application exceeds the area covered by the topics of one given policy subsystem.

minority coalition does not have the votes in the legislature to push through a substantial change in the policy core of governmental policy on its merits. Thus, the minority coalition will try to develop coalitions of convenience with a variety of other groups to garner additional votes (Sabatier, 1998, p. 119). Fifth is a process of “negotiated agreement” in the hope of finding a compromise that is viewed by everyone as superior to the status quo. This results from situations in which all major coalitions view a continuation of the current situation as unacceptable (“hurting stalemate”). This assumes that each coalition has the ability to impose unacceptable costs on the others (Sabatier, 1998, p. 119). The finding of compromise is facilitated by the existence of a professional forum in the policy subsystem (Sabatier & Jenkins-Smith, 1999, p. 146).

In all these processes of policy changes, **policy learning** plays an important to fundamental role, either as an explanatory variable or as an intermediate variable. Policy learning is an individual-level process, even if corporate learning may be envisaged for analytical reasons (Sabatier, 1987, p. 671). Policy learning will be examined in further detail in the next section. This section is dedicated to the individual-level concepts of the research.

2.2. Individual-level concepts: the Theory of Reasoned Action in a policy context

The individual-level conceptual apparatus of this research consists in the development of the ACF view on policy learning and the belief system of policymakers within the analytical framework of the TRA.

In the ACF, subsystem members are characterized by their **belief system**. At the most general level, a belief system is a set of perceived “interests/goals, perceived causal relationships, and perceived parameter states” (Sabatier, 1987, pp. 663-664). It informs the policymaker about “the problems that should receive the highest priority, the causal factors that need to be examined most closely, and the governmental institutions most likely to be favourably disposed to the coalition’s point of view” (Jenkins-Smith & Sabatier, 1993). The relative importance of causal assumptions, problem perceptions, and values is an empirical question. A belief system is a notion specific to policy elites (Sabatier, 1986, p. 43).

A belief system is composed of three strata of beliefs: deep core beliefs, policy core beliefs, and secondary beliefs. Whether a belief is part of one or other stratum depends on its scope and topic. The resistance to change of beliefs from each stratum also varies. “Deep core beliefs” are fundamental normative and ontological axioms. These axioms are of general application: they exert an influence on the positions of the policymaker with respect to any policy. They are very difficult to change (akin to a “religious conversion”). Policy core beliefs are fundamental policy positions resulting, on the one hand, from deep core beliefs and, on the other hand, from perceived interests, goals, causal relationships, and parameters states related to the policy. They also include the strategies that should be privileged to translate the policy positions into real policies. They are subsystem-wide in scope: they apply to a particular (set of) policies treated in one subsystem. Policy core beliefs are quite stable, but changes can occur if experience proves that they are inappropriate

or reveal serious anomalies. Finally, “secondary beliefs are instrumental decisions and information searches necessary to implement policy core beliefs. Usually, they only relate to a given functional or geographical area of the policy subsystem and are moderately easy to change²¹. The Table 3 presents a synthesis of this presentation and includes the most recent list of illustrative components pertaining to each stratum of the belief system.

Among the three strata of beliefs, policy core beliefs play the most important role because they constitute the principal “glue” of politics. Policy core beliefs are “those on which most members of a coalition will presumably show substantial agreement” (Sabatier, 1987, p. 668). Indeed, they relate to a view of the subsystem as a whole, i.e. the view that actors try to support by forming a coalition. In addition, these beliefs are more salient to the individual than deep core beliefs and serve as more efficient guides to behavior than specific policy preferences in the secondary aspects” (Sabatier, 1998, p. 109). The fundamental normative precepts are the most “critical” policy core beliefs” (Sabatier, 1998, p. 110), while policy core policy preferences are the better guide for action. To be precise, policy core policy preferences are in fact secondary beliefs which fall within policy core beliefs when (and only when) “they (1) are subsystem-wide in scope, (2) are highly salient, and (3) have been a major source of cleavage for some time” (Sabatier & Jenkins-Smith, 1999, pp. 133-134). Policy core policy preferences “are normative beliefs that project an image of how the policy subsystem ought to be, provide the vision that guides coalition strategic behavior, and helps unite allies and divide opponents” (Sabatier & Weible, 2007, p. 195). It should be noted that, in ACF terms, the core aspects of a policy and the policy core policy preferences of a policymakers may be defined in similar terms.

²¹ In the early versions of the ACF, the three strata of the system also differ according to the degree of abstraction of the beliefs they include, the deep core belief being more abstract than the policy core beliefs and the policy core beliefs being more abstract than the secondary beliefs. Since the 1998 version of the framework, however, this idea has been abandoned (Sabatier, 1998; see also the debate between Sabatier and Jenkins-Smith on this respect in Sabatier & Jenkins-Smith, 1993a, p. 225).

Table 3: the belief system of a policymaker in the ACF (from Sabatier & Jenkins-Smith, 1999, p. 133)

	Deep core beliefs	Policy core beliefs	Secondary beliefs
Defining characteristics	Fundamental normative and ontological axioms	Fundamental policy positions concerning the basic strategies for achieving core values within the subsystem	Instrumental decisions and information searches necessary to implement policy core
Scope	Across all policy subsystems.	Subsystem-wide	Usually only part of subsystem
Susceptibility to change	Very difficult; akin to a religious conversion	Difficult but can occur if experience reveals serious anomalies.	Moderately easy; this is the topic of most administrative and even legislative policymaking.
Illustrative components	1. Human nature: a. Inherently evil vs. socially redeemable b. Part of nature vs. dominion over nature. c. Narrow egoists vs contractarians 2. Relative priority of various ultimate values: freedom, security, power, knowledge, health, love, beauty, etc. 3. Basic criteria of distributive justice: whose welfare counts? Relative weights of self, primary groups, all people, future generations, nonhuman beings, etc. 4. Sociocultural identity (e.g., ethnicity, religion, gender, profession)	1. Fundamental normative precepts: a. Orientation on basic value priorities b. Identification of groups or other entities whose welfare is of greatest concern 2. Precepts with a substantial empirical component: a. Overall seriousness of the problem b. Basic causes of the problem c. Proper distribution of authority between government and market d. Proper distribution of authority among levels of government e. Priority accorded various policy instruments (e.g., regulation, insurance, education, direct payments, tax credits) f. Ability to society to solve the problem (e.g., zero-sum competition vs. potential for mutual accommodation; technological optimism vs. pessimism) g. Participation of public vs. experts vs. elected officials h. Policy core policy preferences	1. Seriousness of specific aspects of the problem in specific locales 2. Importance of various causal linkages in different locales and over time 3. Most decisions concerning administrative rules, budgetary allocations, disposition of cases, statutory interpretation, and even statutory revision 4. Information regarding performance of specific programs or institutions

I argue that, while most of the policymakers' beliefs are quite abstract orientations, **core policy preferences may be assimilated with behavioral intentions**, in TRA terms, because they provide policymakers with a very concrete guide for action with respect to given policies. The remainder of the connection between the ACF and the TRA flows from this²².

Deep core beliefs, in general, are very abstract. For example, they include beliefs about "whose welfare counts?" (criteria for distributive justice). In the domain of nuclear policy, this kind of beliefs could encourage the policymaker to give importance to the welfare of future generations. Such beliefs, admittedly, give an orientation to the policymaker. But the concrete policies that should be supported as a result of these beliefs are not straightforward and unambiguous. In particular, the support for one policy or another depends upon many other beliefs. The support for an anti-nuclear policy may be balanced by another deep core belief about the importance of the welfare of the current generation. The support for a policy may also depend on causal assumptions pertaining to the core policy beliefs. Such an assumption may concern, for example, the respective long-term impacts of nuclear energy and fossil energy or our dependence on each type of energy. Most of the policy core beliefs remain very abstract, too. Their relation to the concrete behaviour of the policymaker also depends on many other beliefs. For example, the beliefs related to the overall seriousness of the policy problem remain an admittedly important, but very general, motivation to take political action. They certainly do not inform the policymaker about the policy that he should support to resolve the problem.

Policy core policy preferences, by contrast, provide a very clear guide for action to the policymaker with respect to a given policy. As a reminder, core policy preferences were defined as secondary beliefs of particular importance. Secondary beliefs are very concrete. They inform the policymaker about some specific decisions and about the performance of some specific programs or institutions. Hence, they very concretely guide the behaviour of the policymaker with respect to these decisions, these programs, and these institutions. But secondary beliefs often concern specific locales or specific policy areas. Core policy preferences may be viewed as secondary beliefs that concern the whole subsystem. Hence, they provide the policymaker with a very clear indication of the degree of support it should give to a given, important policy decision. This involves a set of very precise behaviours with respect to this policy decision, which are not dependent anymore on other beliefs (core policy preferences are already a synthesis of those beliefs). According to the ACF itself, core policy preferences are "normative beliefs that [...] provide the vision that guides coalition strategic behavior" (Sabatier & Weible, 2007, p. 195). For all those reasons, core policy preferences may be assimilated with a (set of) behavioral intentions, in TRA terms²³.

²² It should be very clear that this distinction between abstract and concrete beliefs has nothing to do with the discussion in Sabatier and Jenkins-Smith (1993a). In the present research, concrete beliefs are those providing clear guides for action whereas abstract beliefs are more general, behavioral orientations. In Sabatier and Jenkins-Smith's discussion, concrete beliefs were related to material interests and, to this title, distinguished from abstract beliefs. Consistent with the 1998 revision of the framework, I do not endorse this distinction. As will be detailed later in this dissertation, the role of interests in politics may be based on abstract beliefs (e.g., the general importance given to self-interest) as well as on concrete beliefs (e.g., how the policymaker should strategize to behave in accordance with his values related to the importance of interests).

²³ Admittedly, the concrete behaviors which will result from core policy preferences still depend on the beliefs of the policymakers with respect to the efficacy of each strategy and guidance instruments. This does not prevent policy core preferences to be very determining for the strategies and behaviors of the policymaker within the subsystem.

Policy core preferences depend upon deep core beliefs and the other core policy beliefs. Among those beliefs, some provide predictions about the expected outcomes of a supportive (or obstructive) behaviour with respect to a policy. They also allow the policymaker to evaluate those outcomes. These beliefs are “behavioral”, in TRA terms, and result in the definition of an attitude with respect to the degree of support the policymaker gives to the policy. Some other beliefs concern the social pressure perceived by the policymaker to have a supportive (or obstructive) behaviour with respect to the policy. These beliefs are normative, in TRA terms, and result in the definition of a perceived norm with respect to the behaviour that should be adopted with respect to the policy. Like other individuals, policymakers have control beliefs. Control beliefs include such perceptions as the availability of resources or the opportunity and ability to implement strategies and use guidance instruments for supporting or obstructing a policy.

I have argued that ACF’ policy core preferences may be assimilated to TRA’s behavioral intentions. The adaptation of the TRA framework (cf. Figure 1) to the policy context flows from this equivalence. This is illustrated in Figure 5. Policy core policy preferences basically depend on policymakers’ attitudes. Those attitudes result from a network of beliefs regarding the policy and the desirable behavior with respect to this policy. The effect of policy attitudes on policy preferences, however, also depend on perceived norms, that is: others’ beliefs and the degree of social pressure (from institutions, organizations, networks or individuals) to perform such or another behaviour. Finally, the realization of policy attitudes into policy behaviours depend on the actual control that policymakers have on the realization of their attitudes into behaviours, or their perception of this control, as well as several background factors.

Most of the beliefs of the ACF belief system are behavioral beliefs: they tell the policymaker how to behave with respect to the policy. For example, according to the distribution of power between the State and market in a policy and the beliefs of the policymaker about that topic, he will have a more or less supportive behaviour with respect to this policy. Nevertheless, his behaviour will also depend on his beliefs about the social norms regarding the respective role of the State and the market. For example, policymakers favourable to the monopoly of the State in the railways will probably express their opinion differently nowadays, in the context of the European liberalization process introducing competition in network industries. Policymakers will also behave according to their (perceived) behavioral control. For example, a policy entrepreneur holding very unique or innovative policy beliefs will perhaps translate those beliefs into concrete behaviors more prudently if he holds a politically exposed position or if he is subject to a strong hierarchy.

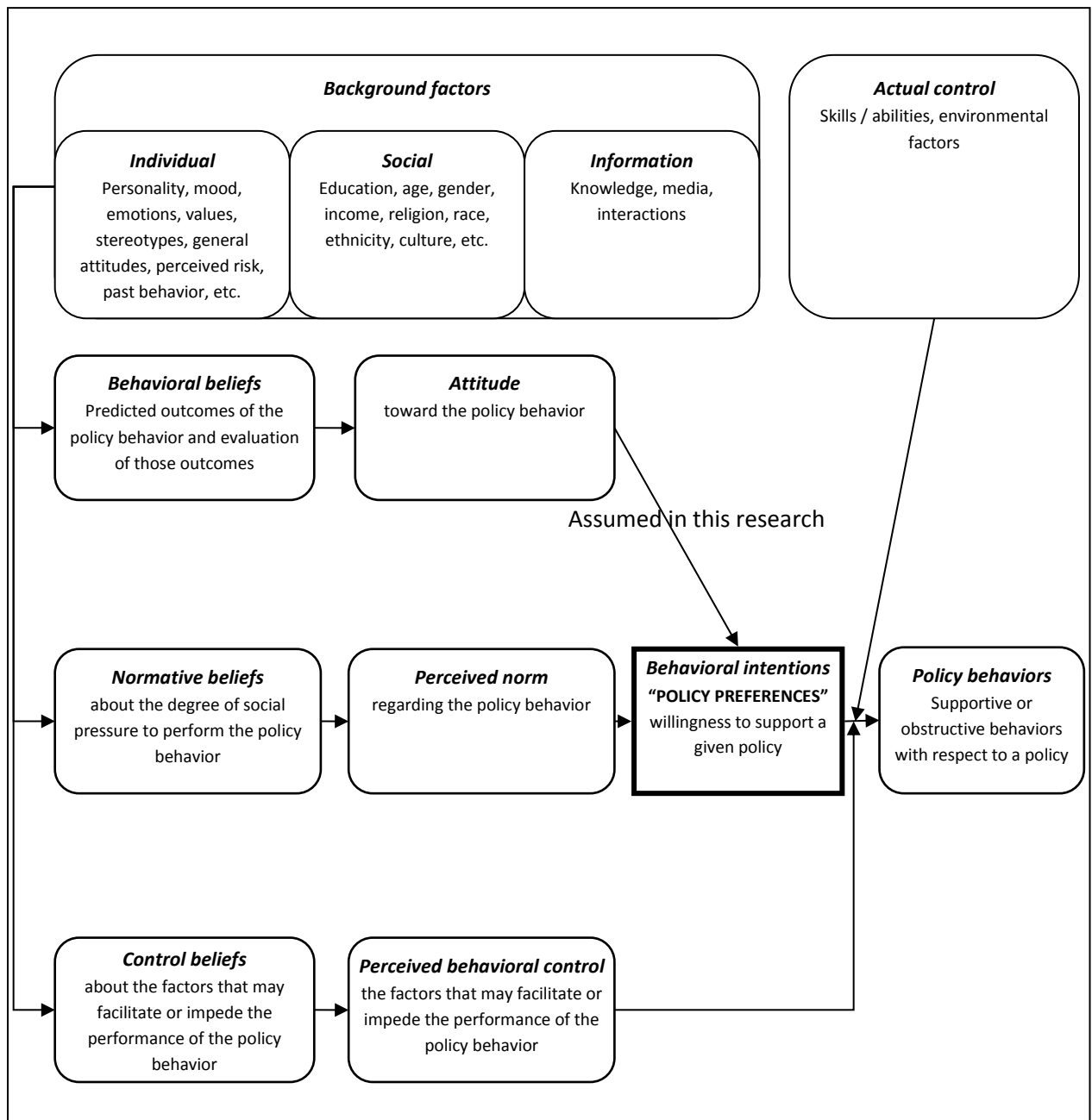
The remainder of this research assesses the effect of interests and trust on (the evolution of) Policy preferences change. Interests and trusts may be viewed as mental constructs resulting from a combination of behavioral beliefs, next to the other components of the ACF belief system. This may be illustrated with interests. Interests result from some evaluative beliefs, for example: “I believe that my interests are important”. Interests also result from predictive beliefs, for example: “this policy will have beneficial consequences on my interests”. Based on this, a “local” attitude may be defined with respect to the policy, for example: “I should support this policy”. But the beliefs and attitudes related to interests are themselves part of a larger set of beliefs, including the components of the ACF belief system, for example: this policy is right-wing (predictive belief on values) or “I like right-wing policies” (evaluative belief on politics). It is only a combination of all these beliefs – not only the beliefs of the ACF system – which allows the policymaker to define an attitude with respect

to the policy. Interests are conceptually distinct from the components of the ACF belief system: they result from different sets of beliefs. But both interests and the components of the ACF belief system *are* ideas and mental constructs, i.e. the result of a combination of beliefs. The same argument holds for concepts related to trust²⁴.

To conclude, this research focuses on the following triptych of variables characterizing individual policymakers in the policy process: behavioral beliefs, attitudes, and behavioral intentions (in addition to several covariates like socio-demographic characteristics). The research hypotheses concern the relation between behavioral beliefs and attitudes. The relation between attitudes and policy preferences is assumed. This does not mean that the effects perceived norms and (perceived) behavioral control are denied. However, the research does not focus on those variables. They are not measured and, given the number of policymakers surveyed in the empirical section of the research, their effects is considered neutral, on average. The interactive effect of attitudes, perceived norms, and (perceived) behavioral control on policy preferences offers stimulating directions for future research.

²⁴ With respect to interests, it is often claimed that the ACF “excludes” interest from the explanation of policy learning and change. I do not endorse this claim. From the beginning, (Sabatier, 1987, pp. 663-664) defined the belief system as a set of perceived “*interests/goals*, perceived causal relationships, and perceived parameter states”. Simply the role of interests, viewed as the result of perceptions (beliefs) was underdeveloped or overlooked by other (useful) considerations.

Figure 5: Analytical framework of the research - Connection between TRA and ACF



2.3. Two indicators of Policy preferences change: Direction & Intensity

In the ACF, policy learning has received broad acceptance . It is defined as relatively enduring alterations of thought or behavioral intentions which result from information and experience and which are concerned with the attainment or revision of policy objectives (Sabatier, 1986, pp. 43-44). In theory, policy learning should be viewed as a “causal mechanism” explaining (King et al., 1994) the course of mental constructs – beliefs, perceptions, attitudes, and behavioral intentions – with respect to policies. In practice, the occurrence of policy learning may be operationalized with the observation of enduring changes in the belief system of policymakers. Hence, in terms of content, policy learning in the ACF is possibly concerned with the alteration of any belief of the belief system.

The present research, however, is more specifically concerned with the evolution of the degree of support of policymakers with respect to the most determining aspects of the European liberalization policy process. As mentioned above, if those aspects (1) are subsystem-wide in scope, (2) highly salient, and (3) have been a major source of cleavage for some time, they may be considered core policy policy preferences. Hence, this research is concerned with changes in the core policy preferences of policymakers with respect to liberalization .

In the present research, policy learning refers to the psychological process which results in enduring changes in the policymakers’ core policy preferences with respect to a given policy. The first dimension of the concept refers to its content. In the present research, the content of policy learning is more specific than in the general ACF definition. Here, policy learning is limited to the processes that result in changes in the core policy policy preferences with respect to a given policy. Indeed, the objective of the research is to understand the individual conditions that explain why the degree of support with respect to a policy vary (or not) over time. The core policy policy preferences being assimilated with behavioral intentions with respect to the policy, they most often turn into real behaviour with real impact on policies. Hence, focusing on core policy policy preferences, viewed as behavioral intentions, is highly relevant with respect to the research question of the thesis. According to its second dimension, learning must be enduring. Few studies pay attention to this aspect of policy learning, whereas it lies at the foundation of human learning in any domain. The beliefs of a policymaker reporting that his opinion about liberalization has evolved over the last day, the last week, or even the last month, have actually changed. But it is not sure whether this change will be enduring. Hence, the measure of learning should also look at the stability of the new beliefs of the policymaker.

Learning is a psychological process which, in itself, is difficult to observe. In this research, the occurrence of policy learning is operationalized in terms of the changes it brings about to the policy policy core preferences of policymakers. In the remainder of the dissertation, core policy policy preferences will be referred to as “policy preferences” or even simply “preferences”, for the sake of clarity . Learning will be said to occur when enduring changes of the policy preferences may be observed. Enduring changes of policy preferences, or “preferences change” is the operational measure of policy learning in this research.

Two different dimensions of preferences change may be operationalized. ***Preferences change direction*** indicates to which extent policymakers’ preferences have evolved favourably or

disfavourably over time, with respect to a given policy. Preferences change direction measures the average change of policymakers' preferences in a given direction. It may be negative, if their degree of favourableness toward the policy has decreased over time, neutral, if their degree of favourableness has not changed, or positive if their degree of favourableness has increased. By contrast, **Preferences change intensity** measures the total amount of policymakers' preferences change, independent of the direction. It may be null, if the policymaker's preferences has not varied , or positive, if the policymakers have revised their opinion about the policy, be it negatively or positively. This distinction is useful to account for the presumed cognitive complexity of policymakers with respect to policies. For example, it could be the case that their expertise has inclined them to assess very differently the various aspects of a policy, their preferences having positively evolved on some aspects and negatively on others. In this context, Preferences change direction would indicate no change, on average. By contrast, Preferences change intensity should capture the amount of preferences variation. As summarized by Table 4, Direction and Intensity are two indicators of Policy preferences change in this research.

Table 4: Two indicators of Policy preferences change – Definitions

Indicator	Definition
Preferences change direction	Average evolution of the preferences of a policymaker with respect to a given policy, in a given direction (by definition, this variable may take negative, null or positive values)
Preferences change intensity	Total amount of variation over time of the preferences of a policymaker with respect to a given policy, independently of the direction (by definition, this variable may take null or positive values, but <i>not</i> negative values)

Another important point concerns the **rationality and intentionality** of policy learning. In the ACF, policymakers' beliefs influence their behavior to real policies. Belief change is viewed as a rational process (logic of consequences) motivated by the intention to translate the belief system into real policies. The rationality of this process is bound by any mental construct that is not oriented toward the translation of the belief system into real policies (logic of appropriateness). In the present research, and consistent with the TRA, I endorse the ACF assumption that policymakers try to behave reasonably with respect to policies in accordance with their belief system. It seems reasonable to think that the components of the ACF belief system are a particularly relevant guide for defining policy preferences and behaviors. But I do not endorse the bound rationality approach. According to this approach, a (set of) goal(s) – here, the translation of the belief system of policymakers into real policies – is given a “privileged” status. The attitudes and behaviors that consistently result from the belief system are said to be “rational”, while the attitudes and behaviors which are not consistent with the belief system are said to be “bound” to other beliefs. Rather, the present research has a “reasoned” approach, in which the components of the ACF belief system are not given this “privileged” status. In fact, the ACF belief system is only a portion of the overall framework of mental constructs of policymakers: all beliefs and attitudes of this framework are bound to each other. For

example, it is true to say that the translation of core policy beliefs into policies is bound by beliefs related to interests. But it is similarly true to argue that the translation of beliefs related to interests into policies is bound by core policy beliefs. To conclude, in this research, policy learning remains intentional: in any context, the policymaker intends to behave consistently with his beliefs. But policy learning is reasoned rather than rational, because all beliefs have a legitimate influence in the definition of attitudes, policy preferences, and behaviors.

Finally, the research has a ***subjective approach of beliefs***. The measure of a mental construct, like a belief, may be objective or subjective (Simon, 1985). In the objective approach, the researcher defines a domain of beliefs *a priori*. Then, the subject is observed to determine whether his attitudes or behaviours (with respect to a policy, for example) are in accordance with his beliefs. If the subject's attitudes and behaviours are indeed in accordance with the researcher's expectations, the behaviour of the subject is attributed the beliefs *a priori* defined. If, on the contrary, his attitudes and behaviours are not in accordance with the researcher's expectations, the subject is supposed to behave according to other beliefs. In the subjective approach, all measures of beliefs are self-reported by the subject himself.

Let us illustrate this again with interests (Martinussen, 2008). In the objective approach, a domain of interests is defined *a priori*. Then, the attitudes and behaviours of the individual are observed. If he behaves according to the expectations, the individual is said to behave in a self-interested fashion. If, on the contrary, the individual does not behave in accordance with the expectations, he is considered to be an altruist, or something like that. The objective approach of interests is often privileged because it does not involve submitting each subject to a questionnaire or interview about his beliefs; they may be measured with proxy factors (e.g., Wolpert & Gimpel, 1998). For example, Wolpert and Gimpel (1998) define *a priori* that crime victims should be interested in gun control. Then, crime victims are observed: those who are supportive of gun control are said to be self-interested. In the objective approach of interests (and other beliefs as well), the researcher makes two postulates. First, he makes the conceptual postulate that he and the subject agree on what is part and what is not part of the interests of the subject (Wolpert postulates that all crime victims believe that gun control is in their interest). Second, he makes the measurement postulate that his own analysis and the analysis of the subject converge about the impacts of the behaviour on the interests of the subject (Wolpert postulates that all crime victims view their support of gun control as an effective way of increasing gun control) (see Lau & Heldman, 2009; Sears, 1997; Darke & Chaiken, 2005). In addition, even when these postulates are met, the use of proxy factors, in the objective approach of interests, may still underestimate or overestimate the link between them and attitudes (Crano, 1997a, 1997b). By contrast, in the subjective approach of interests, there is no postulate and no proxy factor: all measures of interests are self-reported by the subject himself, in a questionnaire (or an interview). It is the respondent alone who assesses the domain of his interests. He also assesses alone the possible impacts of his behaviours on the domain of his interests.

2.4. The role of interests and trust in policy learning

The role of two categories of individual conditions of policy learning are discussed in this dissertation: conditions related to policymakers' interests as well as conditions related to policymakers' trust in other subsystem members, in politicians, and in people at large.

There is a ***theoretical need*** for investigating the individual conditions of policy learning. Most scholarly attention to policy learning has been devoted to aggregate-level issues, in particular with convergence and diffusion approaches which analyze learning and transfer processes among aggregate-level units of government. The conditions that enable or constrain transfer may be programmatic or contextual. They may also be related to the demand and application side (Benson & Jordan, 2011). Programmatic conditions relate to the complexity of a policy that make it more or less unique (Rose, 1993; Dolowitz & Marsh, 2000). Contextual factors include the historical background and path dependency, the relative density of institutional structures, the political context or the ideological compatibility among institutional settings (Bache & Taylor, 2003; De Jong, 2009; Page, 2000). On the demand side, policy makers are often unwilling to move beyond the status quo, unless forced to by unexpected shocks such as a huge failure in an existing policy or a global economic crisis (Stone, 1999). Even where demand is artificially created via coercive transfer, it may not necessarily be sustained due to subterfuge and even overt 'policy resistance' by entrenched interests (Bache & Taylor, 2003). Finally, application factors include the scale and costs involved by institutional adjustment, whether the transferred policy itself must be adjusted, in addition to the technological, logical, economic, bureaucratic and political resources required to address those costs (Benson & Jordan, 2011; Dolowitz & Marsh, 2000). Transfer and diffusion studies focused State-level factors of learning and transfer but they also considered factors at other governmental levels, such as the local level (Wolman & Page, 2002).

Other studies focused on meso-level factors of policy learning, in particular with social learning approaches. For example, some structures of policy networks elicit more inter-individual learning than other ones (Moyson, 2010; Wolman & Page, 2002). The Advocacy Coalition Framework also highlights that political action is often coordinated within advocacy coalitions of policymakers sharing common beliefs about policies. Some coalitions have many political resources to exert much influence on policies. When policies fit the beliefs of the members of those influential coalitions, there is no need for their members to change their policy preferences. On the other hand, some "focusing" events (T. Birkland, 1998; T. A. Birkland, 2006) may attract the attention on the failures of the policies resulting from dominant coalitions. In this case, as the members of dominant coalitions are associated with those policies, they are in first line for changing their opinion. By contrast, the beliefs of adversary coalitions are reinforced (Sabatier & Weible, 2007).

Fewer studies, by contrast, exist on the individual conditions of policy learning. Of course, social and political attitudes were widely investigated (e.g., Robinson, Shaver, & Wrightsman, 1999; Lewis, 2011). But the conditions of their evolution over time were rarely addressed as such, except in some panel studies (e.g., Margalit, 2013). Even more rarely were those investigations explicitly connected with the literature on policy learning.

While the questionnaire of the research survey contains many items, the dissertation focuses on policymakers' individual interests and trust. The role of interests and trust in policy learning deserves much theoretical attention. That human beings are (rationally) interested is a usual but criticized assumption of many rational choice studies, an influential stream of research on politics and policies. At the same time, an important body of literature has empirically assessed the role of interests in social and political attitudes but concluded that the significance of this role is uncertain. It will be argued, however, that the method predominantly used for measuring interests is unsatisfactory and could explain this inconclusiveness in the results. Finally, public choice studies often use trust and trustworthiness as a moderator for the influence of the assumed interested rationality on social and political attitudes. Trust is often used in rational choice studies to explain why rational interests often do not directly influence attitudes because individuals capitalize on trustworthiness to adopt attitudes and behaviors which can harm their interests, at one moment, but serve them more, later (Cox, 2004). Social psychology studies also show that trust can create contexts in which individuals give less importance to their interests, which they call "dispositional trust" (Mayer, Davis, & Schoorman, 1995). Based on an improved measure of interests and trust, this dissertation will empirically assess policymakers' interests and trust and their influence on Policy preferences change, i.e. attitudinal change. This is relevant, especially as those theoretical concerns have rarely been connected to policy learning theory up to now. Those theoretical arguments will be detailed in the next two sections.

Finally, there are several **practical motives** to this research. First, Preferences change direction and Preferences change intensity are distinguished and analyzed separately in this research. The reason for this distinction is mainly practical: for practitioners, it is different to recognize the policymakers whose preferences are susceptible to evolving favourably with respect to a given governmental program – for example, because those policymakers have interests vested in the program – and the policymakers whose preferences are more susceptible to changing , favourably or disfavourably – for example, because they trust the other members of their subsystem.

Second, methodological tools are developed for the analysis of the variation among policymakers in Policy preferences. Multilevel analysis, in particular, allows to distinguish the proportion of this variation which may be attributed to individual differences or to differences among the group units (e.g., organizations) these policymakers belong to. This indicates to practitioners *where* they may do something for influencing the course of policy decisions. Without explanatory variables, however, multilevel models do not tell them *what* to do yet...

Third, the theory being uncertain about the role of interests in policy learning, it would be worthwhile for practitioners to have a good general image of their influence on the course of policy decisions. In addition, the research distinguishes personal interests, operationalizing the policymakers' material well-being, from organizational interests, operationalizing the success of the organization the policymakers belong to. According to the type of interests influencing policy learning, the levers available to practitioners may be very different. If personal interests influence policy learning, practitioners willing to implement their governmental program should take care of its (perceived) impacts on individual policymakers. If organizational interests influence policy learning, practitioners should take care of the (perceived) impacts of their governmental program on organizations, which provides them easier levers for policy implementation. Hence, an empirical assessment of the role of interests in policy learning is worthwhile practically. The evaluation of the

influence of trust on policy learning deserves attention for similar reasons: if policy practitioners know that confident policymakers are more susceptible to adhere to governmental programs over time, it is of practical importance to create the conditions of trustworthiness. If, on the contrary, trust does not play a role, trustworthiness should deserve less attention from the practitioners’.

2.4.1. Interests

The idea that interests can determine the orientation of social and political action is ancient in the social sciences. This idea is based on the presumption that many behaviours may largely be explained by hedonistic considerations made by actors. It probably finds its strongest and most frequent application in economics. In this discipline, studies are often conducted with the postulate that the individual acts (consumes, invests, economizes , etc.) according to his self-interest (Jacquemin, Tulkens, & Mercier, 2001). The free-rider problem is one well-known economic consequence of the interested behaviour of individuals (Olson, 1965). With respect to public goods, free riding means that an individual benefits from the good without contributing to its costs. For example, the trade union services may be considered a public good. In this sense, the workers who, in a firm, benefit from trade union services without paying for them are free riders. One may speak of a free rider problem when, due to free riding, the public good may not be provided anymore.

In political science, many theories have considered interests. For example, rational choice institutionalism (Hall & Taylor, 1996; Ostrom, 1990; Shepsle, 2005) assumes that the behaviour of actors in institutions is rationally oriented toward the fulfilment of their objectives and preferences. In rational choice institutionalism, material interests are often at the centre of preferences. But preferences are often larger than this (Hay, 2004; Ostrom, 1998). For example, electoral ambitions of political actors are often considered, whereas winning an election does not necessarily provide more money. The common content of the preferences, objectives, and interests which are supposed to guide political actors is their orientation toward personal concerns. In fact, empirical applications of rational choice institutionalism are often interested in the numerous situations in which the theory’s assumption is violated. Those behaviours may be guided by heuristics, rather than rationality. Most importantly, the theory argues that political behaviours have a bilateral relation with institutions (Ostrom, 2000). On the one hand, behaviours may be oriented toward objectives which override personal concerns and allow organizing institutionalized, collective action. For example, such institutions allow to overcome the free rider problem in the case of water management (Scholtz & Stiftel, 2005). On the other hand, institutions influence behaviours and ease their orientation toward personal objectives, preferences and interests. For example, the influence of Congress as an institution on its members allows to maintain the stability of coalitions among Congressmen with diverging interests (e.g., Shepsle, 1986). Finally, it should be noted that most empirical applications of the rational choice theory view and measure interests as objective constructs (Paternotte, 2011).

The specific role of material interests in social and political attitudes was systematically investigated by a very important research body following the major 1991 literature review of Sears and Funk on this issue (Green, 1988; Lau & Heldman, 2009; Margalit, 2013; Martinussen, 2008; Sears

& Funk, 1991; Sears, Lau, Tyler, & Allen, 1980; Sudit, 1988). The findings of this research tradition are very inconclusive about the significance level of the connection between personal interests and political attitudes. When significant, however, the relation is found to be positive: people tend to be more favourable to a political object, for example a policy, when their interests are positively influenced by this object.

In the transfer and diffusion tradition of policy learning studies, the consideration of the role of interests as a condition to learning is much more recent. Gilardi (2010), in particular, shows that policy learning may be motivated by considerations related to the effectiveness of policies in other institutional settings ("policy learning") or by electoral performance ("political learning"). In addition, "right-wing governments tend to be more sensitive to information on the electoral consequences of reforms, while left-wing governments are more likely to be influenced by their policy effects" (Gilardi, 2010, p. 650).

Despite the empirical and theoretical importance given to interests in many political science theories, they have been few investigations into policy learning research, in general, and in ACF-based studies, in particular. The explanation of this lack of attention is at the same time historical and theoretical. The ACF was created to complement traditional efforts to explain the policy process on the basis of interests and values (e.g., Ricker, 1962; Wilson, 1973; cited by Sabatier & Jenkins-Smith, 1993b). For this reason, the ACF proposed looking at the belief system of policymakers to understand the reasons of policymakers' behaviours. Hence, quite naturally, there has been a lack of attention to interests in ACF-based studies to explain policy learning and policy change.

The lack of consideration for interests in ACF studies raises two problems. The first problem is conceptual. In its first versions, the ACF defined the belief system as an inclusive set of perceived "interests/goals, perceived causal relationships, and perceived parameter states" (Sabatier, 1987, pp. 663-664). Hence, interests were considered part of the system of beliefs determining policymakers' behavior. As the ACF was created to complement interest-based theories, however, the studies testing the ACF did not focus on interests. Rather, for operationalizing the belief system of policymakers, they relied on the series of "illustrative components" developed over years. In this series, interests are not explicitly represented.

The second problem involved by the lack of consideration for interest in ACF studies is theoretical: taking as a starting point that beliefs do not include interests (anymore), evidence has to be provided about the explanatory power of beliefs relative to interests. Several studies have tried to fill this gap by contrasting interests-based and belief-based explanations of the policy process. For example, Lertzman, Rayner and Wilson (1996) show the role of ideas and learning in policy change in the British Columbia Forest Sector. In a reply to this article, however, Hoberg (1996) argues that the concurrent hypothesis should be tested that policy change could be guided by the interests of the actors. Following Hoberg, policy learning allows to examine the role of ideas in policy change in comparison to (and independently from) the role of interests. It is worthwhile to note that, in the view of Hoberg, interests are a "non-cognitive" factor of policy change, when he writes: "obviously, there is no conceptual or theoretical problem with arguing that one variable trumps another. The problem with the account, however, is that so little attention is paid to alternative explanations that a convincing argument for why learning is so important to the explanation is never offered. At one point, the authors make the following summary statement: "Obviously, learning by itself was not a

sufficient condition for the changes that have taken place. But neither were external 'perturbations' " (Lertzman et al., 1996, p. 125). But this conclusion is simply not supported by the analysis because the authors never provide an argument for why non-cognitive factors are not sufficient. A more persuasive strategy is adopted by Goldstein and Keohane (1993) in their attempt to test the influence of ideas. They argue that the best methodological approach is to test the null hypothesis that the policy change in question 'is entirely accounted for by changes in factors other than ideas'. In what follows, I provide an alternative account of the developments described by the article that emphasizes an interest-based approach, and seems to provide an extremely compelling argument for the extent of change in BC forest policy" (Hoberg, 1996, pp. 139-140).

Nohrstedt (2005) is even more explicit about the opposition between interests and beliefs: "Sabatier and Jenkins (Sabatier & Jenkins-Smith, 1993b, p. 28) exclude interests from the ACF, partly because they are too difficult to identify a priori and because they correlate with belief systems. The overly simple solution to this problem has been to incorporate interests into the beliefs systems concept, a solution that may in fact be counterproductive. By setting aside interests, no reason is provided to reject the null hypothesis that beliefs are not relevant to policy change (Hoberg, 1996, p. 143)". Notwithstanding the conceptual discussion, Hoberg (1996) as well as Nohrstedt (2005) came to the result that interests – viewed as an explanation alternative to beliefs and policy learning – do influence policy change.

In this research, the influence of interests on policy learning is examined because studies addressing this topic are scarce. It should be noted that previous studies on the role of interests in other social and political attitudes rarely investigate attitudinal change. When they find a significant link between interests and attitudes, this relation appears to be positive. Hence, the general hypothesis of the research also claims that policymakers' preferences with respect to policies should change over time according to their interests. In addition, a new look at interests is proposed in accordance to the analytical framework of the research: rather than *opposed* to beliefs, interests are viewed as the *result* of beliefs. In what follows, interests are operationalized into research variables. Operational hypotheses related to interests are also deduced from the general hypothesis. Variables and hypotheses are connected to the analytical framework of the research in Figure 6. Operational hypotheses are listed in Table 5.

The interests of a given entity, for example an individual or an organization, may be defined as the short to medium-term material well-being of this entity (Mansbridge, 1990; Sears & Funk, 1991). Only the material aspects of well-being are captured by the concept of interests. Material well-being is composed of three dimensions related to money: the access to money itself (e.g., salary), the access to opportunities and other factors which money can provide (e.g., professional opportunities), and the access to things which are the result of having money (e.g., buying a house). The reason why interests are limited to material well-being is conceptual and theoretical. If interests are extended outside the material limit, the conceptual limit between them and such concepts like values, justice or culture can rapidly become blurred. Consequently, the relations between interests and these concepts turn out to be difficult to theorize. For example, symbolic personal interests may include the motivation, among civil servants, to elaborate good policies and commitment to public interest, civic duty, social justice, self-sacrifice and compassion (Perry, 1996), things that may be brought closer to the values which support some policies. Long-term well-being is not related to interests because people, organizations and their environment change over time. What is in their

interest at one period of time can fall outside the domain of their interests in the longer-term. For example, in the case of individuals, buying a house may be part of their interest if they intend to raise a family. Later, when their children leave the family, they can think that keeping the house falls outside their interests and that a flat is more appropriate.

The interests of one person result from a belief network . Consistent with the TRA, some of these beliefs are evaluative, while other beliefs are predictive. In the network of beliefs held by a policymaker, three categories of beliefs play an important role to understand the influence of interests on policy preferences change. First, some beliefs are concerned with the outcomes resulting from a policy on the interests of the policymaker. They may be formulated as such: “I believe that given outcomes (e.g., salary increase or decrease) have resulted from the implementation of a policy”. These beliefs are predictive.

A second category of beliefs related to interests identify what is part and what is not part of the domain of interests of one person. They also provide information about the absolute and relative importance of each element of the domain. They may be formulated as such: “I believe that given aspects (e.g., a high salary) fall / do not fall in the domain of my interests”. Of course, many people consider that the salary they receive is part of their interests. But we may imagine someone who does not receive any salary for his work but only material privileges like a car, a house, free subscriptions, etc. For this person , this may or may not belong to the domain of his interests. In addition, for those elements which are part of the domain, the beliefs also provide information about the importance of each element in the domain, like: “I believe that this element of my domain of interests is a not really / very important”. These beliefs are evaluative. Together, they allow measuring the Generalized valence of interests, i.e. the average importance given by a person to the aspects of his material well-being. The Generalized valence of interests may be defined as the subjective salience given by the individual to the idea of self-interest. The valence of interests is null when the domain of interests of a policymaker is empty. In this case, the policymaker does not give any importance to his material interests. The valence of interests is positive when a degree of importance is given by the policymaker to some aspects of his domain of interests²⁵.

Valence is an often-used notion in psychology for referring to the pleasant or unpleasant nature of emotions related to an attitudinal object, for example a person or an interest. Consistent with the framework of this research, valence is an evaluative notion (Clore & Schnall, 2005). An extensive body of literature shows how the valence of an object strongly increases the influence that this object can exert on the attitudes (Lerner & Keltner, 2000; Schwarz & Clore, 1996; Zajonc, 1998). For example, the valence of past relationships was shown to be a good predictor of attitudes with respect to future interactions (Burke & Springer, 2003). Complementary studies have showed that the influence of hedonistic considerations on attitudes is emotion-specific. For example, the effects of sadness and anger, two unpleasant emotions that may result from past events, have different qualitative effects on future events (DeSteno, Petty, Wegener, & Rucker, 2000). Other studies have shown there is a “valence asymmetry”: negatively-valenced attitudinal objects exert a stronger effect on attitudes than positively-valenced objects (Fazio, Eiser, & Shook, 2004; Pietri, Fazio, & Shook,

²⁵ The valence of interests is negative when they are “disliked” by the policymaker. Such a policymaker does not like to feel well-off materially . While this dimension of the valence of interests is considered in this research, it is quite reasonable to think that it will be less frequent. This will be confirmed by the results, see section 1.4.3).

2013). The notion was recently introduced in political science to refer to the “emotional quality of ideas”. As the valence of policy ideas offers a good view on people’s respect of these ideas, good-valenced policy ideas may be associated with new policies to promote them (Cox & Béland, 2013).

A third important category of beliefs related to interests allows each policymaker to evaluate the predicted outcomes of policies with regard to his domain of personal interests. They may be formulated as follows: “I believe that given outcomes resulting from a policy have had a positive/negative impact on given aspects of my domain of interests”. Those beliefs are evaluative and result from the combination of the two first categories of beliefs. On the one hand, only the predicted outcomes of the policy are evaluated. For example, these beliefs are not related with salary if the policymaker thinks that the policy has had no impact on it. On the other hand, only the predicted outcomes are related to the personal domain of interests of the policymakers. For example, if the policymaker is not interested in the amount of salary he receives, these beliefs are not related with salary as such (and this, even if he believes that the policy has had a positive or negative impact on his salary). Together, these beliefs allow to measure vested interests, i.e. the interests of the policymaker influenced by the policy. Vested interests are defined as the subjective hedonistic relevance of an attitude object (in this research, a policy) (Crano, 1995; Lehman & Crano, 2002). Vested interests are positive when the policymaker believes that the policy has had positive consequences on his interests, whereas they are negative when the policymaker believes that the policy has had negative consequences on his interests. Vested interests are null when the policymaker thinks that the policy has had no influence on his interests.

While the two concepts and variables are different, it should be noted that valence is an issue in the Valence of interests as well as in Vested interests. The Valence of interests is an absolute measure of the valence of interests. By contrast, Vested interests are a relative measure: with this variable, policymakers valence an object – a policy – with respect to a given criterion – a domain of interests.

This research also distinguishes ***personal interests from organizational interests***. Personal interests relate to the material well-being of one person. Organizational interests relate to the material prosperity of the organization he is a member of. While their object is organizational, organizational interests are concerned with organizations, and they are well measured at the individual level. They result from the beliefs of the individual about the interests of his organization. Again, there is a first category of predictive beliefs: “I believe that given outcomes (e.g., commercial advantages) have resulted from the implementation of a policy”. There is a second category of evaluative beliefs: “I believe that given aspects (e.g., commercial success) fall / do not fall in the domain of interests of my organization. Finally, there is third category of evaluative beliefs: “I believe that given outcomes resulting from a policy have had a positive/negative impact on given aspects of my domain of interests”.

Most studies, typically those concerned with social and political attitudes, focus on the personal interests of policymakers (e.g., Lau & Heldman, 2009). Sometimes, typically in studies assimilating electoral performance to interests (e.g., Gilardi, 2010), personal interests and organizational interests are measured together. Indeed, electoral success serves the interests of the individual and his party. I suggest that the influence of personal and organizational interests could be distinguished and, moreover , compared. The first reason is theoretical: personal interests and

organizational interests, perhaps, do not influence policy preferences in the same way. The second reason is practical: the levers that should be activated by policy practitioners to influence policy learning and change are not the same according to the type of interests influencing them.

The influence of interests on the evolution of policymakers' preferences may result from **vested interests** in a policy. Vested interests provide the policymakers with information about the consequences of the policy on his interests. Consistent with the studies which found a connection between personal interests and attitudes, policymakers' preferences should change according to their personal vested interests in the liberalization policy: if they believe that the liberalization policy has had positive consequences on their personal interests, their opinion should have evolved positively with respect to this policy. Inversely, if they believe that the liberalization policy has had negative consequences on their personal interests, their opinion should have evolved negatively. Hence, Preferences change direction should be positively related to Personal vested interests (hypothesis I.P1). This hypothesis also has an organizational declension. If policymakers believe that the liberalization policy has had positive consequences on the interests of their organization, their opinion should have evolved positively with respect to this policy. Inversely, if they believe that the liberalization policy has had negative consequences on the interests of their organization, their opinion should have evolved negatively. Hence, Preferences change direction should be positively related to Organizational vested interests (hypothesis I.O1).

It should be noted that these two hypotheses make an important assumption: for policymakers to change the policy preferences over time according to their vested interests, they should give a positive valence to their interests, even if very weak. If, on the contrary, their interests have absolutely no importance to them, there is no reason for them to adapt their preferences with respect to the liberalization policy according to the impact of this policy on their interests. If policymakers give a negative valence to their material interests, the relation between Preferences change direction and vested interests should be actually inverted: the preferences of policymakers that their personal interests should be disfavored and that the policy has had positive impact on them over time should evolve negatively. It seems reasonable, however, to assume that few people will self-report that they have nothing to do with their material well-being or that they even want to disfavor their material interests²⁶.

The influence of interests on the evolution of policymakers' preferences may also depend on the **valence of interests**. If interests are given much importance, the relation between vested interests and preferences change should be stronger. Statistically speaking, this means that, in a regression model of preferences change on personal vested interests and on the generalized valence of personal interests, one should find a positive interaction term between the two explanatory variables. Such an interaction would mean that the higher the generalized valence of personal interests, the stronger the relation between personal vested interests and preferences change should be (hypothesis I.P2). Likewise, this hypothesis has an organizational version, in which the interaction term would mean that the higher the generalized valence of organizational interests, the stronger the relation between organizational vested interests and preferences change should be (hypothesis I.O2).

²⁶ This assumption will be confirmed by the results (see Section 5.3.1).

The connection between the operational variables and hypotheses related to interests and the analytical framework of the research appear in Figure 6. The four hypotheses are listed in Table 5. It may be noted that these four operational hypotheses are related to Preferences change direction because they relate most clearly with existing literature. None of them concerns Preferences change intensity. Nevertheless, the relations between this variable and Preferences change intensity will be examined in the results of the dissertation.

Figure 6: Connection between the operational variables and hypotheses related to interests and the analytical framework of the research

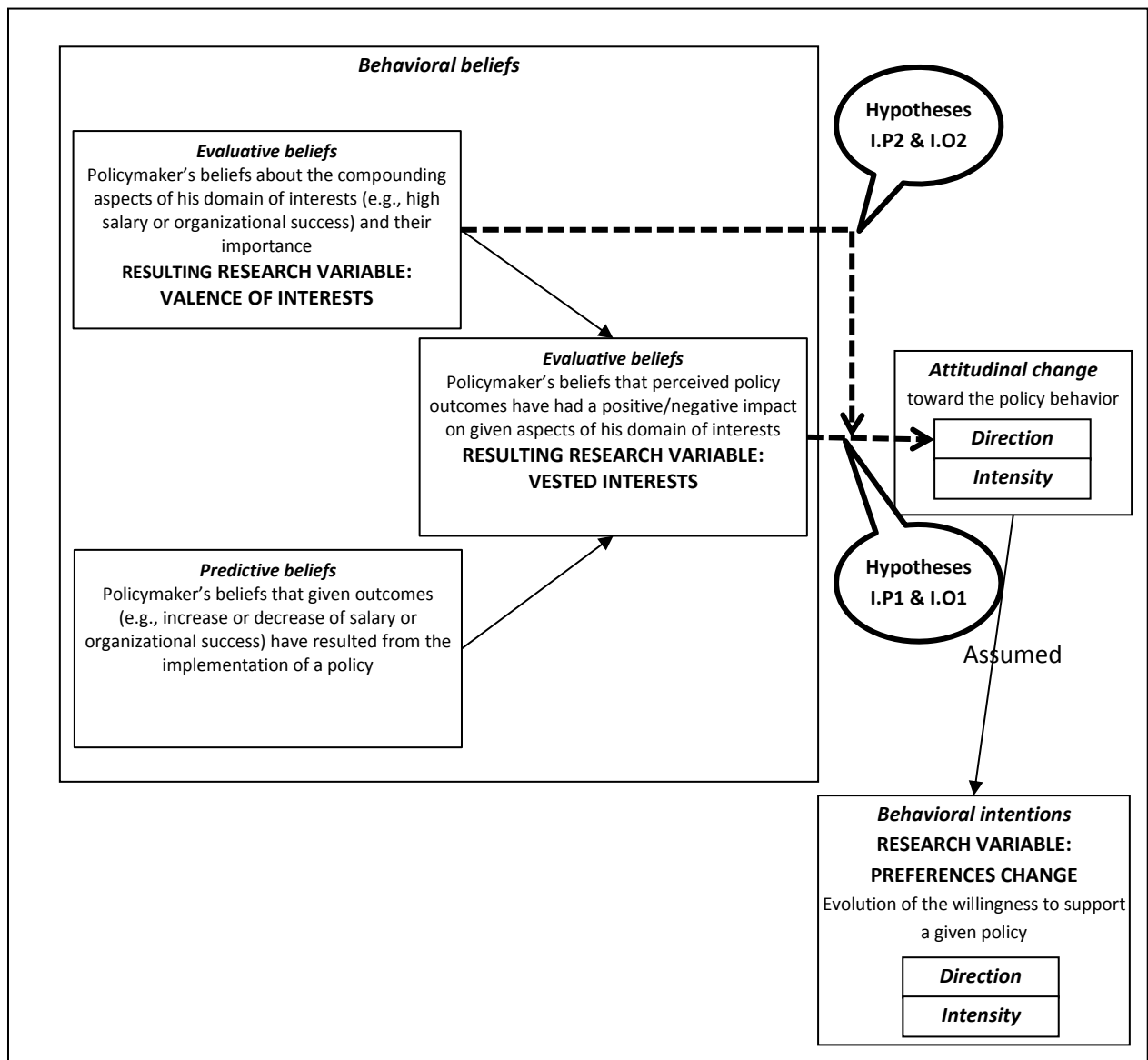


Table 5: Operational hypotheses related to interests

HYPOTHESIS I.P1:

Preferences change direction should be positively related with Personal vested interests in the liberalization policy. In other words, policymakers' preferences with respect to the liberalization policy should change according to their personal vested interests in that policy, over time.

HYPOTHESIS I.P2:

The relation between Preferences change direction and Personal vested interests (hypothesis I.P1) should be stronger when policymakers give more importance (valence) to their personal interests.

HYPOTHESIS I.O1:

Preferences change direction should be positively related with Organizational vested interests in the liberalization policy. In other words, policymakers' preferences with respect to the liberalization policy should change according to their organization's vested interests in that policy, over time.

HYPOTHESIS I.O2:

The relation between Preferences change direction and Organizational vested interests (hypothesis I.P1) should be stronger when policymakers given more importance (valence) to their organizational interests

This section may be concluded with *several clarifications*. First of all, three categories of beliefs related to interests were described above because they allow to define the relevant variables of the research. Consistent with TRA, it should be clear, however, that these beliefs belong to a much larger network of other beliefs. On the one hand, they result from a multitude of other beliefs. The predictive beliefs allowing one person to identify the outcomes of a policy depend on the knowledge that this person (believes that he) has on this policy. For example, a policymaker may or may not believe that a policy has resulted in a reform of the working conditions in his organization. The same kind of arguments holds for evaluative beliefs.

On the other hand, behavioral intentions and behaviours depend on many factors, including other behavioral beliefs, normative beliefs, and control beliefs. In particular, the relation between attitudinal changes and the behavioral changes resulting from those attitudinal changes also depends upon the valence of attitudinal objects. In accordance with the framework of this research, normative and control beliefs are susceptible to lower the influence of attitudes on behavioral intentions and behaviors. Take, for example, a policymaker believing that the improvement of his material working conditions is desirable (behavioral belief) and believing that a given policy reform could allow such an improvement (behavioral belief). This policymaker has interests vested in the policy reform. For this reason, he can develop an attitude favoring this reform. However, at the same time, he could believe that such a motive for policy change is not moral enough (normative belief), which would cancel the influence of his attitude on his behavioral intentions. However, if the valence of the vested interests of this policymaker becomes higher, his attitude favorable to the reform is strengthened. At a certain point, the influence of his attitude on his behavioral intentions becomes higher than the influence of his normative beliefs (unfavorable to a policy reform). Hence, the

relation between the attitude and the resulting behavioral intentions depend upon the valence of the attitudinal object²⁷.

It should also be very clear that this research postulates the anteriority of vested interests (independent variable) with respect to preferences change (dependent variable). It is considered that policymakers cannot have an opinion about their interests vested in the liberalization process before the implementation of this policy. Then, over time, vested interests and policy preferences will evolve in accordance with distinct mechanisms. On the one hand, vested interests depend on the observation that the outcomes of the policy are or are not favourable to one's interests. This excludes the influence of policy preferences. On the other hand, the evolution of policy preferences (policy learning) depends on many factors. These factors can include vested interests. In other words, it may not be case that interests vested in a policy are explained by one's preferences for this policy. If detected by statistical analyses, the correlation between vested interests and learning is the indication of a causal mechanism between interests and learning (and not the other way round).

Interests were also defined above with respect to short-term considerations. Policy learning, by contrast, is a long-term mechanism. It does not raise, however, any theoretical or methodological problem for this research. During the survey, policymakers will be asked to report on the evolution of their preferences with respect to the liberalization policy over the last years. In another section of the questionnaire, they will be asked to evaluate the overall influence of the policy on their interests, for example on their working conditions. To answer those questions, each policymaker will be assumed to make a synthesis of all the negative and positive influences that the liberalization policy may have had on their interests, over years. It may be the case that, in his opinion, a policy decision related to the liberalization deteriorated his working conditions in 1995 whereas another policy decision improved them in 2003, resulting in a "neutral" answer to the question on vested interests in the questionnaire. As interests are assumed to refer to short-term considerations, the point is to consider that the answers given by policymakers on vested interests only refer to past events, and not to the future. Hence, from a theoretical point of view, the tests conducted on the relations between policy learning and vested interests are consistent: these two (sets of) variables refer to events having occurred between the implementation of the liberalization policy and today.

2.4.2. Trust

Many theories have recognized the role of trust in attitudes and behaviors at the individual and at collective levels. In Putnam (1993)'s and Coleman (1988)'s theory of social capital, for example, trust is admittedly the missing link between individual actors' rational choices and social relationships that allow individual advancement, collective action, well-being and other positive returns (Lin, Cook, & Burt, 2001). Consistent with rational choice, trust in common values and

²⁷ This remark sheds additional light on the TRA-based postulate that policy preferences are related to behavioral intentions and behaviors. In fact, this relation may depend on several factors, such as the valence of attitudinal objects.

institutions provides the individuals with positive feedback from society by multiplying transactions and opportunities. According to Coleman (1988), however, trust itself is an important component of social capital on which future confidence assessments may be based in a context of low-information and lack of resources: “the capacity to trust, combined with the institutional constraints on trustees that provide the basis for trust, enables people to gain the benefits of transactions that would be too expensive if fully rational principal-agent controls were required” (Scholtz, 1998, p. 137).

Trust may be defined as “faith or confidence in another's propensity to keep promises, to negotiate honestly, to show respect for other points of view, and to express some level of concern for the welfare of others” (Leach & Sabatier, 2005, p. 492; see also Braithwaite, 1998; McKnight & Chervany, 1996; Tonkiss & Passey, 1999). Like interests, results form a network of beliefs. Some beliefs allow the individual to assign a degree of probability to the future behaviors of other people according to past experience. They may be formulated as follows: “I believe that a given people will have given behaviors”. These beliefs are predictive. Some beliefs allow the individual to evaluate the predicted behavior of other people. They may be formulated as follows: “I believe that given behaviors are positive/negative” Together, those beliefs allow the individual to adopt an attitude with respect to these people. It should be noted that, in this view, trust remains the result of a sort of rational calculation about the behavior of other people. However, this view is coherent with TRA in which different beliefs may be connected with logical links. This is not the same as rational choice, however, because the links are not *necessarily* coherent and logical and the beliefs themselves (predicted behaviors and their evaluation) are not necessarily rational.

The ***first general hypothesis of the research relates trust to Preferences change intensity.*** According to Coopey (1998), modern human resource management exacerbates control on organization members and depersonalizes them through standardization methods. Trust is lacking between stakeholders and managers, as well between managers and the organization members they manage. Discursive practices are necessary for allow organization members to participate in the renewal of organizational values and ideology. Trust, implying a relationship in which organization members are given discretionary powers in caring for something that is valued by stakeholders and managers, is necessary for them to change their organization, that is, to adhere to, and implement new values and methods. According to professionals of organizational learning, trust involves beneficial effects on organizational aspects such as: competitive advantage, because it creates conditions favourable to innovation; self-regulation, because members at all levels are committed to resolving problems without unnecessary control; efficiency, because it eliminates many transaction costs among organization members; etc . All these aspects show the positive influence of trust on learning within organizations (Learning Center, 2011). Trust and its positive effects endure when inter-personal trust are supplemented by a “community of interest, organizational cultures receptive to external inputs, and widespread and continually supplemented knowledge among employees of the status and purpose of the collaboration” (Dodgson, 1993, p. 77).

Trust has positive effects on organizational learning. However, as explained earlier in the review of policy learning approaches, organizational learning is intended toward the adaptation of the organization to the environment, the resolution of organizational problems, the increase of organizational knowledge on these respects, etc. By contrast, this research is concerned with Preferences change with respect to liberalization policy. There is a specific lesson of organizational learning literature, however. Trust involves less suspicion, more openness toward uncertain and new

information and experiences. This is formulated most clearly by Edmondson & Moingeon, (1999, p. 159): “Organizational learning, by its nature, is called for in situations in which much is unknown and uncertain (Senge, 1990), creating a need for trust to enable experimentation, reflection, or action. More generally, trust is needed in periods of change. For example, when a significant change is announced in an organization, the announcement creates uncertainty that often leads people to reject or block change. It is particularly clear in such cases that direct orders are inadequate to ensure new behaviors; for real change to be implemented the degree of perceived, uncertainty must be offset by an increase in trust. In summary, trust in both intentions and competence comes into play in producing significant organizational learning and change”.

Likewise, according to interest-based negotiation literature, people believing that their partners play fairly in the decision-making process should be more inclined to search for consensus about the policy which has to be implemented (Hogg & Smith, 2007). This inclination should involve an enduring openness of mind to unknown information and arguments and thus to learning.

All these indications lead to hypothesize that confident policymakers should be more open to policy learning. Hence, Preferences change intensity should be higher among confident policymakers. Confident policymakers should be more willing to search and handle new information and experience, in situations of uncertainty. It should be clear that this hypothesis does not relate to Preferences change direction. Preferences of confident policymakers with regard to the different aspects (indicators) of the liberalization policy change a lot over time (change intensity), without modifying their average support of this policy (change direction), because some positive changes would be compensated by equally negative changes, and the other way round .

The ***second general hypothesis of the research relates trust to Preferences change direction.*** Trust involves accepting a degree of risk. Trust involves giving resources to others; I lose control over these resources and the behavior of others. In fact, trust is inversely related to risk aversion. Risk aversion is a heuristic-based (set of) belief(s) which influences individual decisions in favor of alternatives of which the consequences are known rather than those in favor of unexplored paths. By contrast, among confident individuals, this tendency is less strong (Schechter, 2007; Guiso, 2012). Their perceptions and predictions about the consequences of policies should be more positive than among distrustful individuals. Confronted with common information and experiences resulting from a new policy, confident policymakers should see fewer risks for themselves and for the collectivity resulting from their support to a new policy, than distrustful policymakers should see. As a result, the preferences of confident policymakers with respect to the liberalization policy should evolve more positively than the preferences of distrustful policymakers.

While they are close to each other, it should be clear that the two general hypotheses of the research relating trust to Preferences change are different. The first hypothesis relates trust to Preferences change intensity and is based on the argument that confident people are more open to new ideas. As a result, confident policymakers are also more open to new information and experiences resulting from the implementation of a new policy, which provides more opportunities to Preferences change (independently from the direction of this change). The second hypothesis relates trust to Preferences change direction and is based on the argument that the predictions made by confident people about new behavioral objects, like policies, are, on average, more positive. As a result, new information and experiences resulting from the implementation of these new policies are

subject to a more positive treatment among confident policymakers than among distrustful policymakers. Being less suspicious with respect to new information and experience, the preferences of confident policymakers should evolve more favourably with respect to the liberalization policy than the preferences of distrustful policymakers.

As underlined by Edmondson and Moingeon (1999) and consistent with the analytical framework of this research, trust is associated with a belief, a belief “that relinquishing some degree of control over a situation to one or more others will not lead to personal loss or harm” (see also Lorenz, 1993; Mayer et al., 1995). This belief results from a set of other beliefs, some of them evaluative and others predictive. Evaluative beliefs associate a general degree of desirability (or undesirability) of the risks resulting from behavioral choices. Predictive beliefs provide the individual with a probability that, as a result of behaviors involving trust in others, negative or positive consequences will occur²⁸. These beliefs will not be considered separately in this research but together, through the measurement of trust as a unique concept. Consistent with the general hypotheses explained above, it is expected that the preferences of confident policymakers will change more intensively and in a more positive direction, with respect to the liberalization policy.

Three types of trust are considered separately in the research, two “generalized” types and one “interpersonal” type. Generalized trust is subsystem-independent; it is of general application. Generalized trust should be understood as the general degree of policymakers’ confidence in others’ fairness. Generalized trust in people is the most general measure of trust. Generalized trust in politicians will be considered separately and may be understood as the general degree of policymakers’ confidence in politicians’ fairness. Indeed, in a political context, it is suspected that trust in politicians could be related, more clearly than trust in people, to the openness and attitude toward new political ideas²⁹. By contrast, interpersonal trust is subsystem-specific; it is contextual. It may be defined as the degree of policymakers’ confidence in the fairness of the other members of his policy subsystem members. As demonstrated by Leach and Sabatier (2005), generalized and interpersonal trust are distinct but related concepts. The connection between trust and policy learning should be stronger when trust is measured with respect to the context in which policy learning occurs. Hence, the connection between Interpersonal trust and Preferences change should be stronger than between Generalized trust and Preferences change.

Two general hypotheses relating trust to Preferences change were put forward. On the other hand, three types of trust were distinguished. As a result, six operational hypotheses may be formulated on the role of trust as an individual condition of policy learning. The connection between

²⁸ By measuring trust as a unique concept, the research makes an assumption of independence between the predictive beliefs and the evaluative beliefs at the basis of trust. For example, it could be imagined that those people who predict many risks are those people who like risks most. In this case, people who do not trust others (because they see many risks) have no reason to fear new information, experiences, and policy learning (because they do not dislike risks). Such a scenario, however, is very improbable. In fact, the converse scenario, in which people who predict many risks also dislike risks most, is more probable. In this case, people who distrust others have many reasons to fear new information, experiences, and policy learning (because they dislike risks). Hence, the assumption made by the research that predictive and evaluative beliefs are, at least, independent, seems very reasonable.

²⁹ It should be noted that the subsystems investigated in this research do not include politicians. Politicians are those persons involved in several sectors (e.g., Members of Parliament). In this research, only the policymakers involved in one subsystem and working within the related sector are considered. This is detailed in the methodological part of the dissertation.

the operational variables and hypotheses related to trust and the analytical framework of the research appear in Figure 7. The six hypotheses are listed in Table 6.

Finally, the research postulates that none of the variables were influenced by the liberalization process; policymakers' degree of trust in other subsystem members, in politicians, and in people at large, did not change as a result of the liberalization process. In other words, trust should be viewed as a possible condition of the learning mechanism with respect to the liberalization process, and not the other way round .

Figure 7: Connection between the operational variables and hypotheses related to trust and the analytical framework of the research

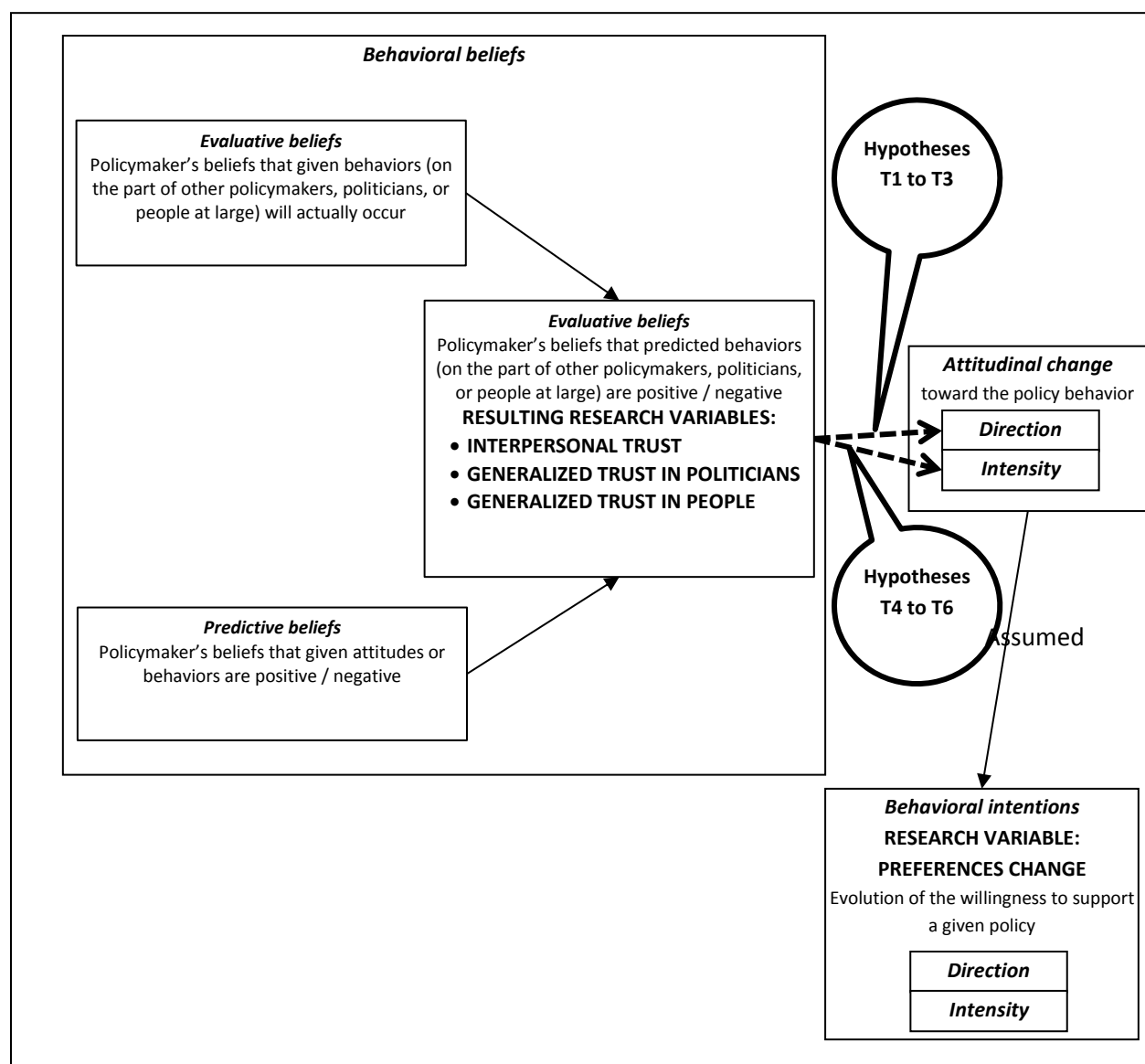


Table 6: Operational hypotheses related to trust

HYPOTHESIS T1:

Preferences change direction should be positively related with Generalized trust in people.

HYPOTHESIS T2:

Preferences change direction should be positively related with Generalized trust in politicians.

HYPOTHESIS T3:

Preferences change direction should be positively related with Interpersonal trust in subsystem members.

HYPOTHESIS T4:

Preferences change intensity should be positively related with Generalized trust in people.

HYPOTHESIS T5:

Preferences change intensity should be positively related with Generalized trust in politicians.

HYPOTHESIS T6:

Preferences change intensity should be positively related with Interpersonal trust in subsystem members.

The relation between trust and policy learning is addressed by Montpetit (2007). Based on deliberative ethics (Cohen, 1997; Risse, 2000; Scharpf, 1997; Schön & Rein, 1994) and social psychology (Leach & Sabatier, 2005) literatures, he suggests that one “precondition” should be important for the policymakers to seriously consider new arguments: they “must trust each other” (Montpetit, 2007, p. 6). His results tentatively ($p\text{-value} < 0.15$) support the hypothesis that trust is related to Preferences change direction. This effect was stronger among respondents exposed to a wider variety of other organizations than among more isolated policymakers. By contrast, the relation between trust and learning intensity was not found to be significant. In the study, “respondents were asked whether, in the last year, they had become more favourable, less favourable or whether their opinion had remained stable about 10 agrifood and 7 human genetics policy options” (Montpetit, 2007, p. 10). Policy learning was measured by summing up the answers given by the respondents, while policy learning intensity was operationalized as the proportion of items on which they indicated a belief change (rather than stability). In the present research, as will be detailed in the methodological part, Preferences change direction and Preferences change intensity are operationalized by comparing past beliefs with present beliefs, with the hope of capturing more nuances in the evolution of policymakers’ beliefs. In addition, the present research distinguishes between (two) generalized and (one) contextualized measure of trust.

The effect of generalized and interpersonal trust on policy learning also has different implications for practitioners. For example, the effect of Interpersonal trust in other subsystem members on policy learning provides practitioners with the indication that a climate of trust, in the policy subsystem, is important for the policymakers’ preferences to be susceptible to change. By

contrast, the effect of generalized trust on policy learning would mean that policy learning has more to do with the personality of policymakers involved. In this case, the selection of policymakers, rather than the climate of the policy process, is important for preferences being susceptible to change. If one thinks to the effect of Generalized trust in politicians on policy learning, another lever for practitioners to facilitate policy decisions is to increase the trustworthiness of politicians, in a given policy sector or in general.

Chapter 3. The European liberalization policy process in the Belgian rail and electricity sectors

The hypotheses of this research are tested with the data from a survey conducted among policymakers involved in two Belgian network industries: the railways and electricity sector. In the questionnaire, these policymakers reported on the evolution of their preferences, that is, their degree of favourableness toward the European liberalization process of network industries over time.

Network industries “are characterized by the delivery of products or services to final customers via a ‘network infrastructure’ linking upstream supply with downstream customers” (European Commission, 1999). Until the 1980s, in Europe, nearly all network industries were public utilities³⁰. Since the 1980s, many of those network industries have been subject to a liberalization policy process. They primarily included telecommunications, the postal services, energy, and transport (see, for example, Geradin, 2000; Newberry, 2000). The implementation of this European process in Member States’ national legislation began in the 1990s in the Belgian rail and electricity sectors.

Historically, network industries were vertically integrated, with most of the activities related to the management, the exploitation and the administrative regulation of infrastructure operated by one, single, State-owned Company. Progressively, as a result of the liberalization policy process, these activities were unbundled, some of them remaining in the hands of a public monopoly (notably the technical and administrative management of the infrastructure), others being opened to competition and operated by several competing public or private companies (notably the commercial exploitation of the infrastructure). At the international level, this process is part of a more general set of privatization policies spreading around the world (Bortolotti, Fantini, & Siniscalco, 2003; Schmitt, 2011), because they are, among other things, characterized by the divesting of some (parts of) state-owned companies to the private sector. In Europe, the liberalization policy process of network industries is also embedded in the Union’s policy objective to promote competition and market-based products and delivery services (Bortolotti & Siniscalco, 2004; European Commission, 1999).

Three reasons why network industries were organized as State monopolies until the 1970s are provided by Geradin (2006, p. 8). “First, there was a belief that such industries were natural monopolies. [...] Second, monopolies were often granted to provide universal service, also often referred to as “public services” or services of general economic interest. [...] Third, because of the importance of these industries from several viewpoints, governments believed that it was important to consolidate them in one firm, which they controlled”.

Five reasons why the monopoly model has been challenged since the 1970s are also provided by Geradin (2006, pp. 8-10). “First, economists started to argue that, while some market segments in network industries (e.g., the local loop in the telecommunications and electricity transport network) certainly have natural monopoly features, others were contestable. [...] Similarly, the provision of universal service did not necessarily require the maintenance of public monopolies cross-subsidizing unprofitable market segments with profitable ones. [...] Second, industry organizations in sectors

³⁰ A notable exception is civil aviation, in which competition has been introduced for a longer time (see Aubin & Lohest, 2011).

subject to fierce international competition, such as the production of steel or the manufacturing of automotive vehicles, argued that they were largely penalized by the high costs of essential production inputs (electricity, gas, transport, etc.), which were provided by public monopolies. If these sectors were to remain competitive in the face of the globalisation of the economy, network industries had to be liberalized as competition would bring lower prices and better service quality. Third, consumer organizations also started to complain about the poor performance of public monopolies. [...] Fourth, early experiences of liberalization in the United States and the United Kingdom convinced the European authorities that the liberalization model was workable and could provide positive economic results. A new model, based on the opening of network industries to competition, combined with regulation through independent agencies, offered an interesting alternative to the much criticized and loss-making monopolies created at the turn of the 20th century. Finally, the European Commission realized that public monopolies, which were based on the granting of exclusive rights to national undertakings, were fundamentally at odds with its internal market policy. National monopolies prevented other Member States' operators from competing, thereby impeding the free movement of goods and services. In other words, the granting of exclusive rights had the effect of partitioning the common market in contradiction with the basic principles of the EC Treaty".

This chapter of the dissertation is composed of **two sections** and does not intend to provide an exhaustive overview of the liberalization of European Member States' network industries, nor even in the Belgian rail and electricity sectors. Rather, in the *first section*, some regulative landmarks about the European liberalization process in the railways and electricity sectors are provided. The regulations which were taken in Belgium to implement the European directives are also mentioned.

In the *second section*, the empirical aspects of the liberalization process are connected to the analytical framework of the research. First, some characteristics of the two policy subsystems associated with the Belgian rail and electricity sectors are presented.

Second, the analytical status of the European liberalization policy process with respect to the two subsystems is discussed. In short, it is viewed, in ACF terms, as an external event in the form of an obligated transfer. The first two points are useful to assessing the validity and particular context of this research with respect to previous ACF-based studies.

Third, four major principles of the liberalization policy will be outlined. These principles will, in the methodological part, be confronted with the content of primary sources (documents and interviews) related to the liberalization in the Belgian rail and electricity subsystems to deduce the core aspects of the policy in each sector. As noted earlier in the dissertation, and consistently with the ACF, the core aspects of a policy and the policy core policy preferences of a policymaker may be defined in similar terms: they are normative aspects/beliefs "that project an image of how the policy subsystem ought to be, provide the vision that guides strategic coalition behavior, and helps unite allies and divide opponents" (Sabatier & Weible, 2007, p. 195). Policy learning was operationalized, in the analytical framework, as the changes it brings about to the core policy preferences of policymakers. Hence, the identification of the core aspects of the liberalization policy, on the basis of its major principles, is important to define on which lines policymakers' preferences are susceptible to change.

Fourth, as a result of the liberalization policy, the nature, the role, the responsibilities and many other aspects of existing organizations involved in network industries were strongly modified.

For example, the activities related to the management of network infrastructures were retrieved from the State-owned Company and reserved to an independent infrastructure manager. In addition, many new organizations emerged. For example, several “new entrants” were willing to compete with the State-owned company – called “incumbent”, in the liberalized structure – to exploit the network infrastructure commercially. Six types of organizations may be distinguished according to the consequences the liberalization policy had on them. This distinction is important to implementing the multilevel design of individual-level data analysis.

3.1. Some regulative landmarks

In the railways, several sets of directives organized the liberalization policy process (Dehousse & Gadisseur, 2002; Laperrouza, 2011; Moyson & Aubin, 2011). The first directive related with the liberalization policy process is directive 91/440/EEC³¹. In 1991, this directive challenges the monopoly model of the railways in two respects. On the one hand, it prevents State-owned companies from cross-subsidizing, with State aid, activities related to the management and exploitation of the network infrastructure, as well as the commercial activities and public service activities. For example, excess State aid received for the management of the infrastructure may not be used anymore to compensate for losses due to its commercial exploitation. On the other hand, for the first time, the exclusivity of access right reserved to State-owned rights is challenged. The directive provides some specific categories of other companies for the right to use the network infrastructure, independently of the State-owned company’s will to give them these rights. In 1995, directives 95/18/EC³² and 95/19/EC³³ enact some general conditions that must be respected by railway companies to use the network infrastructure. These conditions relate to the security, the commercial capacities of the companies, the rules that must be followed to allocate the infrastructure capacity among railways companies, as well as the rules that must be followed to charge the infrastructure fees. In 1996, directive 96/48/EC³⁴ fixes the norms of inter-operability between national networks for high-speed trains.

In 2001, a set of directives including directives 2001/12/EC³⁵, 2001/13/EC³⁶ and 2001/14/EC³⁷, called the “first package”, extended existing rules. Competition is open to the international rail freight transport on some important lines of the European railway network called the “Trans European Rail Freight Network”: any company wanting to operate such activities on this

³¹ Council Directive 91/440/EEC of 29 July 1991 on the development of the Community's railways.

³² Council Directive 95/18/EC of 19 June 1995 on the licensing of railway undertakings.

³³ Council Directive 95/19/EC of 19 June 1995 on the allocation of railway infrastructure capacity and the charging of infrastructure fees.

³⁴ Council Directive 96/48/EC of 23 July 1996 on the inter-operability of the trans-European high-speed rail system.

³⁵ Directive 2001/12/EC of the European Parliament and of the Council of 26 February 2001 amending Council Directive 91/440/EEC on the development of the Community's railways.

³⁶ Directive 2001/13/EC of the European Parliament and of the Council of 26 February 2001 amending Council Directive 95/18/EC on the licensing of railway undertakings.

³⁷ Directive 2001/14/EC of the European Parliament and of the Council of 26 February 2001 on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification.

part of the network may ask, in this context, some infrastructure capacity – i.e. the right use a given portion of the network at a given moment – to the infrastructure managers. In addition to the reinforcement of the rules relating to security and commercial capacity, the control of their application is reserved to regulators independent from any stakeholder of the sector, including the State itself. Directive 2001/16/EC³⁸ organizes the inter-operability of the network on several trans-European lines for conventional trains.

In 2004, the “second package”, including directives 2004/49/EC³⁹, 2004/50/EC⁴⁰, 2004/51/EC⁴¹ and regulation 2004/881/EC⁴², was enacted. It reinforces the rules relating to security as well as the independence of the regulators and infrastructure managers. It also creates the European railway agency⁴³. The competition in the international rail freight transport was extended to the whole European railway network on January, 1st 2006. The extension of competition to national freight transport was scheduled on January, 1st 2007.

In 2007, the “third package” included directives 2007/58/EC⁴⁴ and 2007/59/EC⁴⁵, as well as regulations 2007/1370/EC⁴⁶ and 2007/1371/EC⁴⁷. Competition was extended to the services of international rail transport of passengers, from January, 1st 2010. In addition to this important point, several details of the liberalization process are ruled by this package, for example passenger rights or the training of train drivers. In 2008, directives 2008/57/EC⁴⁸ and 2008/110/EC⁴⁹, in addition to regulation 2008/1338/EC⁵⁰, were called « Package 2bis » because they correct particular aspects of the second package of 2004 (Godet, 2009). Similarly, the “recast” of the first package of directive

³⁸ Directive 2001/16/EC of the European Parliament and of the Council of 19 March 2001 on the inter-operability of the trans-European conventional rail system.

³⁹ Directive 2004/49/EC of the European Parliament and of the Council of 29 April 2004 on safety on the Community's railways and amending Council directive 95/18/EC on the licensing of railway undertakings and directive 2001/14/EC on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification (railway safety directive).

⁴⁰ Directive 2004/50/EC of the European Parliament and the Council of 29 April 2004 amending Council directive 96/48/EC on the inter-operability of the trans-European high-speed rail system and directive 2001/16/EC of the European Parliament and of the Council on the inter-operability of the trans-European conventional rail system.

⁴¹ Directive 2004/51/EC of the European Parliament and of the Council of 29 April 2004 amending Council directive 91/440/EEC on the development of the Community's railways.

⁴² Regulation (EC) no 881/2004 of the European Parliament and of the Council of 29 April 2004 establishing a European Railway Agency (Agency regulation).

⁴³ See <http://www.era.europa.eu/Pages/Home.aspx>.

⁴⁴ Directive 2007/58/EC of the European Parliament and of the Council of 23 October 2007 amending Council Directive 91/440/EEC on the development of the Community's railways and Directive 2001/14/EC on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure.

⁴⁵ Directive 2007/59/EC of the European Parliament and of the Council of 23 October 2007 on the certification of train drivers operating locomotives and trains on the railway system in the Community.

⁴⁶ Regulation (EC) No 1370/2007 of the European Parliament and of the Council of 23 October 2007 on public passenger transport services by rail and by road and repealing Council Regulations (EEC) Nos 1191/69 and 1107/70.

⁴⁷ Regulation (EC) no 1371/2007 of the European Parliament and of the Council of 23 October 2007 on rail passengers' rights and obligations.

⁴⁸ Directive 2008/57/EC of the European Parliament and of the Council of 17 June 2008 on the inter-operability of the rail system within the Community (Recast).

⁴⁹ Directive 2008/110/EC of the European Parliament and of the Council of 16 December 2008 amending Directive 2004/49/EC on safety on the Community's railways (Railway Safety Directive).

⁵⁰ Regulation (EC) No 1335/2008 of the European Parliament and of the Council of 16 December 2008 amending Regulation (EC) No 881/2004 establishing a European Railway Agency (Agency Regulation).

occurred in directive 2012/34/EU⁵¹. The liberalization of the domestic transport of passengers – which remains the most important part of railway transportation – has not been decided yet. In January 2013, however, the European Commission adopted the proposition of a fourth package which includes the introduction of competition in the domestic transport of passengers.

In Belgium, the European regulations related to the liberalization of railways were implemented with many bills and Royal decrees, the main ones being the Royal decree of 5 February 1997, the Royal decree of 11 December 1998, the Royal decree of 12 March 2003, the Law of 4 December 2006, and the law of 19 December 2006, concerning the security of railway exploitation⁵². Today, the domestic railways transport – which remains the most important part of railways transportation – is still not open to competition.

In the electricity sector, the European legal framework of the liberalization process is much simpler and much more advanced: the sector has been totally opened to competition since January 2007, 1st. In 1996, directive 96/92/EC⁵³ fixed the general rules for the organization of the European electricity market. Independent infrastructure managers are responsible for the transmission and distribution of electricity. They equitably allocate infrastructure capacities to competing suppliers, generating and selling their electricity to competing companies delivering electricity to their final customers. In practice, some companies may be engaged in supply as well as delivery activities. Like in the railways, independent regulators are responsible for the impartial implementation of the European regulation, with respect to considerations related to the security of supply, economic efficiency and the environment. In 2003, directive 2003/54/EC⁵⁴, including several revisions, replaced directive 96/92/EC.

In Belgium, the European directives were implemented with regulations at the Federal level but also the Regional level, because the competences related to the electricity sector are distributed among these two governmental levels. According to the Belgian special law of institutional reforms of 8 August 1980⁵⁵, the federal government is responsible for such things as the generation of electricity, the transmission of electricity on the higher-voltage parts of the electricity grid, nuclear energy, etc. By contrast, the regional governments are responsible for the distribution of electricity with lower-voltage parts of the electricity network and its recuperation by final customers. Consistent with this distribution of competences, the directives were mostly implemented with the law of 29 April 1999⁵⁶ and subsequent revisions. The directive was implemented by the decree of 12

⁵¹ Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area (recast).

⁵² Royal decree of 5 February 1997 implementing the Council Directive 91/440/EEC of 29 July 1991 on the development of the Community's railways; Royal decree of 11 December 1998 concerning the license of railway undertaking and the use of railway infrastructure (transposition of directives 95/18/EC and 95/19/EC); Royal decree of 12 March 2003 concerning the use conditions of railway infrastructure; Law of 4 December 2006 concerning the use of railway infrastructure; law of 19 December 2006 concerning the security of railway exploitation.

⁵³ Directive 96/92/EC of the European Parliament and of the Council of 19 December 1996 concerning common rules for the internal market in electricity.

⁵⁴ Directive 2003/54/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in electricity and repealing Directive 96/92/EC - Statements made with regard to decommissioning and waste management activities.

⁵⁵ Special law of institutional reforms of 8 August 1980.

⁵⁶ Law of 29 April 1999 on the organization of the electricity market.

April 2001⁵⁷ in the Walloon Region, by the decree of 17 July 2000⁵⁸ in the Flemish Region, and finally by the order of 19 July 2001⁵⁹ in the Brussels-Capital Region.

3.2. Connections with the analytical framework of the research

This research is concerned with policy learning among the members of **two policy subsystems**: the subsystem of the Belgian railways and that of the Belgian electricity sector. The railways and the electricity sectors are concerned with technical issues which have typically involved the creation and maintenance of a community of specialized policymakers organized into a policy subsystem. For example, many interviewees reported personal or colleagues' careers being characterized by many experiences in different organizations of the same sector. In addition, as will be demonstrated by the seniority of the respondents included in the sample, both policy subsystems are composed of members who have worked in their sector for a very long time. The two subsystems being limited to Belgium, the policy process occurs in a traditional corporatist coalition opportunity structure in both cases.

The policy subsystem of the Belgian railways emerged in the 1830s, with the creation of railway transport. In the electricity sector, the policy subsystem is older. But it is difficult to have a precise idea about when it took on its current form. The territorial and functional operationalization of the perimeter of the Belgian rail and electricity sectors is dealt with in the methodological part of this dissertation (see the section 4.3.1). It may be already noted, however, that the research is limited to the subsystem of the electricity sector (rather than the energy sector, which also includes gas supply). Indeed, the qualitative documentary analysis preliminary to the survey showed that the subsystems of the electricity and gas sectors are composed of different members, even if they are subject to a common liberalization process at the European level.

In addition, while the liberalization process is a new policy with regard to the long history of both subsystems, it did not change their nature and membership. For example, the members of the new infrastructure managers created under the liberalization process were most often responsible for the same kinds of activities, but within the State-owned monopolistic company, in the old structure. Similarly, regulators are most often civil servants to whom functional independence has been guaranteed in the exercise of their new functions. Hence, they were already concerned with the railways or electricity before the implementation of the liberalization policy.

There are no significant interactions between the members of the two subsystems considered in this research⁶⁰. Of course, both subsystems are subject to a European-level policy process of liberalization sharing some common legal and administrative characteristics. However,

⁵⁷ Decree of 12 April 2001 on the organization of the regional electricity market.

⁵⁸ Decree of 17 July 2000 on the organization of the electricity market.

⁵⁹ Order of 19 July 2001 on the organization of the electricity market in Brussels-Capital Region.

⁶⁰ It must be clear that this remark holds for interactions having a significant influence on the policymaking process in each subsystem. Of course, some actors of both subsystems may meet together in the framework of less significant interactions.

this reform has been conducted sector by sector, without connections or a common framework. Even at the European level, there is no clear indication that the actors responsible of the policy process in each sector have many interactions. The data of this research, however, do not allow to be definite on this point. But it is clear that the policy subsystems proper to the Belgian railways and to the Belgian electricity sector are distinct.

Finally, no clearly distinct advocacy coalitions of policymakers were identified in either subsystem. It should be clear that the identification of coalitions was oriented toward the liberalization policy. In practice, the objective was to detect whether some actors have a coordinated, inter-organizational strategy to translate common preferences – supportive or rather obstructive – with respect to the liberalization policy. While some actors share a common view on the liberalization policy, such a coordinated strategy was not clearly detected, during the preliminary documentary analysis, nor during the interviews. In fact, at the collective level, the coordinated strategies are predominantly organizational, which is accounted for by the multilevel design of the analysis of the data.

The *liberalization process* of Member States' network industries should be considered an "*obligated*" *policy transfer*. This is consistent with Dolowitz and Marsh (2000) and Bulmer et al. (2007)'s views, presented earlier in the dissertation (see section 1.4.2). Indeed, this policy process is mainly modelled through European directives.

Contrary to direction impositions, obligated transfers are compulsory transfers in which a certain margin is open for negotiation. From the beginning, Member States' politicians and civil servants have participated in the policymaking process, at the European level. In addition, some leniency also exists at the level of the time-limit for transposing directives into national legislation, which may be respected more or less strictly. Most importantly, while the directives contain general guidelines describing the paradigmatic view on how the network industries should be organized, a certain degree of interpretation is open to national authorities. Indeed, in the European law, directives are compulsory but they must be "translated" in the Member States through their national legislations. It creates a certain distance between the paradigmatic acceptance of the European law, described in directives, and its effective implementation in each country. For example, in the Belgian railways, while the organization responsible for the management of infrastructure (called Infrabel) should be separated from any other organization, the trade unions negotiated in 2005 to keep a common holding (SNCB Holding) for this structure and the public company (called SNCB) involved in exploitation activities. This illustrates the considerable distance which may exist between the European paradigmatic view and its practical implementation in the Member States⁶¹.

Consistent with the ACF (Sabatier & Jenkins-Smith, 1993b, 1999; Sabatier & Weible, 2007), the liberalization policy should be considered an "*external event*", from the point of view of the national policy subsystems' members. In particular, the liberalization policy is imposed by a hierarchically policy subsystem superior to national subsystems. As this external event may be characterized as an obligated transfer in which some margin for negotiation exists, policy learning takes place with the European authorities (in a policy transfer approach) but also among national policymakers (in a social learning approach). Hence, policy learning on the part of subsystem members remains decisive for policy change to occur.

⁶¹ Such an arrangement is not proper to Belgium.

Four major principles of the European liberalization of Member States' network industries may be retrieved from the scientific literature related to this subject (Genoud, 2004; Geradin, 2006; Hrivnak & Krizanovna, 2006). First, liberalization involves the suppression of monopolies. In the monopoly model of network industries, the State-owned company was reserved exclusive right of use and access to the infrastructure. For example, in the railways, it was the only company which decided who could use the railway network to have trains circulate, but also when and how. In the liberalization model, this decision power is reserved to the infrastructure manager, the public company and the private companies being set on equal footing for requesting rights of access to the infrastructure. Indeed, the second major principle of liberalization is the unbundling of the activities related to the infrastructure management and the activities related to the infrastructure exploitation. In the monopoly model of network industries, the State-owned company is responsible for the management as well as the exploitation of the infrastructure. In the liberalization model, the activities related to the management of the infrastructure remains monopolistic and are held by an independent infrastructure manager. According to the third major principle of liberalization, the activities related to the exploitation are open to competition, the public company being confronted with private competing companies on the market. Finally, according to the fourth major principle of liberalization, the rules regulating competition but also aspects related to security, quality or the environment are enforced by independent, sector-based regulatory authorities. In particular, these bodies, though public, must be independent from the State because the State itself is most often a stakeholder on the exploitation market, through its public company. The four major principles of the European liberalization policy process in network industries are synthesized in Table 7.

Table 7: Four major principles of the European liberalization policy process in network industries

• The suppression of the monopolies • The unbundling of infrastructure management and exploitation • The introduction of competition in the exploitation of infrastructure • The application of regulation by independent regulatory bodies
--

Six types of organizations may be distinguished in liberalized network industries. As a result of the implementation of the European liberalization policy process, existing actors of network industries were strongly modified, while new actors appeared. Some actors were entrusted with new and important powers and responsibilities, for example infrastructure managers. Other actors saw their decision power and responsibilities limited by the liberalization policy, for example State-owned companies. Six types of organizations may be distinguished according to the consequences that liberalization had on their activities⁶².

⁶² This typology is ideal-typical. It distinguishes the main features and functions that should characterize each type of organization in a typical liberalized network industry. In practice, several details may be different. The general image, however, is correct. In addition, the typology fits with the network industries which this research is concerned with particularly well – the railways and the electricity sector.

The *"Incumbent"*, in the old structure, was the State-owned company which holds a monopoly on the activities of infrastructure exploitation and management. In the liberalized structure, the management activities are retrieved from the incumbent. In addition, its monopoly on the exploitation activities is phased out, up to the suppression; the incumbent is in competition with new entrants on the market of products or services delivery.

The *"Public administration"*, in the old structure, was responsible for the administrative implementation of the legal rules resulting from national policies. This role was quite limited because the State-owned company, given its size and expertise, held much administrative power. In the liberalized structure, the role of public administration is transformed, because equitable rules must be enacted for the incumbent but also for all new entrants. As the supranational component of policies increases, civil servants participate in European-level committees related to the elaboration, implementation, and evaluation of many policies related to the liberalization process. For example, many meetings occur about the inter-operability of networks. This issue is important for a supplier from one country to deliver products or services to the citizens in another country, that is, for competition to occur. In the liberalized structure, however, public administration is not responsible anymore for the implementation of legal rules. This task is attributed to the regulators.

The *"Infrastructure manager"* is a new organization, in liberalized network industries. The infrastructure manager is an independent organization responsible for the management of the network infrastructure, which mainly includes: the maintenance, renewal and extension of the infrastructure. It also includes aspects related to the security as well as the equitable distribution of the rights of access to the network to all companies willing to exploit it.

In liberalized network industries, several new organizations called *"Regulators"* are responsible for a strict and impartial implementation of the rules regulating the management and exploitation of the network. Their power relates to all aspects covered by the rules, including security, competition, maintenance, etc. Hence, their injunctions are imposed on all the stakeholders of the sector. While most often public, these organizations must, however, be independent from the State, given that the State itself is a stakeholder of the sector through the exploitation activities of the State-owned incumbent.

The organizations willing to compete with the incumbent on the new markets created by the liberalization policies are called *"New entrants"* or (*"operators"*). Some of these organizations are really *"new"*, in the sense that they were created by private actors as a result of new market opportunities. This is mostly the case in the electricity sector, in which new companies were created to produce electricity based on *"green"* sources, for example. However, many other new entrants are only new branches of the existing incumbents from the same country or from neighboring countries. Many entrants in the railways are alliances of incumbents. In this research, I considered that companies exploiting rail or electricity networks could be considered *"new"* entrants only when the national incumbent – the SNCB, in the railways, and Electrabel, in the electricity sector – held less than 50 % of the shares of the company when this company proved to be functionally independent from the national incumbent.

Finally, *"Interest groups"* include national-level and European-level associations representing the interests of customers, State-owned companies, *"green"* electricity companies, companies of freight versus passengers transport, etc. As a type of organization, interest groups already existed

before the implementation of the liberalization policy. However, as a result of the latter, the role and nature of interest groups has changed a lot. For example, associations representing the specific interests of new organizations like infrastructure managers and new entrants have been created. In addition, the missions of the associations representing organizations like State-owned incumbent change a lot. This research being concerned with national policy subsystems, only the national-level interest groups have been considered in the research survey.

The distinction of six types of organizations according to the consequences involved by the liberalization policy is important to implementing the multilevel analysis of the data in this research. Indeed, multilevel analysis intends to capture the variation of the dependent variable attributable to each level of analysis. In this research, three levels may be distinguished: the sector, the organization and the individual. At the level of the organizations, the evolution of the preferences of policymakers depends a lot on the consequences of liberalization on each organization. Analytically, the simplest solution would be to introduce each organization of the sample into the multilevel models separately. Methodologically, however, this solution is not possible, because a minimum number of observations in each organization is required to compute multilevel models. As subsystem members are most often members of the top or middle management of their organizations, there are many cases in which a very small number of respondents come from each organization. For example, the incumbents or the infrastructure manager being generally large organizations, the number of respondents in each of them is sufficient to compute models. By contrast, some interest groups, for example, are very little organizations. As a result, there are sometimes one, two or a dozen respondents, which is not enough to compute multilevel models. The solution was to distinguish six types of organizations, according to the consequences that liberalization had on them. In such a way, each type of organization includes a sufficient number of respondents. This allows to compute some parameters for each group of policymakers, in the multilevel models.

This research is based on the analysis of the data from a web survey conducted among 1256 subsystem members from 51 organizations in the Belgian railway and electricity sectors. The response rate was equal to 33%. The web survey was preceded by a two-month test period including face-to-face submissions and online simulations. The tests were conducted with colleagues, close relations, and several policymakers from both subsystems. The web survey was also preceded by a documentary analysis and a campaign of qualitative interviews.

The **documentary analysis** consisted in the collection of scientific literature related to the liberalization policy process. This literature includes social, political, economic and legal research articles related to liberalization in general, the liberalization process in the European Union, network industries, and the particular history of the Belgian railway and electricity sectors. The archives of two broadsheet newspapers (*“La Libre Belgique”* and *“Le Soir”*) were also consulted back to the beginning of the liberalization process in both sectors. In addition to these secondary sources, extensive use was made of primary sources, including European and national legal rules, organizational brochures, charts, websites, reports, minutes of meetings, etc.

Thirty semi-structured interviews were conducted among key policymakers in the Belgian railway and electricity sectors⁶³. The objective of those interviews was twofold. On the one hand, they allowed collecting information about the liberalization policy process from subsystem members actually involved in the policymaking process. On the other hand, as those policymakers are often organizational leaders too, they were in a position to make a decision about the authorization to issue the web survey in their organization. Hence, the interviews offered a good opportunity to present the web survey and ask for their authorization to submit the questionnaire in their organization. Still with respect to the survey, the interviews allowed to map the organizations pertaining to each sector⁶⁴.

This research is primarily based on the results of the **quantitative analysis** of multilevel regression models. A quantitative approach was privileged because it fits better with the present research for at least three reasons. First, the objective of this research is to investigate the effects of policymakers' individual characteristics on policy learning. Qualitative research most often considers a particular event or effect by analysing one or several subjects with a particular value on the dependent variable. It attempts to get a better understanding of this effect and is interested in its possible causes. This is the “causes-of-effect” approach. By contrast, quantitative research tends to focus on explanatory variables and tries to detect their effect on a dependent variable. This is the “effects-of-causes” approach (Goertz & Mahoney, 2012; Mahoney & Goertz, 2006)⁶⁵. As shown earlier, existing studies provide a good image of policy learning. We know many things about the nature, extent, and intensity of policy learning. For example, we know that secondary beliefs are more susceptible to change than core policy beliefs. We also know that policymakers do not learn

⁶³ Sometimes, those persons were already known by one or other researcher of the Louvain-Europe Political Science Institute. Indeed, the Institute had already some expertise about network industries.

⁶⁴ By implementing the so-called “snowball” sampling method, described in section 4.3.2.

⁶⁵ Goertz and Mahoney's distinction between qualitative and quantitative research is based on a “stylized”, ideal-typical view of both research traditions describing their dominant norms and practices (rather than on all middle-of-the-road studies).

very much; policy beliefs are quite stable on average. The literature was also desert about some extreme cases, for example those policymakers like Sabatier's policy brokers or Muller's mediators whose beliefs change a lot. By contrast, the present research is interested in the individual conditions of policy learning. It does not focus on those policymakers who learn a little or a lot, but on the general effect of individual characteristics on any policymaker's policy learning. Hence, the effects-of-causes approach of quantitative research is more convenient to investigate this object.

Second, this research aims at providing a better understanding of the "average" policymaker, with respect to policy learning. According to qualitative research, given the causal heterogeneity of effects, increasing the research population even modestly requires substantial modifications to the theoretical framework that fits the original cases well. This inclines them to restrict the domain of their arguments. By contrast, quantitative research primarily looks at generalization. For quantitative research to analyse the effect of causal variables, causal heterogeneity is not a problem, as long as the assumption of conditional independence holds. Conditional independence means that the effect of the explanatory variables of interest is not dependent on the effect of those causal variables that are not included in the model. If this condition holds, the effect of these other causal variables falls into the error term of the model (Goertz & Mahoney, 2012; Mahoney & Goertz, 2006). According to the objective of the present research, its findings should best fit any subject randomly taken in the whole population of policymakers, rather than one or several selected, outstanding subjects. Quantitative research fits this objective better than qualitative research. This argument is consistent with the post-positivist stance of the present research, oriented toward the (critical) formulation of theoretical propositions of general application (see section 1.4.4).

Third, quantitative research is more suitable than qualitative research for the analysis of hypotheses and explanatory variables of which the expected effect is "small". In Cohen (1988, 1992)'s terms, small-size effects are those not visible to the naked eye, even after careful examination. These effects, even if actual, require statistical analysis to be detected, that is: quantitative research on a representative large-n sample of subjects⁶⁶. Several indications suggest that the effect of the explanatory variables considered in this research will be of small size. The actors' psychology as a whole has a substantial influence on their attitudes and behaviours, which justifies its analysis. Taken separately, however, each psychological characteristic has a smaller effect. This is even more the case when considering the influence of non-contextualized personality traits, like generalized trust, on contextualized attitudes, like policy learning. As the individual conditions of policy learning are largely underexplored in the existing literature, the research is largely exploratory with respect to the choice of hypotheses and explanatory variables that will be tested. While they can be quite powerful in their original context, they will not necessarily be as powerful in the context of policymaking. Even in their original context, many social psychology effects may be small-size. If the effects considered in this research are actually small, quantitative research on a large sample of policymakers is more suitable than the qualitative analysis of a small number of particular policymakers.

While this research is primarily based on quantitative analyses, **qualitative data** were also collected during the documentary analysis and the campaign of semi-structured interviews preliminary to the web survey. These qualitative data were not only useful to prepare the web survey, however. First, they provided very important information about the liberalization policy

⁶⁶ Effect sizes will be discussed in further detail later in this dissertation (see section 4.4.2.1).

process in the Belgian railway and electricity sectors. What were the most important decisions related to this process on which policymakers' preferences had to be assessed? What are the important issues in these two sectors on which the liberalization policy could have an impact? By providing information to answer these types of questions, qualitative data were useful to operationalize the dependent variable of the research. These data were also helpful to interpret the results of quantitative analyses.

Three types of quantitative *research design* may be distinguished in social research (Punch, 2005, p. 73). *Experiments* involve the manipulation of independent variables and a sample of subjects representative of the population are randomly assigned to the treatment groups. For example, a first group of random individuals are submitted to a treatment (an aversive situation), the second group is submitted to the inverse treatment (a comfortable situation), and the final group is not submitted to any of those two treatments (placebo situation). Then, the relation between the treatment and the dependent variable (the degree of stress) is tested by comparing the value of this variable among the individuals of the three groups. In *quasi-experiments*, treatment groups do not result from a manipulation by the researcher but naturally exist in the population. They are taken as such and compared. In the context of a quasi-experiment, a first group could be composed of workers being fired (aversive situation), the second group of workers receiving a promotion (comfortable situation), and the last group continuing to work without change (placebo situation). In *correlational surveys*, treatment groups do not exist at all, even naturally. The variation occurring in independent variables is directly analysed and correlated with the dependent variable within models. In quasi-experiments and correlational surveys, the validity of causal inferences on the relations between explanatory variables and the dependent variable depend on the statistical control of covariates. *The present research* is based on a correlational survey: policymakers in the two subsystems considered are not grouped according to the value of the individual characteristics investigated in the research⁶⁷.

The remainder of this section is composed of four paragraphs. The first explains how the variables used in the theoretical part of the research were operationalized. The second is devoted to the survey and the third to the questionnaire. The last exposes how the data collected were analysed.

4.1. Data measurement

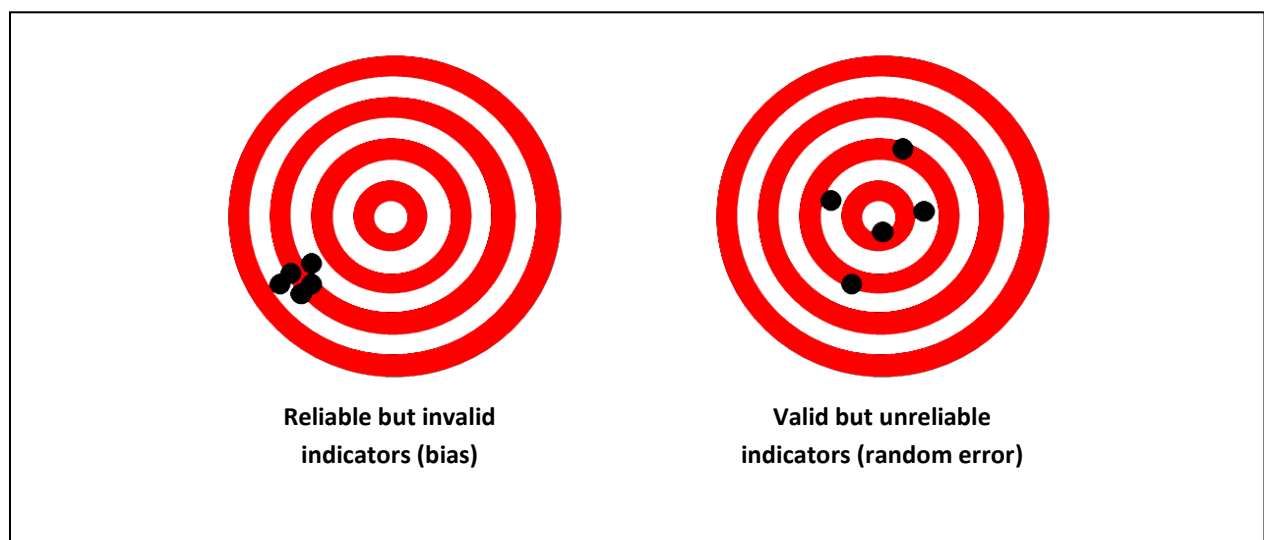
At a general level, *measurement* may be defined as the assignment of number to objects or events according to rules (Stevens, 1951). With respect to abstract concepts, measurement more specifically involves a process of linking those abstract concepts to empirical indicators (Blalock, 1968). In this research, measurement is based on classical test theory (Carmine & Zeller, 1979;

⁶⁷ If two subsystems were considered (rather than one), it was to increase the sample size of the survey and the power of the analyses, in addition to strengthening the conclusions of the research. This issue is discussed in further detail later on in the dissertation (see section 4.4.2.1). The issue of covariates will be discussed in detail later in this dissertation too (see section 4.1.4).

Gulliksen, 1950; Janssen, 2008; Lord & Novick, 1968; Nunnally, 1978; Spearman, 1904; Stanley, 1971).

Validity and reliability are two important characteristics of measurement that are conditions for the analyses to providing reliable results and conclusions. Following Carmine & Zeller (1979, p. 12), “an indicator of some abstract concept is valid to the extent that it measures what it purports to measure”. Still following Carmine & Zeller (1979, p. 11), reliability “concerns the extent to which an experiment, test, or any measuring procedure yields the same results on repeated trials” (on a same observation). If a concept is represented by a target as in Figure 8, valid and reliable indicators all point to the centre of this target. Reliable but invalid indicators all point to another, same point of the target. Valid but unreliable indicators point to the centre of the target but are imprecise.

Figure 8: Validity and reliability of indicators (from Janssen, 2008)



Unreliable indicators increase the random error of measurement while invalid indicators increase the systematic (non-random) error of measurement. Both types of error should be avoided. The next two sections describe the measures that were taken in this research to maximize the validity and reliability of data measurement.

4.1.1. Measurement validity

Two types of validity were considered for selecting the third-level indicators included in the survey questionnaire: content validity and construct validity. **Content validity** is particularly used in social psychology for the measurement of abstract concepts (e.g., self-esteem). Content validity “depends on the extent to which an empirical measurement reflects a specific domain of content”

(Carmine & Zeller, 1979, p. 20). For example, content validity is particularly important when mathematical achievement tests are conducted at schools. “What does mathematics cover?” should be the question guiding teachers when designing the test.

When no measure of a concept already exists, content validity depends on two interrelated steps (Carmine & Zeller, 1979, pp. 20-22; Goertz, 2006). Creating such a measure first requires specifying the full domain covered by the secondary-level dimensions of the concept. Then, content validity depends on how well specified the sampling method is that is followed to choose those dimensions that will actually be measured in the measurement tool (the questionnaire). Sampling may rest upon random selection, weighted random selection or no selection at all if all dimensions are measured in the questionnaire. In this research, for example, an *ad hoc* measure of policy learning was created. Indeed, a measurement of the evolution of policymakers’ preferences with respect to the liberalization process in the Belgian railway and electricity sectors does not exist yet. The domain of this concept is contingent on its definition in the literature. It is also contingent on the particular characteristics of the liberalization policy in the Belgian railway and electricity sectors. How the above-mentioned rules related to content validity were applied to define and operationalize the domain of policy learning, is discussed later (see section 4.1.3).

When a measure already exists for a concept, the researcher may endorse or adapt this measure. This research measures several socio-psychological traits and attitudes that were already measured by many studies in social psychology and political science. Privileging the use of those existing measures ensures that the concept measured is actually the same. It also improves the replicability and comparability of findings with respect to past (and future) studies. Many social psychology constructs, however, are based on scales including a great number of indicators. For example, Cialdini, Trost, and Newsom (1995), proposed measuring the “preference for consistency” personality trait with an 18-item scale. Keeping all those indicators preserves their representativeness and thus their content validity with respect to the original concept. As it was not always possible in the scope of a 20-minute questionnaire, the adaptation of existing measures also included, like in the creation of new conceptual measures, a sampling of the indicators used by previous studies. Several guidelines were followed to preserve their content validity as much as possible. When a short version of the scale was previously proposed by some researchers, the items of this short list were privileged. When such a short version did not exist yet, an *ad hoc* short list was created, based on the analysis of the different dimensions measured by the original scale. Once the different dimensions were distinguished, those items measuring similar dimensions were put together and one of them was selected to appear in the questionnaire.

There are three strong indications that these *ad hoc* scales were sampled properly. First, on the whole sample, respondents’ scores on the standard version of these scales were similar to the standard scores score reported by previous studies using the complete scales. Second, the internal consistency of the scales was systematically analysed. It most often provided excellent inter-items correlations and very good Cronbach alphas, comparable with those reported in previous research⁶⁸. Third, when it was possible, the construct validity of these scales was assessed and proved to be very good.

⁶⁸ The next section deals with internal consistency.

The second type of validity considered in this research is **construct validity**. “Fundamentally, construct validity is concerned with the extent to which a particular measure relates to other measures consistent with theoretically derived hypotheses concerning the concepts (or constructs) that are being measured” (Carmine & Zeller, 1979, p. 23). Behind construct validity is the idea that, if a theoretically-derived relation between two concepts was empirically proven by previous research, the same relation should be detected in new studies if the two concepts measured are actually the same. Most often, new studies try to detect new relations between concepts that were unrelated before. But when the present survey measured several concepts that were related in previous studies, construct validity was assessed. For example, Leach and Sabatier (2005) tested the relation between generalized and interpersonal trust. As these two concepts were measured in the present survey, the relation between both concepts was also tested. The effect size detected was very similar to Leach and Sabatier (2005)’s findings. This is a good indication that the construct validity of these concepts in the present survey is good.

To conclude, validity not only depends on the definition and operationalization of the domain of the concepts. It also depends on the quality of the questionnaire (the measurement tool). Several aspects, such as the layout of the questionnaire, the cognitive accessibility of the questions, or whether the questionnaire limits respondents’ fatigue and boredom, may affect the quality of the concept-indicators relationship. As these aspects are also susceptible to influencing the response rate of the survey, they will be discussed later in this dissertation (see section 4.3)⁶⁹.

4.1.2. Measurement reliability

With respect to **reliability**, classical test theory is based on the idea that any particular score observed with a measurement tool will not equal its true score because of random disturbances. In other words, a random error (e) exists in the relation between a measurement score (x) and the true score (t) it purports to measure:

$$X = t + e$$

Equation 1

As mentioned by Carmine & Zeller (1979, p. 30), ““positive” errors would be just as likely to occur as the “negative” errors, and their magnitude would be similar as well. [...] Therefore, these errors are expected to cancel each other out in the long run – they have a mean or average score of zero”. Random error means that the measurement is valid. A *contrario*, non-random (“systematic”) error means that the measurement is biased.

In addition, classical test theory posits four assumptions. “(a) the expected (mean) error score is zero $E(e)=0$; (b) the correlation between true and error scores is zero: $\rho(t,e)=0$; (c) the

⁶⁹ In addition to content validity and construct validity, “criterion-related” validity “is at issue when the purpose is to use an instrument to estimate some important form of behavior that is external to the measuring instrument itself, the latter being referred to as the criterion” (Nunnally, 1978; cited by Carmine & Zeller, 1979). In comparison with the two theoretically-laden types of validity used in this research, criterion-validity is strictly empirical and useful in a context where an observable event (in social psychology, a behavior) may be correlated with the measurement. This context is not that of the present research.

correlation between the error score on the measurement and the true score on a second is zero: $\rho(e_1, t_2)=0$; (d) the correlation between errors on distinct measurement is zero: $\rho(e_1, e_2)=0$. In these assumptions, E represents the expected value or “long-run” mean of the variable and ρ is the correlation between two variables in a population” (Carmine & Zeller, 1979, p. 30)⁷⁰. From (b) follows that:

$$E(X) = E(t) + E(e) \quad \text{Equation 2}$$

From (a) follows that:

$$E(X) = E(t) \quad \text{Equation 3}$$

The above results pertain to repeated measurements of a single variable for a single person. But reliability refers to the consistency of repeated measurements across persons rather than within a single person. Consequently, Equation 1 must be rewritten so that it does not pertain to a single observed, true score, and random error, but rather to the variance of those properties. Thus,

$$\begin{aligned} VAR(X) &= VAR(t + e) \\ VAR(X) &= VAR(t) + 2COV(t, e) + VAR(e) \end{aligned} \quad \text{Equation 4}$$

From assumption (b) follows that:

$$VAR(X) = VAR(t) + VAR(e) \quad \text{Equation 5}$$

That is, the observed variance equals the sum of the true score and error variances. The reliability of X as a measure of T is given by the following ratio:

$$\rho_x = \frac{VAR(t)}{VAR(X)} = 1 - \left(\frac{VAR(e)}{VAR(x)} \right) \quad \text{Equation 6}$$

This ratio varies between 0 and 1: if all observed variance is contaminated with random error, then the reliability equals zero, since $1-(1/1)=0$. Conversely, if there is no random error involved in the measurement of some phenomenon, then the reliability equals 1, since $1-(0/1)=1$.

Reliability is at stake when similar items are repeatedly submitted. On the one hand, one similar item may be submitted several times to one respondent. On the other hand, several similar items may be submitted to the respondents at one moment. This research is concerned with the second scenario⁷¹. Reliability is of crucial importance for those many concepts measured with two or

⁷⁰ The following demonstration comes from Carmine and Zeller (1979).

⁷¹ In the context of the first scenario, reliability is assessed by analyzing the average relation between the answers given by the respondent to the item over the several submissions of the questionnaire ("retest method": Carmine & Zeller, 1979).

more items (Gliem & Gliem, 2003). For example, in social psychology, it is often considered that the concept of self-esteem is composed of two dimensions: self-assessment and self-acceptance. In turn, each dimension is measured with five items. Those items are different because they cover different portions of the definitional domain of the concept. At the same time, they are similar because they are supposed to measure the same concept. Hence, on average, they should all point in the same direction for one single person.

One of the most common methods used to assess the reliability of such measurements is to compute their internal consistency with the so-called **Cronbach alpha (α_c)** (Garmines & Zeller, 1979). Cronbach (1951)'s statistic has the advantage that it includes all items and observations in one formula to provide one single estimate of reliability of each composite measurement in the sample. This is the main statistic used in this research with respect to reliability. Cronbach's alpha is computed as follows:

$$\alpha_c = \frac{N}{N-1} \frac{[1 - \sum \sigma_{Y_i}^2]}{\sigma_X^2} \quad \text{Equation 7}$$

where N is the number of items used; σ_X^2 is equal to the variance of the total composite; and $\sigma_{Y_i}^2$ is the variance of component item i in the sample considered. Through several additional transformations, Cronbach's alpha may be expressed in terms of interitem correlations:

$$\alpha_c = \frac{N\bar{\rho}}{1 + \bar{\rho}(N-1)} \quad \text{Equation 8}$$

where N is still the number of items used and $\bar{\rho}$ is equal to the mean interitem correlation.

α_c is derived from the general definition of reliability (Equation 6), being the ratio between true variance and observed variance. As the observed variance of a score is always greater than or equal to the true variance, the theoretical values of the α_c are between 0 – , indicating that the items are totally unrelated with each other – and 1 – , indicating that the items measure exactly (the same portion of) the same concept. In practice, the estimator may provide negative values, which have no theoretical sense. Novick and Lewis (1967) showed that α_c provides conservative estimations of the true consistency of composite measurements. If the α_c suggests that they are consistent, it is very probably the case in reality. Equation 8 also shows that the α_c of a composite construct increases as a function of the number of items included in the construct and the average interitem correlation.

A final question concerns the decision criterion: what is a consistent and reliable composite measurement? George & Mallery (2003, p. 231) summarized the most widely used rule of thumb in social research, as it appears in Table 8.

Table 8: Internal consistency of composite constructs – rule of thumb (from George & Mallery, 2003, p. 231)

$0.9 \leq \alpha_c \leq 1.0$	Excellent
$0.8 \leq \alpha_c < 0.9$	Good
$0.7 \leq \alpha_c < 0.8$	Acceptable
$0.6 \leq \alpha_c < 0.7$	Questionable
$0.5 \leq \alpha_c < 0.6$	Poor
$\alpha_c < 0.5$	Unacceptable

In addition to the α_c , individual interitem, correlations were also considered for assessing reliability in this research. They allow analyzing the individual behaviour of each item with respect to the others: does this item seem to point to the same concept as the concept pointed out by the other items of the composite, on average? This is the question that such analysis allows to answer. However, the global assessment of interitem consistency with the α_c remains the most important part of the job to assess the reliability of a composite construct. In particular, the influence of one only item of the list on the dependent variable should not be considered an indication that the global construct itself is related to the dependent variable (Gliem & Gliem, 2003).

In the next sections of this dissertation, the operationalization of the dependent variable, covariates, and explanatory variables of the research will be explained. It follows the above-mentioned guidelines with respect to validity. The reliability of the constructs will be assessed in the results.

4.1.3. Measurement of the dependent variable and its two indicators

In this research, Policy preferences change is used as an operational measure of policy learning. This dependent variable has two indicators: Preferences change direction and Preferences change intensity. They were measured at the individual level thanks to the web survey. Following Jenkins-Smith and Sabatier (1993b, p. 42; 1999, p. 123)'s ACF, policy learning is defined in this research as "relatively enduring alterations of thought or behavioral intentions that result from experience or new information and which are concerned with the attainment or revision of the precepts of the belief system of individuals or of collectivities".

In this research, policy learning will be operationalized as an enduring change of core policy preferences. Hence, this concept is composed of two necessary (and sufficient) conditions that must be fulfilled for policy learning to occur. First, core policy preferences must change. Second, and consistent with the definition of policy learning (and learning, in general), this change must be enduring. The two conditions are discussed in the next two sections. In the final section, a synthesis is presented and the measurement of the dependent variable is exemplified.

4.1.3.1. Preferences change

This research focuses on *changes in core policy y preferences* as an operational measure of belief change and policy learning. Core policy preferences are the most salient core policy beliefs. Among policymakers' beliefs, core policy beliefs are those that apply to virtually all aspects of subsystem policy; they are subsystem-specific. Their topics provide a very efficient guide to policymakers' behaviour over a wide variety of situations in the subsystems (Zafonte & Sabatier, 1998). Core policy preferences are the most salient of the core policy beliefs. Core policy preferences are those beliefs that "(1) are subsystemwide in scope, (2) are highly salient, and (3) have been a major source of cleavage for some time" (Sabatier & Jenkins-Smith, 1999, pp. 133-134). Core policy preferences are "normative beliefs that project an image of how the policy subsystem ought to be, provide the vision that guides coalition strategic behavior, and helps unite allies and divide opponents" (Sabatier & Weible, 2007, p. 195). Core policy preferences relate to the core aspects of policies. Hence, they are the most decisive beliefs with regard to policy change. Another result is that core policy preferences and core policy aspects may be defined in relation with the three same criteria. For research focusing on the causes of policy learning, it is relevant to focus on this part of policy learning that has the most decisive influence on the courses of policies: core policy preferences. Following the ACF, one may distinguish four topics which are core aspects of a policy if they fit the definition well. They appear in Table 9.

Table 9: Possible topics of core policy aspects in the ACF (Sabatier & Weible, 2007)

• The seriousness of specific aspects of the problem in specific locales; • The importance of various causal linkages in different locales and over time; • Most decisions concerning administrative rules, budgetary allocations, disposition of cases, statutory interpretation, and even statutory revision; • Information regarding the performance of specific programs or institutions.

In a previous part of the dissertation, four major principles of the liberalization policy were retrieved from the scientific literature (see section 3.2). As a reminder, they include: the suppression of monopolies; the unbundling of infrastructure management and exploitation; the introduction of competition in the exploitation of infrastructure; the application of regulation by independent regulatory bodies. During the interviews, those topics were submitted to the interviewees to know whether they fit the definition of core policy aspects. The intention was to create a list of core policy aspects operationalizing the list of general principles retrieved from the scientific literature on the Belgian rail and electricity sectors. Interviewees were submitted the list of principles, to determine which aspects of the policy related to these principles were subsystem-wide in scope, highly salient, and a major source of cleavage for some time. Open questions were also asked at the beginning of

each interview to identify the core policy aspects that the analysis of the scientific literature could miss. The result of this process appears in Table 10.

Table 10: Indicators of the core aspects of the liberalization policy

IN THE RAILWAY SECTOR:

- The introduction of competition in the railway transport of freight (*competition*)
- The introduction of competition in the international railway transport of passengers (*competition*)
- The maintaining of the NMBS/SNCB monopole on the national railway transport of passengers (*competition*)
- The maintaining of the 100% control of the State on the capital of the NMBS/SNCB Group (*monopole*)
- The unbundling of operations on, and management of, railway infrastructure (*unbundling*)
- The application of regulation by independent regulatory bodies in the railways (*regulatory bodies*)

IN THE ELECTRICITY SECTOR:

- The introduction of competition in the generation and supply of high-voltage electricity (for middle to large professional clients) (*competition*)
- The introduction of competition in the generation and supply of low-voltage electricity (for small professional clients and households) (*competition*)
- The unbundling of generation and supply of electricity, on the one hand, and transport and distribution, on the other hand (*unbundling*)
- The application of regulation by independent regulatory bodies in the electricity sector (like the CREG, the CWaPE, the VREG or Brugel) (*regulatory bodies*)

The content validity of this measurement of core policy preferences should be assessed from a double perspective: from the empirical perspective of the liberalization policy and from the conceptual perspective of the ACF. From the empirical perspective, four principles of the liberalization policy were distinguished in the scientific literature. The principle covered by each policy decision operationalized in the questionnaire is mentioned in brackets in Table 10. Only the suppression of public monopolies on exploitation activities is not operationalized by at least one item in the electricity sector, because it is not a core aspect of the liberalization policy in this sector. In fact, the monopoly of Electrabel, the incumbent in the electricity sector, has already diminished a lot, which is not the case of SNCB in the railways. Hence, it is quite normal that the interviewees in the electricity sector did not report that this aspect of the liberalization policy is very salient. With respect to the possible topics of core policy aspects in ACF (Table 9), the research focuses on decisions, those decisions which are “subsystem-wide in scope, highly salient, and have been a major source of cleavage for some time”.

Policy learning is not only a measure of beliefs but a measure of **belief change** over time. Any measure of change involves the comparison of two situations at two different moments in time. Following the ACF, a decade is the minimum time frame for analyzing policy change and learning. Here, the analysis is presumed to account for the “enlightenment function” of policy research and ordinary knowledge, where content has a cumulative effect on policy. In addition, the decade is the minimum time frame to grasp at least one policy cycle of agenda setting, formulation, implementation, and reformulation. Policymakers’ current policy preferences (2012) were compared to the policy preferences they held at the beginning of the European liberalization policy process. In the railways, European directive 91/440/CE was the first directive related to the liberalization policy implemented in Belgium, with the Royal Decree of 5 February 1997. Hence, the time frame is of two decades in the railways. In the electricity sector, European directive 96/92/CE was the first directive related to the liberalization policy implemented in Belgium, with the Law of 29 April 1999. Hence, the time frame is about 15 years in the electricity sector⁷². In both sectors, this time frame grasps at least one policy cycle. Since the national implementation of the liberalization process began, many years have allowed practitioners and policymakers to collect information and experience about the qualities and drawbacks of the decisions made at the end of the 1990s. Much information in the form of official reports, scientific literature and informal feedback from all stakeholders shed light on the efficiency and efficacy of the liberalization policy. This information had an “enlightenment function”. This is illustrated by the regulative process associated with the liberalization policy at the national and European levels, which includes, in addition to new regulations, revisions and corrections of past regulations (this regulative process was presented in section 3.1).

The first indicator of the dependent variable of the research measures the **Preferences change direction**. With respect to each item that was submitted in the questionnaire, the respondents were offered the opportunity to give an answer ranging from “much in disfavor” [-2] to “much in favor” [+2], once considering their preferences at the beginning of the liberalization process, and once considering their current preferences. For each item, Preferences change was operationalized as the difference between the value given with respect to current preferences and the value given with respect to past preferences. The total score of Preferences change direction equals the sum of the differences obtained by the respondent on each item. Hence, the total score of Preferences change direction is positive when, on average, the respondent’s preferences with respect to the liberalization policy have evolved positively since the beginning of the liberalization process. The total score is negative if, on average, the preferences have evolved negatively. The total score equals 0 when the position of the respondent has not changed at all on any indicator of this variable (or if each change on one item is compensated by a change of the same magnitude on another item). As the number of items operationalizing core policy aspects is different in each sector,

⁷² In the questionnaire, respondents were asked to report on their “current” policy beliefs as well as their policy beliefs “at the beginning of the liberalization policy process, which has been progressively implemented in the Belgian railway/electricity sector since the directive [...]”. The empirical field of this research is composed of two *national* policy subsystems. Even if the national network industry is mentioned in each case, analytically, it would have been more precise to make reference to the first *national* rule implementing the liberalization policy in each sector, rather than to a European directive. Presenting the liberalization policy in reference to a European directive, however, is symbolically more efficient, clearer than in reference to a national rule. National rules generally do not embrace the whole liberalization process but only one of its parts. In addition, during the preliminary interviews, the knowledge of interviewees with respect to the national rules appeared to be much more imprecise than with respect to European rules. European rules, more than national rules, are “representative” of the liberalization policy. Hence, they were used as points of reference for the beginning of the liberalization process.

the scale of the composite variable differs in each sector (from 24 to +24 in the railways and from -16 to +16 in the electricity sector). To create a common scale, the values of the scale in the railways were multiplied by 2 while the values of the scale in the electricity sector were multiplied by 3, in such a way that the extreme possible values of both scales are pushed to their least common multiple. In the end, the scale of the overall variable of Preferences change direction for both sectors ranges from -48 to +48. It is worth noting that, with this operationalization, Preferences change direction does not depend upon the general support of the respondent for the policy at the beginning of the process, nor at the end: the preferences of policymakers who are rather negative, rather positive, or rather indifferent to the liberalization policy, may change negatively, positively, or not. This is a measure of policy learning over time, and not a measure of policy preferences at one moment.

Preferences change direction provides two different types of information about Preferences change. First, whether the variable is negative or positive gives us the direction of preferences change. When Preferences change is positive, it means that the respondent judges that his opinion has favourably evolved with regard to the policy since the beginning of the liberalization process. By contrast, when Preferences change is negative, he judges that his opinion has disfavouredly evolved with regard to the liberalization process. Second, the value of Preferences change direction informs us about the intensity of Preferences change *in this direction*. However, when the differences between current and past preferences are added to each other to construct a total score of Preferences change direction, those differences that are opposed are averaged to retrieve an overall composite. For example, suppose that the following differences are collected from a respondent on the 5 items submitted in the railways: -2; + 3; +4; -1; 0. The total score of Preferences change direction for this respondent equals $-2 + 3 + 4 - 1 + 0 = +4$. This score, however, does not give a good overview of the total intensity of Preferences change by this respondent; it underestimates the “ability” of policymakers to have changing opinions in opposed directions with regard to the different items.

An additional dependent variable is constructed to measure the ***Preferences change intensity***. To compute this variable, the difference between current and past preferences was still calculated for each policy core aspect. However, instead of summing up the differences obtained, it is the *absolute value* of these differences which was summed up. Let us come back to our respondent of the railways who had provided the five following differences between current and past preferences: -2; + 3; +4; -1; 0. The total score of Preferences change direction based on these values was +4. By contrast, the total score of Preferences change intensity resulting from these values is computed as follows: $2 + 3 + 4 + 1 + 0 = +10$. In any case, the minimum value of Preferences change intensity equals 0, for those respondents who did not report any change between their current and past preferences. Any change reported by the respondents on the indicators of policy core aspects increases the value of Preferences change intensity.

Because the number of items operationalizing core policy aspects differs in each sector, the scale of Preferences change intensity in the railways ranges from 0 to 18, while it ranges from 0 to 12 in the electricity sector. Hence, the scale of Preferences change intensity is multiplied by 2 in the railways and by 3 in the electricity sector, in such a way that the highest value of both scales is pushed to their least common multiple, 36.

4.1.3.2. Enduring change

Preferences change must be enduring for policy learning to occur. Preferences must not only change, but be stabilized. Preferences certainty is a reliable indicator of Preferences stability. Preferences of which individuals are convinced are more likely to be stable (Holland, Verplanken, & van Knippenberg, 2003; Krosnick & Petty, 1995). Attitude certainty is a measure of attitude strength. Attitude strength is usually defined “in terms of its consequences” (Holland et al., 2003, p. 594). Among other things, strong attitudes are persistent over time and resistant to change (Krosnick & Petty, 1995). By contrast, uncertain Preferences are less likely to be stable.

Attitude certainty is a meta-attitudinal measure of attitude strength (Bassili, 1996; Holland et al., 2003). Bassili (1996, p. 641) contrasts “operative” and “meta-attitudinal” measures of strength. Meta-attitudinal strength measures are based on “respondents’ impressions of their own attitudes”, in contrast with those measures based on the judgment of the attitude as operative strength measures. For example, “attitude accessibility is usually measured by the response time with which an attitude is indicated and is assumed to reflect the strength of the association between an object and its evaluation” (Holland et al., 2003, p. 595). Attitude certainty is a meta-attitudinal measure of attitude strength “based on the impression of the confidence with which an attitude is held” (Holland et al., 2003, p. 595).

To measure preferences certainty, respondents were asked to evaluate their degree of conviction in the policy preferences they reported to have at the beginning of liberalization and the preferences they reported to having today. The possible answers ranged on a 5-point scale, from “completely unconvinced” [-2] to “completely convinced” [+2]. Those respondents who reported to be “completely unconvinced” [-2] or “rather unconvinced” [-1] of their current preferences were dismissed from the analyses because it means their current preferences are not stabilized (no learning). Likewise, respondents who reported to be “completely unconvinced” [-2] of their past preferences were dismissed from the analyses because it means that they did not actually remember what they thought in the 1990s. Respondents who reported to be “rather unconvinced” [-1] of their past preferences were not dismissed because, given the time distance, it is quite normal to be less certain of these preferences.

4.1.3.3. Synthesis and example

The research is equipped with two indicators to assess preferences change resulting from policy learning among policymakers: Preferences change direction and Preferences change intensity. Table 11 presents compares the scale of the two indicators of the dependent variable.

Table 11: Indicators of the dependent variable of the research – Measurement scales

Variable	Scale
Preferences change direction	[- 48; 48]
Preferences change intensity	[0; 48]

To make the computation of the dependent variable more concrete, an example appears in Table 12 on the basis of the portion of a questionnaire filled by a fictional respondent from the railways.

Table 12: Measurement of the dependent variable of the research in the survey questionnaire – An example

FICTIVE QUESTIONNAIRE OF A RESPONDENT:

1) *“At the beginning of liberalization or – if later – when you was involved in the Belgian railways for the first time, what was your position about the following major principles of this policy process?”*

- The introduction of competition in the railway transport of freight: **RATHER UNFAVOURABLE [-1]**
- The introduction of competition in the international railway transport of passengers: **NOR FAV. NOR UNFAV. [0]**
- The maintaining of the NMBS/SNCB monopole on the national railway transport of passengers: **RATHER FAVOURABLE [+1]**
- The maintaining of the 100% control of the State on the capital of the NMBS/SNCB Group: **VERY FAVOURABLE [+2]**
- The unbundling of operations on, and management of, railway infrastructure: **VERY UNFAVOURABLE [-2]**
- The application of regulation by independent regulatory bodies in the railways: **RATHER UNFAVOURABLE [-1]**

2) *“Remembering former opinions can be a difficult exercise. Please indicate your degree of conviction in your six previous responses.”:* **RATHER CONVINCED [+1]**

3) *“And today, what is your position about the following principles?”*

- The introduction of competition in the railway transport of freight: **RATHER FAVOURABLE [+1]**
- The introduction of competition in the international railway transport of passengers: **RATHER UNFAVOURABLE [-1]**
- The maintaining of the NMBS/SNCB monopole on the national railway transport of passengers: **RATHER FAVOURABLE [+1]**
- The maintaining of the 100% control of the State on the capital of the NMBS/SNCB Group: **VERY FAVOURABLE [+2]**
- The unbundling of operations on, and management of, railway infrastructure: **RATHER UNFAVOURABLE [-1]**
- The application of regulation by independent regulatory bodies in the railways: **RATHER FAVOURABLE [+1]**

4) *“Please indicate your degree of conviction in your six previous responses.”:* **COMPLETELY CONVINCED [+2]**

COMPUTATION OF THE INDICATORS OF THE DEPENDENT VARIABLE FOR THIS RESPONDENT:

$$\begin{aligned}
 \text{Preferences change direction} &= (((-1) - (+1)) + ((0) - (-1)) + ((+1) - (+1)) + ((+2) - (+2)) + ((-2) - (-1)) + ((-1) - (+1))) \times 2 \\
 &= ((-2) + [+1] + [0] + [0] + [-1] + [-2]) \times 2 \\
 &= (-4) \times 2 \\
 &= -8
 \end{aligned}$$

$$\begin{aligned}
 \text{Preferences change intensity} &= (\text{abs}[-2] + \text{abs}[+1] + \text{abs}[0] + \text{abs}[0] + \text{abs}[-1] + \text{abs}[-2]) \times 2 \\
 &= (2 + 1 + 0 + 0 + 1 + 2) \times 2 \\
 &= (6) \times 2 \\
 &= 12
 \end{aligned}$$

As the respondent did not give a [-2] answer to the second question nor a [-2] or a [-1] answer to the fourth question, his preferences may be considered as stabilized; the second condition of policy learning – that preferences change must be enduring – is fulfilled

4.1.4. Measurement of the covariates

This research is based on a correlational survey and accounts for several covariates. In correlational surveys, subjects are not randomly assigned in different groups according to their value on the explanatory variable (like in experiments). Instead, the composition of the sample depends on the context of the survey. Hence, covariates must be statistically controlled (Punch, 2005). Covariates are those variables that influence the dependent variable in addition to the effect of explanatory variables of interest. Explanatory variables may have a different effect on the dependent variable among certain observations according to the value of covariates for these observations. This blurs the inferential test of theoretical relations. Some covariates are integral parts of theoretical hypotheses. For example, imagine three variables, Y being the continuous dependent variable, X being the continuous explanatory variable of interest, and Z being a dichotomous covariate. A theoretical hypothesis relating these variables could be: “X has a positive relation with Y among subjects with value 0 on Z but a negative relation among the subjects with value 1 on Z”. Some other variables are suspected to play a role of covariate in many situations but do not have any particular theoretical interest in this research. Their possible influence on models should be statistically controlled in all analyses.

Five covariates are statistically controlled in the models of this research. These covariates include three socio-demographic characteristics: gender, the age, and the education level of the respondents. Covariates also include political predispositions to policy learning like political interest and satisfaction with democracy. With respect to the analytical framework of this research, socio-demographic characteristics should be considered social background factors of the belief system of policymakers. Political predispositions to policy learning are viewed as mental constructs which result from a combination of beliefs. In the case of political interests, evaluative beliefs could include such propositions like: “I believe that the well-being of society is important”. Predictive beliefs could include: “I think that politics has an actual impact on the well-being of society”. In the case of satisfaction with democracy, evaluative beliefs could include: “I believe that justice is important”. Predictive beliefs could include: “I believe that Belgian democracy improves justice”. Like socio-demographic characteristics, however, political predispositions are considered covariates because they are not the explanatory variables of interest in this research.

Socio-demographic characteristics like gender, age, and the education level are commonly accounted for in social science research; their influence on many aspects of psychological and social life is widely recognized. In particular, several studies have showed that socio-demographic characteristics are related with resistance to persuasion and the propensity of attitudes to change following new stimuli and new experiences. Such phenomena are very close to, if not similar to, the process of learning about policies, as it is considered in the analytical framework of this research.

Though overestimated by early research, the influence of ***gender*** on attitude change is significant (Petty & Wegener, 1998, p. 39). Women are expected to show higher compliance than men. Explanations of this phenomenon were attributed to the “greater reception skills of women” (McGuire, 1969) or to the “greater conformity expectations” of society for women (Hovland & Janis, 1959). Another explanation relates to the sender of the investigator, males being “more effective in eliciting compliance from females than are other females” and women being “more interested in

social harmony than are men” (Eagly & Wood, 1991). Gender differences with respect to attitude change was shown to be exacerbated in a group-pressure context (Cooper, 1979). As the compulsory implementation of the liberalization policy process within national subsystems may be, to a certain extent, assimilated with a group-pressure situation, gender differences could be observed with respect to Preferences change direction. Differences in Preferences change intensity could be related to this.

With regard to **Age**, it is expected that attitude change and compliance should be higher among younger than older people (Petty & Wegener, 1998). In addition to the different social, economic, and cultural positions that younger and older people have in society, age differences with respect to attitude change were also attributed to the greater suggestibility of younger people (Ceci & Bruck, 1993). Related to this, age should be connected with Preferences change direction. Furthermore, many studies compare younger and older students, while research comparing students with older people is less frequent. As students’ attitudes are probably more inclined to change than older people’s attitudes, comparing students with other students probably underestimates the total effect of age in the overall population (Petty & Wegener, 1998).

With respect to **Education level**, a consistent body of literature has demonstrated “both the critical importance of early adulthood and the college years as crucibles of sociopolitical learning and the long-term retention of political outlooks developed during that stage of life” (Wald, 2011, p. 2). On the one hand, this highlights an effect of education on attitudinal change among students. Those people receiving education are more susceptible to attitudinal change because “universities are environments where young people encounter new ideas, meet people with different backgrounds, are exposed to perspectives rare or previously unavailable to them in their prior environments, and internalize them” (Wald, 2011, p. 2). This effect is operative during the education itself as well as during the several following years. During the next stages of life, however, this effect is not salient anymore, which is suggested by the difficulty to change attitudes through adult education (Preston & Feinstein, 2004). Related to this, we should actually find a relation between age and Preferences change intensity, the policy preferences of younger people being more susceptible to change due to their greater proximity with the study time. On the other hand, the literature is inconclusive about the independent effect of education on attitudinal change, that is, people of the same age but differently educated have a different susceptibility to attitudinal change, following new information and experiences. It could be tempting to think that more educated people have been opened to more diverse “outlooks”. For example, there is evidence that education is correlated with tolerance and against racism or authoritarianism (Radloff, 2007). But there is little evidence that, following new stimuli, the attitudes of educated people are more susceptible to change. Contradictory indications are even suggested by Battaglio (2009). In his study, he finds supportive evidence that education is positively related with the internal consistency of citizens’ positions with respect to the privatization of different utilities⁷³. The fact that policy beliefs of educated people are more consistent at one moment in time may suggest that they are, likewise, more consistent over time. In the end, existing

⁷³ Battaglio (2009, p. 49) formulates the hypothesis that “respondent levels of political sophistication are important for recalling appropriate political cues and thus more consistent political opinions”. He uses, as an indicator of political sophistication, chronic information that he defines as “general information about politics or particular policies” (p. 49). In turn, he uses education as a proxy variable for the amount of chronic information a respondent receives because “respondents with greater levels of education are more likely to process greater levels of chronic information involving politics and policy during their lifetimes” (p. 49).

studies on attitudinal change and resistance to persuasion are inconclusive about the actual effect of the education level. But their results suggest that the education level should be included as a covariate in the models of policy learning. They also suggest that the education level could act as a covariate of age, explaining why the effect of age – involving more susceptibility to attitudinal change among younger people – could be stronger among educated people than among less educated people.

Socio-demographic characteristics are operationalized in the survey thanks to classical questions found in most of quantitative research. They appear in Table 13. The value of these variables depends upon the answer given by the respondent and appears in brackets (but not in the survey). Gender is dichotomous. Age and education level are ordinal, with respectively 12 and 5 possible answers.

Table 13: Measurement of socio-demographic characteristics in the survey

GENDER:

Question:

"Are you a man or a woman?"

- A man [-0.5]
- A woman [+0.5]
- NO ANSWER ["Missing value"]

AGE:

Question:

"In which age bracket are you situated?"

- <= 20 [- 5.5]
- 21-25 [- 4.5]
- 26-30 [- 3.5]
- 31-35 [- 2.5]
- 36-40 [- 1.5]
- 41-45 [- 0.5]
- 46-50 [0.5]
- 51-60 [1.5]
- 61-65 [2.5]
- 66-70 [3.5]
- 71-75 [4.5]
- >= 76 [5.5]
- NO ANSWER ["Missing value"]

EDUCATION LEVEL:

Question:

"What is your last degree?"

- Primary education [- 2]
- Secondary education [- 1]
- Undergraduate [0]
- Graduate [1]
- PhD [2]
- NO ANSWER ["Missing value"]

Covariates also include ***political predispositions to policy learning***. Political predispositions to policy learning are political opinions that may render policy beliefs more susceptible to change but are not related with the psychology of policymakers. Both predispositions were identified in the literature.

Political interest is a self-reported measure of the level of attention and curiosity that a respondent has in general politics. As policymakers work in a political environment, it may be suspected that their political interest is higher than in the overall population. Even among policymakers, however, the degree of political interest varies from one person to another. Battaglio and Legge test two complementary hypotheses with respect to the influence of political interest on citizens' beliefs regarding the privatization of different utilities. In a first study, they suggest that

“those who are interested in politics should be more supportive of experimentation within the political system” and thus favourable to privatization (2009, p. 702). This hypothesis was not supported by the results. In a second study, Battaglio (2009) finds supportive evidence that political interest is positively related with the internal consistency of citizens’ positions with respect to the privatization of different utilities⁷⁴. In the end, citizens interested in politics are not necessarily supportive for experimentation but their policy beliefs are more consistent at one moment in time. In turn, those beliefs could also be more consistent *over* time, suggesting a possible (negative) relation between political interest and Preferences change intensity.

Satisfaction with democracy is the second political predisposition to policy learning, statistically controlled in the models of this research. Satisfaction with democracy is a self-reported measure of how well or bad the system of democracy works in the respondent’s country. Battaglio and Legge (2009) tested two contradictory hypotheses regarding satisfaction with democracy: “while it might be guessed that (1) satisfied citizens are not prone to change, (2) those who are supportive of the political system may have more confidence and familiarity to know its shortcomings and take steps that they view as reform, such as privatization” (p. 702). Their results confirmed a positive relation between satisfaction with democracy and support for privatization. They also show that satisfaction with democracy is related to support for political experimentation. People open to experimentation are more prone to attitudinal change, suggesting a possible relation between satisfaction with democracy and Preferences change intensity.

In the above-mentioned studies, political interest and satisfaction with democracy were operationalized with *ad hoc* questions. An *ad hoc* question, however, takes more space in the survey than additional items in an existing list of other Likert-type items. To limit the size of the questionnaire in the present research, those *ad hoc* questions were transformed into Likert-type items, as shown in Table 14. The value of these variables depends upon the answer given by the respondent and appears in brackets (but not in the survey)⁷⁵.

⁷⁴ “Although the effects of this measure may be limited by the reality that it is self-reported, the logic behind the hypothesis is similar to the education variable: the better informed should exhibit less response variation than others” (Battaglio, 2009, pp. 49-50).

⁷⁵ About the survey questionnaire of this research and the use of Likert-type items, see section 4.2.

Table 14: Measurement of political predispositions to policy learning (from Battaglio & Legge, 2009; Battaglio, 2009)

POLITICAL INTEREST:	
<u>Original question:</u>	<u>In this survey:</u>
<i>"How interested would you say you personally are in politics"?</i>	<i>"I am interested in politics".</i>
• Not at all interested • Not very interested • Somewhat interested • Fairly interested • Very interested	Strongly disagree [-2] Disagree [-1] Nor agree nor disagree [0] Agree [+1] Strongly agree [+2]
SATISFACTION WITH DEMOCRACY:	
<u>Original question:</u>	<u>In this survey:</u>
<i>"All in all, how well or badly do you think the system of democracy [in respondent's country] works these days"?</i>	<i>"I find that the Belgian system of democracy works well these days".</i>
• It does not work well and needs to be completely changed • It does not work well and needs a lot of changes • Don't know • It works well but needs some changes • It works well and needs no changes	Strongly disagree [-2] Disagree [-1] Nor agree nor disagree [0] Agree [+1] Strongly agree [+2]

Three other factors are good candidates for the introduction into the models as covariates: the **sector** variable, the **organization** variable, as well as the **seniority** variable. Whether the respondent is part of one sector or another and whether he is a member of one organization or another may influence policy learning. The effect of those variables will be accounted for by the analysis of data with multilevel models (the use of multilevel analysis in this research is described later in this dissertation, in section 4.4). Subsystem seniority is defined as the number of years that a policymaker has been part of his subsystem. Seniority influences the amount of information received and the number of experiences of a policymaker in his subsystem. As policy learning is a measure of belief change resulting from new information and experience, policy learning can depend upon policymakers' seniority. For example, Montpetit (2007) showed that seniority is negatively related to learning intensity: those policymakers working in their sector for a long time are less prone to changing their beliefs. This variable, however, will not be used as a covariate because, as will be shown in the description of the sample, most respondents to the survey are very senior (see Table 22). This is positive for the validity of the measure of policy learning, which should be a measure of belief change over a longer period. But it results in the censoring of the seniority variable on the right: most observations are situated on the right tail of its scale, with even 68.32 % of the respondents on the final point⁷⁶. Hence, the variable shows little variation that could be used to

⁷⁶ Censored variables will be discussed in further detail in relation with the analysis of learning intensity, which is also censored but on the left (see the section 4.4.1.2).

model its influence on policy learning and to improve the modeling of the relations between explanatory variables of interests and the dependent variable⁷⁷.

A final remark about the *missing values* of covariates. Some respondents of the survey decided to respond with the “NO ANSWER” item to one or several questions operationalizing covariates⁷⁸. As a result, like the other variables, covariates are subject to the problem of missing values. The statistical procedures, however, often dismiss all the observations that have a missing value for any variable introduced in a model. Covariates are numerous and included in all the estimated models. Hence, the impact of their missing values on the analyses is huge: the probability for a respondent to have at least one missing value to one of the covariates is substantial. If the estimated models systematically rejected the information provided by all these respondents, the effective sample size of the survey would decrease too much. To solve this problem, missing values of covariates were replaced by their mean value in the sample. This operation allows to preserve the effective sample size while influencing the estimation of the models very little (Allison, 2002) . This artifact was only used for covariates.

4.1.5. Measurement of the explanatory variables

Several explanatory variables were constructed in the theoretical part of the dissertation. Their measurement is described in the present section.

4.1.5.1. Interests

Self-interest is defined as the short to medium-term material well-being of the personal life of an individual (or that of his immediate family) (Mansbridge, 1990; Sears & Funk, 1991). Two variables related to self-interest are used in this research: personal vested interests and the valence personal interests. By analogy with self-interest, organizational interests are defined as the short to medium-term prosperity of an organization. Two variables related to organizational interests are also distinguished: organizational vested interests and the valence organizational interests.

Personal vested interests are defined as the subjective hedonistic relevance of an attitude object. It refers to the effects of this object on the self-interest of the individual. When those effects improve the material well-being of the individual, personal vested interests are positive. Personal

⁷⁷ In other words, the models have few observations in the group of junior respondents to model the relation between explanatory variables and policy learning in this group.

⁷⁸ This occurs for many possible reasons. For example, some respondents can be bothered by the idea to provide their age in a survey. Another possible reason is the fear to become identifiable by providing several personal characteristics that could be cross-referenced by the researcher to recognize the respondents.

vested interests are null when the object's attitude is unrelated to the material well-being of the individual. Finally, personal vested interests are negative if the object's attitude has a negative influence on the material well-being of the individual.

Personal vested interests in the liberalization process measure the relevance of this policy for the self-interest of policymakers. Personal vested interests should be operationalized with such aspects of policymakers' well-being which are susceptible to be influenced by the liberalization process. For example, whether a policymaker has an air-conditioning unit at home, it is well related to his material well-being but is not a good indicator of his vested interests in the liberalization process. Indeed, the influence of the liberalization policy on having an air-conditioner is quite improbable, whoever the policymaker. Rather, vested interests of policymakers in policies should be evaluated with respect to aspects related to their professional life, self-interest *and* susceptible to be influenced by the liberalization process. This limits the content validity of the concept to the professional aspects of self-interest but makes it more relevant in the context of this research.

In practice, three aspects related to the material well-being of policymakers were submitted to the respondents. These aspects include their salary (like in Martinussen, 2008), but also their material working environment and their opportunities to get promotions. Whether they were actually influenced by the liberalization process was assessed by the respondents themselves in the questionnaire as indicators of personal vested interests. The Likert-type items corresponding to these indicators are listed in Table 15. The answers to these items are ordinal 5-point scales ranging from "Strongly disagree" [-2] to "Strongly agree" [+2]. The aggregation of these items results in an ordinal scale ranging from -6 to +6 for the variable operationalizing vested personal interests.

The ***valence of personal interests*** is the subjective salience given by the individual to the idea of self-interest. The valence of self-interest may be positive if the individual judges that self-interest is an important idea. The valence may be null if the individual is indifferent to this idea. The valence may be negative if the individual reports that he would give more importance to other aspects of his life if he had to choose between them and his self-interest.

The aspects of the material well-being of individuals covered by self-interest may be numerous. In practice, however, the above-mentioned indicators of self-interest used to operationalize personal vested interests will be used again to operationalize the valence of personal interests. Indeed, as the interaction between the valence of personal interests and personal vested interests will be analysed in the models of policy learning, the content of self-interest operationalized by both variables should preferably be similar. The importance given to the three indicators of self-interest will be assessed by each respondent in the questionnaire as indicators of the valence of personal interests. The three corresponding Likert-type items are listed in Table 15. The answers to these items are ordinal 5-point scales ranging from "Strongly disagree" [-2] to "Strongly agree" [+2]. The aggregation of these items results in an ordinal scale ranging from -6 to +6 for the variable operationalizing the valence of personal interests.

Table 15: Measurement of personal vested interests and the valence of personal interests

PERSONAL VESTED INTERESTS: <u>Likert-type items:</u> Item 1. My material working environment was positively influenced by the liberalization of the railways / electricity sector. Item 2. My professional opportunities were positively influenced by the liberalization of the railways / electricity sector. Item 3. My salary was positively influenced by the liberalization of the railways / electricity sector. <u>Construction of the variable:</u> Personal vested interests = item 1 + item 2 + item 3 VALENCE OF PERSONAL INTERESTS: <u>Likert-type items:</u> Item 1. I attach some importance to my material working environment Item 2. Obtaining professional promotions is important for me. Item 3. I attach some importance to the amount of salary I receive. <u>Construction of the variable:</u> Valence of personal interests = item 1 + item 2 + item 3

Organizational vested interests are defined as the subjective relevance of an object's attitude for the prosperity of the organization. When its effects improve the prosperity of the organization, organizational vested interests are positive. Organizational vested interests are null when the object's attitude is unrelated to the prosperity of the organization. Finally, organizational vested interests are negative if the object's attitude is negatively related to the prosperity of the organization.

Organizational vested interests in the liberalization process measure the relevance of this policy for the prosperity of the organization which policymakers are members of. In other words, the measure is provided by each respondent to the survey with respect to the organization in which he works (rather than the other organizations involved in the liberalization process). Organizational vested interests should be operationalized with such aspects of organizations' prosperity which are susceptible to be influenced by the liberalization process.

In practice, two aspects related to the prosperity of the organizations were submitted to the respondents. These aspects include: the finances of the organization and its success. Whether they were actually influenced by the liberalization process was assessed by the respondents themselves in the questionnaire as indicators of organizational vested interests. The Likert-type items corresponding to these indicators are listed in Table 16. The answers to these items are ordinal 5-points scales ranging from "Strongly disagree" [-2] to "Strongly agree" [+2]. The aggregation of these

items results in an ordinal scale ranging from -4 to +4 for the variable operationalizing vested organizational interests.

The ***valence of organizational interests*** is the emotional quality, the subjective salience given by the individual to the idea of organizational interest. The valence of organizational interests may be positive if the individual judges that organizational interests are an important idea. The valence may be null if the individual is indifferent to this idea. The valence may be negative if the individual reports that he would give more importance to other aspects of his life if he had to choose between them and the interests of his organization. The aspects of organizational prosperity covered by organizational interests may be numerous. In practice, however, the above-mentioned indicators of organizational interests used to operationalize organizational vested interests will be used again to operationalize the valence of organizational interests. Indeed, as the interaction between the valence of organizational interests and organizational vested interests will be analysed in the models of policy learning, the content of organizational interests operationalized by both variables should preferably be similar. The importance given to the two indicators of organizational interests will be assessed by each respondent in the questionnaire as indicators of the valence of organizational interests. The two corresponding Likert-type items are listed in Table 16. The answers to these items are ordinal 5-points scales ranging from “Strongly disagree” [-2] to “Strongly agree” [+2]. The aggregation of these items results in an ordinal scale ranging from -4 to +4 for the variable operationalizing the valence of organizational interests.

Table 16: Measurement of organizational vested interests and the valence of organizational interests

ORGANIZATIONAL VESTED INTERESTS:

Likert-type items:

Item 1. The success of my organization was positively influenced by the liberalization of railways / electricity sector.

Item 2. The finances of my organization were positively influenced by the liberalization of railways / electricity sector.

Construction of the variable:

Organizational vested interests = item 1 + item 2

VALENCE OF ORGANIZATIONAL INTERESTS:

Likert-type items:

Item 1. I attach some importance to the success of my organization.

Item 2. I attach some importance to the finances of my organization.

Construction of the variable:

Valence of organizational interests = item 1 + item 2

The research distinguishes “generalized trust” in people and politicians from a contextualized measure of trust called “interpersonal trust”. Generalized trust may be defined as the general degree of an individual’s confidence in others’ fairness as well as the general degree of an individual’s confidence in politicians’ fairness. Interpersonal trust in subsystem members may be defined as the specific degree of policymakers’ confidence in other subsystem members’ fairness. As presented above, only interpersonal trust is subsystem-specific. Generalized trust, by contrast, is not subsystem-specific: it concerns all people and politicians from any policy subsystem.

Generalized trust in people was operationalized with an *ad hoc* question used in Leach and Sabatier (2005). **Generalized trust in politicians** was operationalized with an *ad hoc* Likert-type item used in Battaglio (2009)

Leach and Sabatier (2005) also suggested a 5-item scale to measure **Interpersonal trust in subsystem members**. In this research, however, interpersonal trust was measured with a more direct question adapted from Lubell (2001, 2000). This appears in Table 17. The value of these variables depends on the answer given by the respondent and appears in brackets (but not in the questionnaire). The questionnaire was not large enough to measure interpersonal trust with the 5-item scale from Leach and Sabatier (2005). Instead, I relied on the more direct question adapted from the one used by Lubell (2001, 2000) a similar empirical context.

Table 17: Measurement of generalized trust and interpersonal trust

GENERALIZED TRUST IN PEOPLE (from Leach & Sabatier, 2005):

Question:

“Do you think most people would try to take advantage of you if they got a chance, or would they try to be fair?”

- Would take advantage [-0.5] → Distrust
- Would try to be fair [+0.5] → trust
- NO ANSWER [.]

GENERALIZED TRUST IN POLITICIANS (from Battaglio, 2009):

Likert-type item:

“In general, people we elect as MP's or Ministers try to keep the promises they have made during the election”.

INTERPERSONAL TRUST (from Lubell, 2000, 2001):

Original question:

Thinking about the range of contacts you have had with other stakeholders, do you completely trust these stakeholders to fulfill the promises and obligations made on each issue in the context of the partnership, completely distrust them, or somewhere in between?

- Completely distrust [0]
- ...
- Completely trust [11]

In this survey:

“Thinking about the full range of contacts you have in the Belgian railways, how would you characterize, in general, the degree of trust you have in the persons involved in this sector”?

- Very low [-2]
- Low [-1]
- Moderate [0]
- High [+1]
- Very high [+2]
- NO ANSWER [.]

4.2. Questionnaire

The **general organization** of the questionnaire includes 8 question pages, plus one introductory and one concluding page. It was translated from French (researcher's mother tongue) to Dutch by a professional center, the Translation Centre of the Université catholique de Louvain. The translation was then checked by the researcher to assess whether any linguistic nuances specific to the field of political science, as well as to the rail or electricity sectors, had not been missed. The questionnaire was composed of two parts. The first part (4 pages) related to politics and policies. The questionnaire began with the measurement of policy learning. Policy learning was the most important variable of the research. The questions and items measuring this variable were cognitively demanding. It required the best of the respondents' attention. In addition, the participation of

respondents who did not fill in this part of the questionnaire was obviously far less useful for the research. For these reasons, the questionnaire began with the measurement of this policy learning (first page). This was the only compulsory part of the questionnaire. All the other questions were also compulsory (to oblige respondents to consider them) but offered a “No answer” opportunity. The three last pages of the first part concerned respondents’ other attitudes with respect to their policy subsystem. The second part of the questionnaire (4 pages) related to respondents’ daily lives. It was about attitudes and behaviours independent from the particular subsystem they are members of but that could influence how their policy beliefs have changed over time.

Because the objective of the questionnaire was to collect “top of mind” answers, there was no opportunity to go back in the pages of the questionnaire. As it was announced quite explicitly to the respondent, the research objective could be summarized as correlating the answers from the first part with the answers from the second part of the questionnaire. Hence, as noted by (Poynter, 2010, p. 38), some respondents could feel tempted to go back in the questionnaire to make the first-part answers more “coherent” with the second-part answers. With respect to the general lay-out of the questionnaire, the default options of LimeSurvey are very convenient and were not modified.

Constructing a questionnaire is a compromise between the **duration** of the questionnaire and the response rate: the longer a questionnaire, the lower the response rate (Cape, Lorch, & Pierkarski, 2007). Determining the length of the questionnaire also depends on the context. For example, if the participants are paid to fill it in, a longer questionnaire is possible. Even in this case, questionnaires may not be too long because the concentration of the respondents is limited in intensity and duration. Web surveys have a major drawback on this respect. Face-to-face administered surveys allow the surveyor to motivate the respondent if only by his presence and his encouragements on how the survey results count for him. By contrast, this effect is absent in the case of web surveys: logging off is very easy for respondents wanting to stop the survey (Brace, 2008). According to the results of Cape et al. (2007), independent of the web questionnaire’s duration, at least 10% of the respondents log off before the end of a web survey. If it takes up to 20 minutes, about 15% log off. If the duration is comprised between 20 and 60 minutes, up to 30% log off. Etc. For those reasons, the effective duration of the questionnaire in the present research was limited to around 20 minutes.

Many concepts are measured through one or several **Likert-type items** in the questionnaire. The technique (Likert, 1932) “presents respondents with a series of attitude dimensions (a battery), for each of which they are asked whether, and how strongly, they agree or disagree, using one of a number of positions on a 5-point scale” (Brace, 2008, p. 73). 7-point or even 9-point scales allow respondents to provide more nuanced answers but are more demanding cognitively. Considering that the response rate was the most important challenge of this survey, 5-point scales were privileged in the present research. The 48 Likert-type items were homogeneously distributed among 3 out of the 8 pages of the questionnaire. Likert-type items are particularly well-suited for self-completed questionnaires such as those submitted in web surveys. These items are, however, subject to four effects (Brace, 2008) that have been accounted for in the design of the present questionnaire.

According to the *order effect*, survey participants tend to privilege left-sided scalar answers (disagree) to right-sided answers (agree) (Artinngstall, 1978). One solution to this problem is to provide scales in opposite order to each half of the sample, which does not delete the bias but

averages it. This solution was not implemented, however, because previous studies on which the present research is based do not report that they averaged the left-sided bias in such a way. Hence, as the intensity of the bias is not known, averaging it in the present research would affect the comparability of its results with previous findings (due to a problem of measurement validity). As most Likert-type items used in previous studies are organized from disagree (on the left) to agree (on the right), the items were organized similarly in the present questionnaire.

Acquiescence effect (or “yes saying” effect) is the respondents’ tendency to agree with a question rather than to disagree with it (Kalton & Schuman, 1982). Indeed, disagreeing most often involves greater affective and cognitive costs than agreeing. Given that the Likert-type items of the present survey are organized from disagree (on the left) to agree (on the right), this acquiescence effect should bias them to the right. Hence, order effect (bias toward the left side) and acquiescence effect (bias toward the right side) should partly compensate each other.

The *central tendency effect* is the reluctance of respondents to adopt extreme positions (Albaum, 1997). One solution to this problem is a two-level design, with one first Likert scale testing one attitudinal dimension and a second question asking respondents how strong they feel about their response to the first question. While this design indeed improves the answers’ variation, it doubles the required space for each question. Hence, in practice, it is difficult to implement. As its names suggests, however, the central tendency’s effect is to direct respondents’ answers toward the centre of the scale; it does not bias them.

Finally, as a result of fatigue or boredom, the *pattern answering* effect is the respondents’ tendency to fall into a routine of ticking boxes, that may result in a vertical or diagonal pattern (Brace, 2008). Several measures were taken to avoid this effect. On the one hand, the items measuring a similar concept were randomly distributed by the researcher among the three pages of the questionnaire relying on Likert-type questions. On the other hand, LimeSurvey presented the questions of a same page randomly from one respondent to another, in such a way as to average a question order effect. Finally, the questionnaire contained several contradictory Likert-type items (for example, “The liberalization of the railways is a right-wing policy” versus “The liberalization of the railways is a left-wing policy”). This inclines attentive respondents to fill in the questionnaire consistently. This also allows the researcher to detect inattentive respondents and suspicious questionnaires. As explained in detail above, such an examination of the suspicious questionnaires was indeed performed for validation purposes before their inclusion in the research sample (see section 4.3.4).

To conclude, it may be noted that this survey was addressed to policy elites. They have the highest hierarchical positions in the organizations they work in. It may be reasonably supposed that their education level is, on average, higher than in the overall population. At least, they have, still on average, a better understanding of policy issues related to the sector they work in. Thus, their ability to concentrate, their interest in the survey and their understanding of the questions were probably higher than if the survey had been submitted to average citizens.

4.3. Survey

The survey of this research was a web survey conducted between April and November 2012. It was administrated with the LimeSurvey software (LimeSurvey Project Team / Carsten Schmitz, 2012). After the elaboration of the questionnaire on LimeSurvey, it was submitted by email to 1256 subsystem members on their professional computers. To be able to participate in the survey, they had to click on the survey URL appearing in the email with the introductory message. This opened the questionnaire in their browser. The questionnaire was composed of one introductory page, 8 pages of questions, and one concluding page. After the concluding page, the participants were invited to close their browser and received an email to confirm the good reception of their answers. The respondents who did not fill in the questionnaire received one (and only one) reminder, again by email. The content of the email appears in the Appendix. The questionnaire is not reproduced in the Appendix because all the questions used to measure the data are presented in the dissertation.

Web surveys have several advantages as well as several specific characteristics (Poynter, 2010; Sue & Ritter, 2007) particularly convenient in the context of the present research. *First*, web surveys are interesting to conduct research on large and disseminated populations. In this research, 1256 target policymakers were identified in many different organizations. Sending them the invitations to the survey was easier. *Second*, web surveys are particularly convenient in research on hard-to-reach populations. Policy elites are often harder to reach because they occupy top positions in the subsystems. Hence, making an appointment to have an interview with them or to submit a paper questionnaire is more difficult. *Third*, web surveys demand few resources in comparison with other measurement tools. For example, interviews are limited to the campaign preliminary to the survey. Many good-quality software of online survey management are open source. LimeSurvey is installed on the central server of the Université catholique de Louvain and freely accessible to its members from any computer. The dataset resulting from the survey is encoded by the respondents themselves when filling in their questionnaire. *Fourth*, web surveys allow to address time constraints. In particular, web surveys allow reducing the time required by the diffusion of questionnaires, as many email invitations may be sent quickly with the software. The other steps of the survey research are not deleted, however, and the time they require should not be underestimated. *Finally*, web surveys are particularly convenient to deal with sensitive information because it easily allows to preserve the confidentiality and anonymity of the responses. Confidentiality means that the identity of those policymakers who participated and those did not is unknown. Anonymity means that the identity of those who participated may not be retrieved from a questionnaire. Web surveys conducted with emails including an URL to a browser allow to guarantee confidentiality and anonymity. As will be explained later, policy subsystem working in a political environment and the present research dealing with policy-related issues, policymakers were very attentive to confidentiality and anonymity. Hence, conducting a web survey was particularly useful to convince them to participate. Of course, web surveys must be conducted among populations equipped with an Internet connection. This was not a problem, as nearly all subsystem members have a desk job. When the target population is equipped with the Internet, web surveys may reach a similar response rate as other survey methods (Kaplowitz, Haddock, & Levine, 2004).

A research and a survey may be characterized by their **population and sample**. The population of a piece of research (and a survey) is “the entire group of individuals, groups, or objects

to which you would like to generalize your research results – for example, citizens of a country, students at a university, or employees of a company” (Sue & Ritter, 2007, p. 25). The sample is “a subset of this population. It consists of the group of people who are selected to participate in the research” (Sue & Ritter, 2007, p. 26).

This research is based on a **two-degree sampling**. Policymakers from the Belgian railway and electricity sectors are a sample of the whole population of policymakers that this research intends to better understand (first degree). On the other hand, the research survey does not include all the members of these two subsystems but rather a sample of these two groups of policymakers (second degree). The research sample is expected to tell us something about the population of subsystem members from the Belgian railways and electricity sectors. In turn, these policymakers are expected to tell us something about subsystem members in general. In both cases, the postulated representativeness of the sample with respect to the population will allow to infer correlational relations between the data from the sample and the population (the causal direction of those relations flowing from the theory).

The population and the sample of this research will be discussed in the following sections. The relations which exist between them will also be discussed. They may be characterized by a penetration rate and a response rate. With regard to the response rate, the participation rate of organizations and the response rate of individual policymakers will be discussed separately.

4.3.1. Population

This research analyses a population of **policy subsystem members**, i.e. actors who are involved in dealing with a policy problem such as pollution control, mental health or energy (Sabatier, 1993; Sabatier & Weible, 2007). Policymakers from the Belgian railway sector and electricity sector are the members of two distinct policy subsystems. Operationally, subsystem members in the railways are those people influencing policies and administrative decisions regarding the management and exploitation of services on the Belgian rail network. In the electricity sector, subsystem members are those persons influencing policies and administration decisions regarding the generation, supply, transport and distribution of electricity on the Belgian grid.

The territorial and functional **perimeter** of a policy subsystem is drawn with regard to the perimeter of the issues in which its members are involved. In the railways like in the electricity sector, this perimeter is defined on country lines. Of course, Belgian administrations and regulators may interact with other national administrations or with European institutions regarding some issues (like the liberalization policy). As another example, Belgian operators may collaborate with the operators from other countries, sometimes in the framework of European or regional groups of interest. But this research focuses on those actors primarily involved in Belgian-level issues. For example, it excludes the members of European interest groups, who are not primarily involved in Belgian-level issues. Finally, several organizations are the Belgian branch of international companies based in another country. Several Belgian organizations also conduct activities in other countries, such as Elia in Germany. In any case, the survey focuses on those actors active in the Belgian parts of

these organizations. They have direct or nearly direct relationships among each other (with one or two go-betweens at most).

As another operational frontier, the research focuses on people *mainly* involved in the two subsystems, that is: people *working* within the railway or electricity sectors, rather than people occasionally involved in them. As a consequence, the population does not include the members of governing boards nor elected officials (MPs as well as ministers and their cabinets at each level of government). From a practical point of view, those actors often change from one election to another. In addition, the involvement of these actors in subsystem-related projects may vary a lot from one period to another. For example, an MP can pay a lot of attention to the sector when it is concerned with a bill, but less at some other time. By contrast, the involvement of those actors who work in the sector is, in all likelihood, more stable. Many interviewees reported that, even if governing board members and elected officials may be influential, the content of many decisions is mostly influenced by people working within the sector. For all these reasons, in the present research, policy subsystem members only include people working within the railways or electricity sectors.

Within Belgium, the railway sector and the electricity sector are **intergovernmental**. It is obvious in the electricity sector, in which some competences are federal, whereas others are regional. Even if all the railway competences have remained federal, the regional level was also considered in this sector to draw the boundaries of the policy subsystem. Indeed, as Regions have some competences on which railways may have some influence, several rules compel federal organizations to involve regional authorities in the decision-making processes. For example, about every decade, a new investment plan which binds the NMBS/SNCB to the Federal authorities describes the major construction projects that it should implement. As these projects have possible effects on regional competences such land settlement or tram and bus transport, Regions have to be consulted before making decisions on investment plans. As a result, railways policymakers should be searched for at the regional level too. For example, to inform the regional authorities on interactions with the Federal authorities with respect to the railways, some departments of the regional public administration include people specialized in the railways. These civil servants might possibly influence the course of policymaking in the railways. In other words, they are subsystem members.

Latent policymakers were also considered in the survey. Latent policymakers are those subsystem members which are active in many subsystem issues, but not directly in the liberalization policy process. They could take an active part in the decision-making process with respect to this policy if they had the power, the information or the opportunity (Sabatier, 1987, p. 659). For example, some organization members manage activities which have not been concerned by the liberalization policy until now. But, given their organizational position, they would be uppermost consulted if these activities came to be included in the European liberalization process.

Two policy subsystems – rather than one – were surveyed in order to increase the size of the research sample. Taken alone, each subsystem offers a valid population for testing hypotheses related to policy learning. However, in addition to the absolute size of each subsystem, the penetration and response rate reduce the final size of the sample on which statistical analyses may be conducted. In consequence, with one only subsystem being surveyed, the statistical results flowing from these analyses would not be powerful enough to be conclusive ⁷⁹. Hence, two Belgian policy subsystems were surveyed. In the railway sector, 560 invitations to fill in the questionnaire

⁷⁹ Statistical testing and power are discussed later on in this dissertation (see section 4.4.2).

were sent by email from April 2012 to June 2012. 236 participants opened the questionnaire to participate in the survey. In the electricity sector, 696 questionnaires were sent from September 2012 to December 2012 and 261 participants opened the questionnaire⁸⁰.

4.3.2. Penetration rate

The **penetration rate**, also called “coverage” (Sue & Ritter, 2007), may be quantitatively defined as the ratio between the sample size and the population size. In this research, the penetration rate is the ratio between the number of invitations to the survey that were sent and the actual number of (active and latent) policymakers in each policy subsystem. The issue is also qualitative and relates to the representativeness of the sample (with respect to the population of policymakers in the two subsystems of the research and with respect to all subsystems in general). It should be avoided that those policymakers who are not included in the sample share some specific characteristics that explain why they were missed by the sampling method. Indeed, if these characteristics also influence how policymakers’ beliefs change (policy learning), the representativeness of the sample is spoiled and the analyses conducted on this sample are biased (Sue & Ritter, 2007). Ideally, the research sample should include all the subsystem members from both the railways and the electricity sectors (saturation sampling). However, whereas the number of invitations sent is known, the actual number of subsystem members is difficult to determine. Which organizations are significant enough to be said to be part of the policy subsystem? In these organizations, whose workers are influential enough to be said to be subsystem members? And, even if a clear decision rule is chosen regarding these aspects, which research method ensures that all significant organizations and all influential workers will be included in the final research sample? Unfortunately, no exhaustive list of subsystem members exists in which a sample of policymakers could be randomly selected to conduct analyses. But it is possible to implement sampling methods that optimize the penetration rate of the survey.

Two complementary *sampling methods* were combined to optimize the penetration rate and the representativeness of the sample. First, the **documentary analysis** preceding the survey allowed to determine the institutional and organizational perimeter of the population in each policy subsystem. In addition to secondary sources, extensive use was made of primary sources including organizational brochures, charts, websites, reports, etc. As a result of this first stage of the sampling process, two spread sheets were created, including a list of relevant organizations and, where possible, their chart. At this stage of the sampling process, two pitfalls were possible. On the one hand, some small or less “audible” organizations of which one or several members influence subsystem policies could not be included in the sample. On the other hand, some audible organizations having no actual influence on the course of decisions could be wrongly included. The

⁸⁰ In Belgium, July and August are months when schools are closed and children are on holiday . As a result, many relatives and people are on holiday at this moment of the year, professional activity slows down and many workers are absent. In this context, conducting the survey during these two months would have been counter-productive. In addition, as the invitations to the survey were sent by email, they would have been assimilated in a long list of unread emails at the end of the holiday . They would probably have become less priority than when they were received alone, during a typical working day, in a cleaned mail box.

documentary analysis being based on official or quasi-official references and sources, identifying those people who actually influence policies and decisions related to the liberalization policy process remained difficult .

To complete and enrich the results of the documentary analysis, several qualitative interviews were conducted to implement a ***snowball (or “chain referral”) sampling method***. This method “yields a study sample through referrals made among people who share or know of others who possess some characteristics that are of research interest” (Biernacki & Waldorf, 1981, p. 141; see also Atkinson & Flint, 2001; Noy, 2008; Sadler, Lee, Lim, & Fullerton, 2010). Concretely, “informants refer the researcher to other informants, who are contacted by the researcher and then refer her or him to yet other informants, and so on. Hence the evolving “snowball” effect, captured in a metaphor that touches on the central quality of this sampling procedure: its accumulative (diachronic and dynamic) dimension” (Noy, 2008, p. 330).

Snowball sampling is convenient to collect data about “hidden” populations, such as people suffering from a social disease (e.g. HIV-AIDS) or people adopting a deviant behavior (e.g. drug use) (Sadler et al., 2010). Subsystem members are indeed “hidden”. They are small in number. Hence, they are more difficult to distinguish from the whole community of people working in the sector, within which they are nested. In addition, policy elites most often remain discrete with respect to the information, power or privileges they may hold in relation with their position. Finally, policymakers are disseminated in many different organizations. This networking approach is advocated by the ACF itself for identifying the membership (and associated topic) of a policy subsystem (Sabatier, 1993, p. 24)

Once the majority of possible subsystem members have been identified on the basis of their organizational affiliation, the hard-to-reach remaining minority – but perhaps of primary importance – is difficult to discern. Snowball sampling allows to go on the track of these actors by making use of within-subsystem relationships (Atkinson & Flint, 2001). In addition, among those possible subsystem members identified through documentary analysis, the snowball method helps to identify those people having an actual influence on the policymaking process. It makes use of within-subsystem information: policymakers recognize each other. On the other hand, a low participation rate to a study based on a traditional random sampling method may be partially explained by a lack of trust on the part of subsystem members. Snowball sampling is particularly suited for overcoming this difficulty because it is based on interpersonal contacts between the researcher and the actors as well as contacts among subsystem members themselves. Trust is easier to establish on the basis of interpersonal relationships (Atkinson & Flint, 2001).

There are several reasons why an actor may be distrustful with regard to the researcher. First, social elites such as subsystem members can it feel necessary to adopt a “low” profile. They can view this as incompatible with the publicity to which, in their mind, their participation in a survey could lead. Thus they can feel a certain distrust toward the outsiders (Cohen & Arieli, 2011). Second, in some organizations, there can be a professional culture that inhibits the will of members to participate in research. This is true where a rigorous chain of command must be respected by organization members. This culture is not proper to public administration. Third, language can also be a barrier for reaching some subsystem members (Sadler et al., 2010). In Belgium, language barriers are strongly related to political barriers. Subsystem members can more or less spontaneously participate in the study according to the political/language community of the

researcher, even if the questionnaire is translated. Fifth, for a more diverse series of individual reasons, the “belief system” of potential subsystem members can render them distrustful regarding the researcher and discourage him or her to fill in a questionnaire (Sadler et al., 2010). The snowball sampling method is particularly suited to overcome these barriers.

The snowball sampling method was implemented during the preliminary campaign of qualitative interviews. Interviewees were asked to name several organizations they collaborate with. They were also asked to think about particular people outside their organization they interact with in the context of their jobs. Finally, they were asked to name several other organizations they feel close to and several other organizations they feel not that close to. During the last interviews in each subsystem, the names quoted by the interviewees became repetitive with regard to those cited by the previous interviewees. This was an indication that the accumulated list of subsystem members from the Belgian railway and electricity sectors was a good-quality sample and that the campaign of interviews could be stopped on this aspect⁸¹.

Finally, the classical snowball sampling method was adapted in the present research with a “hierarchical” correction. In each organization where policymakers were identified through qualitative interviews, all the members were included from the highest to the lowest organizational level, where at least several actors were identified as subsystem members. Up to which hierarchical level of the organization actors are susceptible to influence policy decisions was discussed with the interviewees themselves. This hierarchical correction compensates for the tendency of the snowball sampling procedure to over-represent “well-connected” actors and to under-represent or even neglect “unconnected” actors. With the snowball method, “elements are not randomly drawn, but are dependent on the subjective choices of the respondents first accessed” (Atkinson & Flint, 2001, p. 4). “Thus, particular individuals (the most popular, long-term residents or those with wider social networks) are more likely to be identified than others” (Atkinson & Flint, 2001, p. 5). A snowball sampling of subsystem members gives access to, and makes use of, a knowledge of policy subsystems which is mainly social, in the sense that it both uses and activates existing social networks (Noy, 2008).

4.3.3. Organizational participation rate

The **organizational participation rate** may be defined as the ratio between the number of organizations which actually participated in the survey and the number of organizations which were invited to participate. Like for the penetration rate, this issue is also qualitative and relates to the representativeness of the sample. It must be avoided that those organizations which declined the invitation to participate did not share a common characteristic that could be related to policy learning. Suppose that failure to enrol organizations in the survey was higher with members of the

⁸¹ Another way to implement the snowball sampling method is with the survey itself. In this case, the data required for the snowball sampling method come from the questionnaire: the respondents are asked to fill in the name of several other organizations/policymakers they collaborate with or feel close / not close to. In the present research, however, avoiding dropouts was judged more challenging than identifying all subsystem members. “Snowball” questions are open questions. For this reason, they may incline respondents to close the questionnaire because open questions are more “boring” or reduce the feeling of confidentiality. Hence, snowball questions were avoided.

public administration. If the policy beliefs of civil servants have changed more than the beliefs of other policymakers, the sample is unrepresentative and the analyses are biased.

For **improving the organizational participation rate**, the following approach was implemented. The first contact with target organizations was made through a formal letter addressed to their highest head. Most often, this approach was successful: the letter circulated in the organization toward the relevant service (most often: “Communications” or “Corporate Governance”). Typically, an interview was organized with a person mandated by the department head to answer my preliminary, qualitative questions and to collect some concrete information about the survey. At the end of the interview, either the person provided me with the list of the organization members, including their email addresses and positions, or the person reported on the interview to the head before providing me with the list. Sometimes, for reasons typically including holidays or lack of time, the formal approach failed because the letter was “lost” in the organization. In this case, key contacts were informally approached, either to get the interview and the list of organization members, or to launch the formal approach again and obtaining an interview with the relevant service⁸². Even in this case, the existence of the formal letter and approach helped finding support for the survey. The formal approach privileged to implement the survey had one major drawback. When a head refused to involve his organization in the survey, I had no legitimacy anymore to approach and involve key organization members informally.

Two other arguments that were very important for the organization’s head to agree with the survey were its confidentiality and anonymity. Finally, the survey was organized on a voluntary basis: only those target policymakers willing to participate could open the questionnaire. In the email invitation, the agreement of the organization head, the confidentiality and anonymity of the survey, as well as its facultative nature were obviously mentioned.

As a **result**, in the railway sector, no organization explicitly refused to participate in the survey: of the 16 organizations approached, 13 agreed with the survey and 3 never gave an answer. The organizational participation rate was lower in the electricity sector. Out of 35 organizations approached, 29 accepted the implementation of the survey and only 7 eventually refused . The 9 remaining organizations never gave an answer, despite many attempts. These results appear in Table 18.

Table 18: Organizational participation rate to the survey

	Total	Refused the survey (rate)	Gave no answer (rate)	Accepted (org. participation rate)
Railway sector	16	3 (3/16 = 18.75%)	0 (0/16 = 00.00%)	13 (13/16 = 81.25%)
Electricity sector	35	7 (7/35 = 20.00%)	9 (9/35 = 25.71%)	19 (19/35 = 54.29%)
<i>Total</i>	<i>51</i>	<i>10 (10/51 =19.61%)</i>	<i>9 (9/51 = 17.65%)</i>	32 (32/51 = 62.74%)

⁸² Key contacts result from previous studies of the Belgian railway and electricity sectors by researchers from the *Political Science Louvain-Europe Institute at Université catholique de Louvain*.

4.3.4. Individual response rate

The **individual response rate** of the survey is the ratio between the number of invitations that were sent and the number of filled-in questionnaires that were submitted and validated. Again, the issue is also qualitative and relates to the representativeness of the sample. It had to be avoided that those policymakers who declined the invitation to participate shared specific characteristics. Indeed, if these characteristics also influence how policymakers' beliefs change, the representativeness of the sample is spoiled and the analyses conducted on the basis of this are biased (due to the so-called "non-response" error: Sue & Ritter, 2007).

To **improve the individual response rate**, some practical guidelines were followed. In the email invitation, PhD research in "political psychology" is mentioned (rather than one in "social and political sciences", the official name of the diploma at the university). This term was chosen to insist on the personal focus of the research, because, during the campaign of qualitative interviews, many interviewees wrongly thought that the study was policy-oriented or even economical. They thought that its conclusions would say something about the content of the liberalization policy process or about the "good" economic model for the sector.

The invitation was as personalized as possible with regard to the recipient. For example, he received the email in his own box and the message began with his surname. To involve the recipient in the project, it was also specified that the survey was sent to "several specific" persons (rather than to an unspecified, random sample). The invitation was also personalized to create empathy with regard to the researcher: the invitation highlighted that the answers of the respondent would be very important for the researcher's project.

That the survey was anonymous and organized on a voluntary basis was also very important to improve the response rate. This point was reported by many participants during the exchanges I had with them. Another important point of the invitation was the indication that the organization head agreed with the dissemination of the survey.

A very consistent estimation of the interview time – 20 minutes – was provided in the email invitation. It is tempting to underestimate the interview time in the invitation, to convince reticent participants that they will not spend too much time on the survey. However, information circulates among subsystem members: if they report to each other that the survey is too long, this can discourage many of them from opening the questionnaire at all.

Finally, as approximate language use may also create doubts about the quality of the survey and discourage subsystem members from participating, the translation Centre of the Université catholique de Louvain was entrusted with the translation of the invitation and the questionnaire from French (the researcher's mother tongue) to Dutch. The translation was then checked by the researcher to make sure that the intentions and details expressed in the Dutch translation remained the same as in the French version.

With respect to the questionnaire, questions positively formulated were privileged to questions negatively formulated, because, cognitively speaking, they are more accessible. Open questions were also avoided because they are longer to answer; they break the "routine" of

answering multiple choice questions with the mouse, which may incline respondents to stop their participation because it takes more time or more cognition⁸³.

The answers of the respondent were saved after each page. If the browser was closed to accomplish another task or because of a computer problem, the questions already filled in did not have to be filled in again when coming back to the questionnaire. It also increased the response rate, because, if the respondent definitively stopped his participation after 6 out of the 8 pages, for example, the answers given in the 6 first pages were nonetheless available to the researcher⁸⁴.

That the survey could be not perfectly anonymous and confidential was one of the most important doubts that were reported during the preliminary campaign of interviews with respect to the surveys. In practice, some interviewees feared that a cross analysis of socio-demographic characteristics collected in the questionnaire could allow identifying respondents and discover their political attitudes. Some researchers argue that socio-demographic questions should be asked at the beginning of questionnaires to give respondents confidence with “basic” questions. Given the doubts reported about socio-demographic questions during the qualitative interviews, however, these were rather introduced at the end of the questionnaire. If these questions were a motivation to stop the participation, all previous questions were nevertheless saved.

To improve the quality of the analyses, several **validation criteria** were applied to include the questionnaires collected in the research sample. The relevance and consistency of the questionnaires were examined. Questionnaires were judged *irrelevant* when 75% or more of the questions were answered with a “no answer” item. In this context, whether the other answers really reflect the respondent’s opinion is questionable. In addition, with so many missing values, the use of these questionnaires in the analyses would be of little interest. Questionnaires were also considered irrelevant when they provided answers related to policy learning (first part of the questionnaire), but not about the individual characteristics of the respondent (second part of the questionnaire). Indeed, the data collected from those questionnaires would influence the measure of policy learning, without helping to understand the relation between policy learning and policymakers’ individual characteristics.

Questionnaires were judged *inconsistent* when their answers were suspected not to reflect the real opinion of the respondent. As a decision rule, questionnaires with 75% of the answers situated on a similar extreme of the answer scales or, on the contrary, on their central (neutral) point, were considered inconsistent. It is highly improbable that one respondent agrees or disagrees with nearly all the questions and items in the survey. Specifically, some contradictory items could hardly be compatible with the same degree of agreement⁸⁵. For example, one item was formulated as follows: “the liberalization policy is a right-wing policy”, whereas another item was formulated as follows: “the liberalization policy is a left-wing policy”. Particular attention was also paid to consistent-like questionnaires including only one or two specific inconsistent-like pages. For these

⁸³ Routinized answering may be a problem for the accuracy of answers. This is discussed later in this dissertation (see section 4.2).

⁸⁴ Some would argue that this approach raises ethical questions: does the researcher not “steal” the answers from the respondent if he decides to stop the questionnaire before the end? With respect to this, I underline that the questionnaire begins with an introductory page that informs the respondent that his answers to the questions are progressively saved by the survey software, before attaining the end of the questionnaire.

⁸⁵ The use of Likert-type items is discussed later in this dissertation (see section 4.2).

questionnaires, there was no general decision rule; they were kept or excluded on a case-by-case basis.

Two characteristics were considered to determine which questionnaires could be suspicious with respect to their relevance and consistency and hence merited examination. First, the 38 incomplete questionnaires were carefully examined. Incomplete questionnaires are those questionnaires closed before the last page of questions. These questionnaires were not necessarily irrelevant or inconsistent. But they are suspicious because incompleteness may be the sign of a lack of time to answer the questionnaire, a lack of interest to do it seriously, or the respondent's curiosity in the content of the questionnaire without any intention to actually submit it.

Second, the interview time of the 459 complete questionnaires was examined. Interview time is the period comprised between the moment the respondent opened the questionnaire on his computer and the moment he sent it back to the server for treatment by the survey software. On average, during the test period, the respondents took 22 minutes to fill in the survey. At the end of the survey, the average interview time consistently equalled 24 minutes. 25% of the respondents took 15 minutes or less, 25% between 15 and 19 minutes, 25% between 19 and 26 minutes, and the final 25% between 26 and... 299 minutes. Those respondents who took much more time than the others to fill in the questionnaire probably let the questionnaire open on their computer for a long time without filling in any questions, coming back to it later. 30 out of 459 respondents (7%) took more than 40 minutes to complete the questionnaire. An examination of their answers did not reveal any major problem. More suspicious were those questionnaires that were filled in too quickly for the respondents to consider the questions seriously. Each questionnaire submitted in less than 13 minutes (47 out of 459 questionnaires, 10%) was also carefully examined.

As a **result**, 236 questionnaires were collected in the railway sector. The intermediary response rate equals 42% (236/560) in this subsystem. 261 questionnaires were the amount in the electricity sector. The intermediary response rate equals 38% (261/696) in this subsystem. Hence, the average response rate of the survey equals 33% at this point. As a result of the validation process, 84 of the 497 questionnaires were deleted. The 413 remaining questionnaires constitute the final research sample. 199 questionnaires were validated in the railway sector. Hence, the response rate equals 36% (199/560) in this subsystem. 214 questionnaires were validated in the electricity sector. Hence, the response rate equals 31% (214/696) for this subsystem. On average and even after the application of rigorous validation criteria, the final response rate of the survey equals 33%. This is very good, considering that the response rate of a web survey conducted with email invitation and one reminder typically reach the response rate of 25% (Kaplowitz et al., 2004). These results appear in Table 19.

Table 19: Individual response rate to the survey

	Number of invitations sent	Number of questionnaires collected (Intermediary response rate)	Final response rate Number of questionnaires validated
Railway sector	560	236 (236/560 = 42.14 %)	199 (199/560 = 35.53 %)
Electricity sector	696	261 (261/696 = 37.50 %)	214 (214/696 = 30.75 %)
<i>Total</i>	1256	497 (497/1256 = 39.57 %)	413 (413/1256 = 32.88 %)

4.3.5. Description of the sample

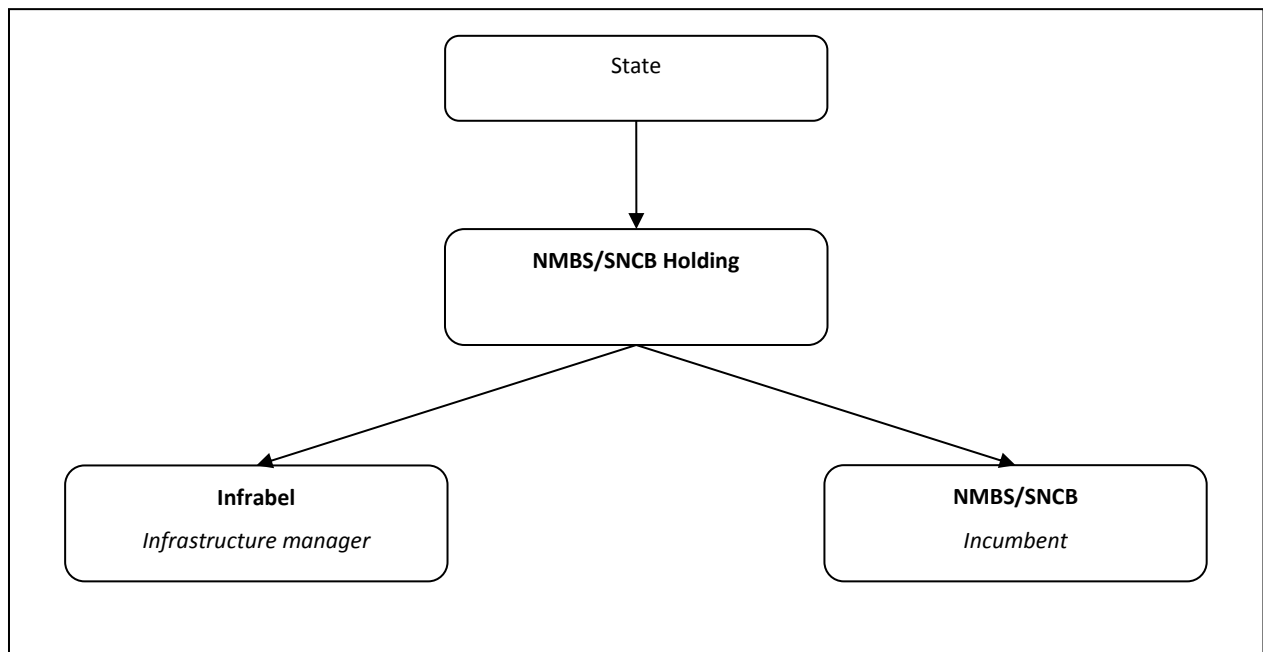
The research sample is composed of 413 respondents distributed over 32 organizations. As described earlier, each organization is supposed to play a specific role in a liberalized network industry. According to this role, six types of organizations may be distinguished: public administration, regulator, infrastructure manager, incumbent, new entrant, and interest group.

The description of the sample in the **railway sector** appears in Table 20. All major organizations were surveyed. The “Federale OverheidsDienst Mobiliteit en Vervoer / Service Public Fédéral Mobilité et Transports” (FOD/SPF) is the main federal administration responsible for railway issues in Belgium. Its structure has evolved since the end of the survey. At the time of the survey, two of its Directions were concerned with railway transport. In addition, consistent with European directives, two specific services are entrusted with questions related to security and administrative investigations following railway accidents and incidents. Finally, several specific members of the SPF/FOD have been bestowed the special role of regulator. They structurally depend on the public administration. Functionally, however, they are supposed to act independently from the other civil servants.

Before the liberalization process, the “Nationale Maatschappij der Belgische Spoorwegen / Société Nationale des Chemins de fer Belges” (NMBS/SNCB) was a large, public organization entrusted by the State with nearly all tasks related to railway exploitation (including some tasks in the hands of public administration nowadays). As it simultaneously played several roles that should be given to independent organizations in a liberalized context, it was reorganized in 2005: two branches and one common holding were created on the basis of the old NMBS/SNCB. The first branch, Infrabel, became the infrastructure manager. The second branch, the NMBS/SNCB (its new version), is the incumbent in charge of railway transport. Both branches depend on a common holding, the NMBS/SNCB Holding, including common services like human resources management (HRM) or ICT. Formally, the personnel of both branches are provided by the holding to its two branches. In practice and functionally, the personnel of each part of the structure works independently, in accordance with European directives. The whole structure is owned by the State, as it appears in Figure 9. TUC rail is a 100% branch of Infrabel, that plans and implements projects of network renovation and extension. It may thus be considered an infrastructure manager, along with Infrabel. TUC Rail is a company of civil engineers⁸⁶.

⁸⁶ Historically, the reason to keep a common Holding was the fear on the part of trade unions to lose the advantageous status that was ensured to the personnel in the old NMBS/SNCB, as well as a fear to see this status evolve differently in Infrabel and the new NMBS/SNCB. On January 9th 2013, after several months of negotiations, the decision was made by the Council of Ministers to go further in the separation of Infrabel and the NMBS/SNCB, by deleting the Holding and keeping a common structure only responsible for personnel. This debate polarized the subsystem members a great deal, but it occurred after the end of the present survey.

Figure 9: Structure of the NMBS/SNCB since 2005



With regard to organization types, the NMBS/SNCB Holding has a hybrid status. Without a doubt, its managers have to be considered subsystem members: it emerged from documentary analyses and qualitative interviews that they strongly influence the policy process in the Belgian railway sector. But to which organization type does the NMBS/SNCB Holding correspond: incumbent or infrastructure manager? Organization types are distinguished because they are suspected to influence policy learning with respect to the liberalization policy. The attitude of organization members with regard to the liberalization policy was compared from one organization to another and t-tests were performed. In the railways, the attitude of policymakers was measured with respect to 11 aspects of the liberalization policy, at the beginning of the process and today. On 20 out of the 22 measures, the attitudes of the subsystem members from the Holding were, on average, closer to the attitudes of the subsystem members from the NMBS/SNCB than to the attitudes of the subsystem members from Infrabel. Hence, regarding the liberalization process, the Holding seems much closer to the NMBS/SNCB than to Infrabel. That is why the NMBS/SNCB Holding will be considered an incumbent in this research.

Thalys is a new entrant that runs international, high-speed trains on the following lines: Brussels-Paris, Brussels-Amsterdam and Brussels-Cologne. It is a 28%-owned-NMBS/SNCB company that employs about 100 persons in Brussels. As mentioned earlier, the Belgian market is open but market shares are not very equally distributed among operators. In addition, the NMBS/SNCB often holds – along with other national incumbents from France, Germany, Luxemburg or the Netherlands – a substantial number of shares of these new entrants. As a result, they are most often not very “new”, nor very independent, from the incumbent. Operators were considered new entrants when the NMBS/SNCB holds less than 50% of their shares and when the qualitative analysis proved the company to be functionally independent from the incumbent. Regarding these criteria, Thalys may be considered a new entrant that benefits from the opening of competition in the railway sector.

Interest groups include a “Sectorial committee of consultation on security”. This Committee has no formal existence but was reported as important during the qualitative interviews. It is attached to the service specialized in security, within the FOD/SPF (federal public administration). This committee includes representatives of nearly all stakeholders in railway security: they come from railway operators, rail engineering companies, equipment suppliers, consultants in security norms, etc. Interest groups also include a “Committee of users consultation”, attached to the NMBS/SNCB Holding. This committee has a formal existence⁸⁷. As a mission, it gives recommendations about services provided by the three branches of the NMBS/SNCB to their users. Several categories of the Belgian middle ground are represented in this committee (young people, cyclists, commuters, trade unions, Flemish/Walloon people, etc.). Even if the committee members often complain not to be listened to, it is interesting to include them in the research sample because the representation is on an institutional basis. For example, young people are represented by a well-known organization representing young people in Belgium, cyclists are represented by a well-known Belgian cycling organization, etc. Hence, the committee is a common forum for people from diverse institutional origins interested in the railways. Some members of the three important trade unions are also present in the sample. The “AVC-CSC Transcom”, the “VSOA Spoor / SPLF Cheminot” and the “Syndicat Autonome des Conducteurs de Trains”. Finally, “Navetteurs.be” is a voluntary organization representing the interests of railway passengers⁸⁸.

⁸⁷ Law of 21 March 1991 reforming several public economic companies.

⁸⁸ It may be the case that some members of interest groups are also members of the security committee or the users committee. In this case, they were deleted from the committee list and surveyed in the framework of their original interests group.

Table 20: Sample in the railway sector

Type of organization	Name of the organization	Frequency	Percent	
Public administration	1. Federal FOD/SPF	13	6.53 %	6.53 %
Regulator	2. Several members of the FOD/SPF	3	1.51 %	1.51 %
Infrastructure manager	3. Infrabel	30	15.08 %	24.12 %
	4. TUC Rail	18	9.05 %	
Incumbent	5. SNCB	29	14.57 %	37.69 %
	6. SNCB Holding	46	23.12 %	
New entrant	7. Thalys	8	4.02 %	4.02 %
Interest group	8. Sectorial Committee of consultation on security	17	8.54 %	26.13 %
	9. Committee of users consultation	11	5.53 %	
	10. ACV-CSC Transcom	3	1.51 %	
	11. VSOA Spoor / SLFP Cheminots	4	2.01 %	
	12. Syndicat Autonome des Conducteurs de Train	15	7.54 %	
	13. Navetteurs.be	2	1.01 %	

Unlike the railway sector, the **electricity sector** is formally intergovernmental. The description of the sample for this sector appears in Table 21. This means the structure of the liberalized environment is repeated at the Federal level and in each of the three following Regions of the country: Flanders, Wallonia, and Brussels. In the electricity sector, all major organizations were also surveyed, with the notable exception of Elia, the infrastructure manager at the federal level⁸⁹. This organization is admittedly important and its managers probably influential as far as the course of the policymaking process is concerned. Many subsystem members from the regional infrastructure managers could be surveyed, however. As their institutional position at the regional level is similar to the position of Elia at the federal level, it may be reasonably supposed that their experience of the liberalization policy process is comparable and that the sample remains representative.

At the federal level, public administration of the electricity sector is ensured by one Direction of the “FOD/SPF Economie”. The corresponding Direction in the Walloon public administration (“Service Public de Wallonie” - SPW) is also represented in the sample. The regulators are all represented in the sample. The “Commission de Régulation de l’Electricité et du Gaz” (CREG) is the federal regulator. The regional regulators are: “Bruxelles Gaz Electricité” (Brugel) in Brussels, the

⁸⁹ Despite many attempts to get the email list and the authorization for publishing the survey, the requests remained unanswered.

“Commission Wallonne pour l’Energie” in Wallonia, and the “Vlaamse Regulator van de Elektriciteits- en Gasmarkt” (VREG) in Flanders.

At the regional level, network infrastructures are managed by municipalities. Most often, associations of municipalities entrust one company to manage their infrastructures. The number of municipalities covered by each of these companies vary largely. For example, AIEG operates on the Walloon municipalities of Andenne, Gesves, Ohey, Viroinval and Rumes. Sibelga covers the municipalities of Brussels. Ores, Resa, and Eandis cover much wider territories in Flanders and Wallonia.

Electrabel is the incumbent in the electricity sector. Like the NMBS/SNCB in the railways, Electrabel was responsible for most of the production, transport and distribution of electricity on the Belgian grid before the liberalization process. Unlike the NMBS/SNCB, Electrabel is today completely separated from Elia, the infrastructure manager (there is no common holding). In the electricity sector, new entrants are also completely independent from the incumbent (they do not result from the association of national incumbents like in the railways). New entrants represented in the sample include Belpower, EGL France & Benelux⁹⁰, Elexys, and Octa+. As an interest group, the “ACV-CSC Bie” is a trade union. The “Algemene Raad van de CREG / Conseil général de la CREG” is a committee of users like the one in the railways. Synergrid is a federation representative of gas and electricity network managers in Belgium.

⁹⁰ Since the end of the research, EGL France & Benelux has been integrated into the Axpo Group.

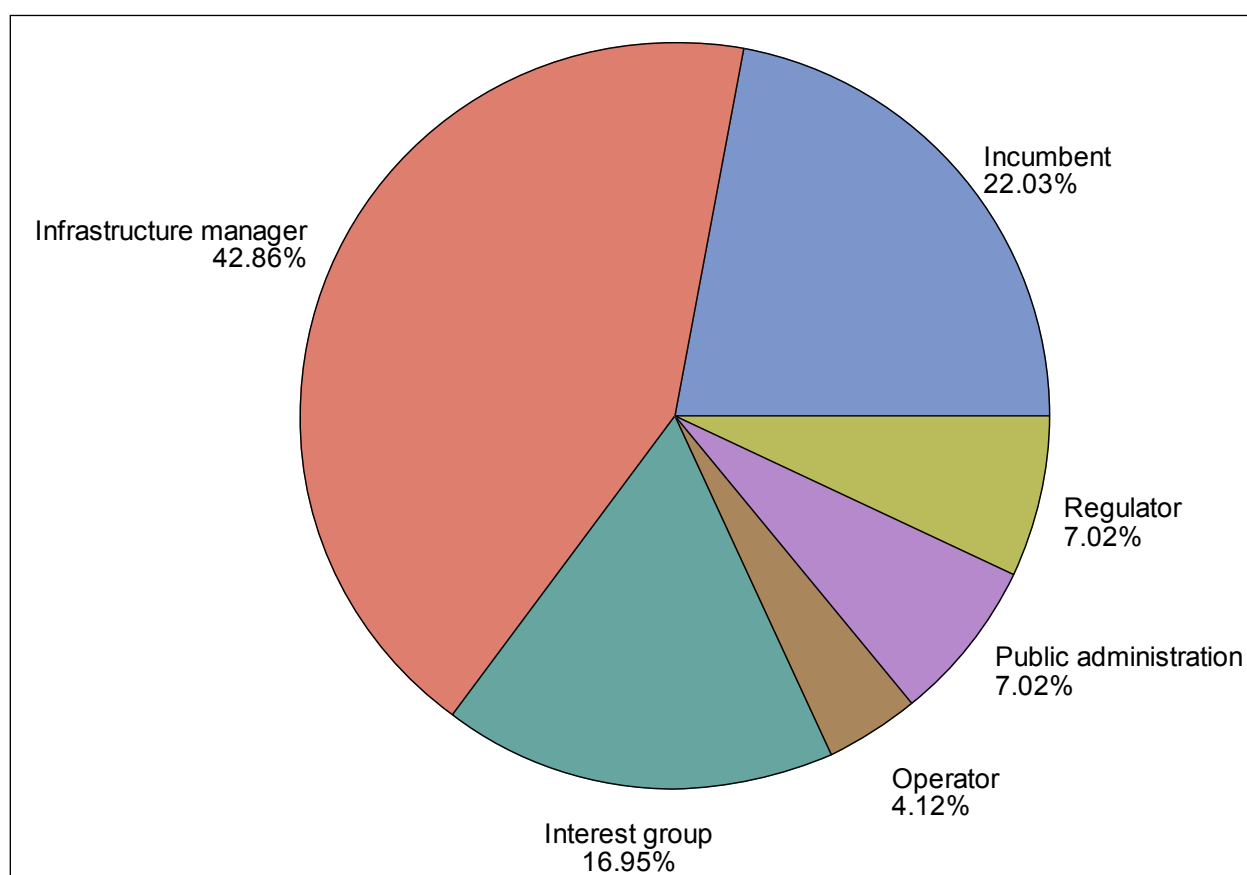
Table 21: Sample in the electricity sector

Type of organization	Name of the organization	Frequency	Percent	
Public administration	1. Federal FOD/SPF Economie	13	6.08 %	7.48 %
	2. Regional SPW	3	1.40 %	
Regulator	3. CREG	4	1.87 %	12.15 %
	4. Brugel	5	2.34 %	
	5. CWaPE	9	4.21 %	
	6. VREG	8	3.74 %	
Infrastructure manager	7. AIEG	3	1.40 %	60.28 %
	8. Ores	48	22.43 %	
	9. RESA	42	19.63 %	
	10. Sibelga	20	9.35 %	
	11. Eandis	16	6.54 %	
Incumbent	12. Electrabel	16	7.48 %	7.48 %
New entrant	13. Belpower	2	0.93 %	4.21 %
	14. EGL France & Benelux	1	0.47 %	
	15. Elexys	1	0.47 %	
	16. Octa+	5	2.34 %	
Interest group	17. ACV-CSC BIE	3	1.40 %	8.41 %
	18. Algemene Raad van de CREG / Conseil général de la CREG	12	5.61 %	
	19. Synergrid	3	1.40 %	

Overall, as illustrated in Figure 10, each organization type is well represented in the sample, in a proportion that is consistent with the number of subsystem members from each category in the population. New entrants were admittedly hard to reach⁹¹. But the resulting proportion of subsystem members coming from this category of organizations is coherent, because they are small in number. Those new companies entering the market are not very large. Hence, their managers are not numerous. Among them, those who influence the course of the policymaking process are even less numerous. In addition, because of their relative weakness with respect to incumbents and other large organizations in the sector, they often use common interest groups to get heard by public authorities and the media.

⁹¹ During the qualitative interviews, they reported that they feared in participate to the survey due to the damage it could cause to their commercial activity if anonymity or confidentiality were not completely respected.

Figure 10: Distribution of respondents among types of organizations in the overall sample



A final question relates to the **seniority of subsystem members**. Were they already subsystem members or members of the sector when the liberalization process began? Of course, it is not the case of all the respondents to the survey. However, people who work within the sector and have a high hierarchical position in one of its organizations, like the respondents of the sample, should most often have a long experience in the sector. In addition, elected officials and governing board members were not considered in this research. The most volatile policymakers should not be included in the sample.

The survey included a question on the seniority of respondents in the sector. The results of this question are presented in Table 22 and confirm the above-mentioned expectations about seniority. Out of the 413 respondents in the sample, up to 276 (68.32%) reported that they have worked in their sector for more than 10 years. Only 36 (8.91%) of them reported to have been involved in the railways for two years or less. To measure policy learning, respondents were asked to compare their beliefs with respect to liberalization at the beginning of the process (in the 1990s in both sectors) with their beliefs nowadays. When the respondents did not work in the sector at the beginning of the process, they were asked to compare their current beliefs with their “initial” beliefs. As most policymakers have worked in the sector for a long time, the question provides a valid measure of policy learning, i.e. belief change as a result of information and experience over a long period of time.

For those 8.91% of policymakers having worked in their sector for a shorter time, the measure of learning is less perfect. But it remains acceptable because the idea of policy learning is to evaluate the extent of belief change resulting from new information and experiences related to the policy cycle: agenda setting, formulation, implementation, evaluation, reformulation, etc. As highlighted by the preliminary campaign of interviews in both sectors, several “local” policy cycles are simultaneously ongoing with respect to different aspects of the liberalization process: at the same time, some policymakers are concerned with the formulation of new propositions on several aspects of the liberalization process, other policymakers are involved in the implementation of decisions made several months ago, while still other policymakers are writing evaluation reports about other aspects of the process. In addition, one policymaker is most often involved in different cycles at the same time. In the end, even those policymakers involved in the liberalization process for a shorter time have been confronted with various experiences and information that could have affected their initial beliefs with regard to the liberalization policy.

Table 22: Seniority of respondents in their sector

Seniority in the sector	Frequency	Percent	Cumulative frequency	Cumulative percent
About one year (or less)	17	4.21%	17	4.21%
About two years	19	4.70%	36	8.91%
About 3 or 4 years	37	9.16%	73	18.07%
Between 5 and 10 years	55	13.61%	128	31.68%
More than 10 years	276	68.32%	404	100.00%
<i>Frequency missing = 9</i>				

4.4. Data analysis

The data of this research were analysed with multilevel regression models. The next section describes those models and how their parameters are estimated. The second section explains how decisions are made about the relations among variables on the basis of the estimated parameters.

4.4.1. Multilevel regression analysis

The data of this research were analysed with multilevel regression models (Hox, 2002; Pustjens, Van Den Noortgate, Onghena, & Van Damme, 2004; Snijders & Bosker, 2012; Van Den Noortgate, Pustjens, & Onghena, 2004a, 2004b)⁹². Indeed, each policymaker of the survey is a member of one particular organization, each of them being involved in one particular policy subsystem. In other words, the respondents of the survey are “nested” in organizations, which are themselves “nested” in the two subsystems. Hence, the structure of the data is multilevel: one level is composed of respondents, the second level is composed of organizations, and the third level is composed of subsystems.

Contextual factors pertaining to the second (organizational) and third (subsystem) levels may stimulate or dampen policy learning. As described earlier, in each subsystem, six types of organizations may be distinguished according to the role that these organizations are supposed to play in a liberalized network industry: public administration, regulator, infrastructure manager, incumbent, new entrant, and interest group. The role that the organizations must play in the sector as a result of its liberalization has a strong impact on the opportunities and constraints of organizations. For example, the liberalization process has imposed constraints on the incumbents. While they were in a comfortable situation of a legal monopoly before the liberalization process, they are in less a comfortable situation of competition with new entrants nowadays. By contrast, the liberalization process has given new powers to the infrastructure managers. As a result, the policymakers of a single subsystem have had an experience of the liberalization process that could strongly vary according to the type of the organization they are members of, which in turn is susceptible to have influenced their policy learning. Likewise, the policy history of the liberalization process has also differed in each sector. As a result, the new experiences and information resulting from the liberalization policy process in each subsystem has differed according to the sector the policymaker works in. Again, these differing experiences and information have probably had an average impact on policy learning among the policymakers of a single subsystem. The value of policy learning for a policymaker is very likely to be related (correlated) to the value of policy learning of the other policymakers of the same organization / subsystem. These organization-level and subsystem-level impacts on policy learning not being related to the influence of individual characteristics which this research focuses on should be statistically controlled. Finally, the multiplication of cases at the organization and the sector level is not only a constraint that must be statistically controlled but also an opportunity (Tarrow, 2010). First, it strengthens the conclusions of the research: the results are stronger in validity and broader in scope if they are confirmed not only in one organization pertaining to one sector but in many organizations pertaining to two sectors. This also contributes to the systematisation of paired comparisons, in the social sciences.

Multilevel models offer a convenient methodological framework to analyse the data of this research. Indeed, classic regression models allow accounting for the variation of the dependent variable (policy learning) due to contextual factors, by introducing them as covariates (covariates). With respect to classic regression models, however, multilevel models have two major advantages when considering that this research focuses on the *individual* conditions of policy learning. First,

⁹² These models are also called “hierarchical linear” models or, in the context of statistics, “mixed linear” models.

more clearly than classical regression models, multilevel models distinguish the variation of the dependent variable that is due to each level of analysis. This offers a better view on what this research aims at explaining. Second, in classical regression models, the introduction of a new explanatory variable reduces the variation of the dependent variable that remains to be explained. But it does not inform the analyst about the level where the variation is reduced. Did the variable reduce the variation between groups of policymakers pertaining to the same organization because those individuals share a similar value of the explanatory variable? Or did the variable reduce the variation among individuals, independently of the organization they are members of? Multilevel models easily allow making the difference. To conclude, multilevel models improve the clarity and quality of the analyses as well as the diagnoses about the effect of the individual conditions of policy learning⁹³.

The analyses of this research were conducted with two well-known statistical computer programs: SAS release 9.3 (SAS Institute Inc., 2012) and Stata release 12 (StataCorp., 2011b). In addition to the usual functions of the two statistical packages, the “mixed” procedure was used in SAS to fit multilevel models (Littell, Milliken, Stroup, Wolfinger, & Schabenberger, 2006; SAS Institute Inc., 2009a, 2009b, 2011; see also the handy introduction of Singer, 1998). The “nlmixed” procedure was used in Stata (Hamilton, 2013; Mitchell, 2010; StataCorp., 2011a, 2011b). In addition to the basic packages, several specific macros and modules were used to implement some methods. They will be cited in later in this dissertation.

A general introduction to multilevel regression analysis is presented in the first of the following section, before a discussion of its specific application in the present research.

4.4.1.1. Multilevel regression analysis: general presentation

Conceptually, multilevel regression models are like a multilevel version of classical multiple regression models. One response variable is measured at the lowest level and explanatory variables at all existing levels. We expect the dependent variable to be a linear function of the explanatory variables of the model. For example, assume we have data in J groups, and a different number of individual N_j in each group. On the individual level we have the dependent variable Y_{ij} and the explanatory variable X_{ij} , and on the group level we have the explanatory variable Z_j . The subscript i

⁹³ Multilevel models have two other advantages that will not be used in this research. First, they allow modeling “random slopes”, that is: a relation between individual-level variables and the dependent variable that varies according to the group which the individuals are members of. For example, it could be imagined that the relation between the gender of policymakers and their policy learning varies according to the type of organization they work in, public or private, the relation being stronger in public organizations than in private organizations. Random slopes may be modeled at any level. For example, the relation between gender and policy learning could vary according to the subsystem. Second, multilevel models allow testing the effect of higher-order variables. For example, some characteristics of the organization could elicit or dampen policy learning such as an organizational orientation toward conservatism or innovation. Higher-order variables may be contextual when they characterize the higher-order unit, such as the size of an organization, or structural when they result from the aggregation of characteristics pertaining to the lower-order units included in each higher-order unit, such as the average intelligence of all individuals pertaining to each organization.

Fixed slopes and higher-order variables will not be modeled here, however, because this is not the objective of the research. This research focuses on individual-level aspects of policy learning.

identifies the individuals, while the subscript j identifies the groups. Thus, we have a separate regression equation in each group:

$$Y_{ij} = \beta_{0j} + \beta_{1j}X_{ij} + e_{ij}$$

Equation 9

Like in the usual regression model, e_{ij} is the residual error term which measures, for each individual, the differences between the prediction of the model and the actual value observed in the sample. β_{0j} is called the “intercept” coefficient and β_{1j} is the “slope” coefficient. The difference between the classical and the multilevel regression model is that the latter allows the intercept and the slope to be specific to each group j (in the classical models, there is no subscript j). In general, those individuals pertaining to a group with a high intercept β_{0j} are predicted to have a higher value of the dependent variable. When the equation does not contain any slope, β_{0j} may be assimilated to the predicted average value of Y_{ij} in the group j . β_{1j} predicts the average number of units that the dependent variable Y_{ij} will increase after an increase of one unit on the explanatory variable X_{ij} . Likewise, differences in the slope β_{1j} indicate that the relationship between the explanatory variable X_{ij} and their predicted value of Y_{ij} is not the same in all groups. For this reason, in multilevel models, the intercept coefficient and the slope coefficient are often referred to as “random” coefficients. The β_j are modelled by parameters proper to the group level:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}Z_j + u_{0j}$$

Equation 10

$$\beta_{1j} = \gamma_{10} + \gamma_{11}Z_j + u_{1j}$$

Equation 11

Equation 10 predicts the average value of the dependent variable with the explanatory variable Z_j proper to the group level. If γ_{01} is positive, the average value of the dependent variable Y_{ij} is higher in groups with a higher value of Z_j . Conversely, if γ_{01} is negative, the average value of the dependent variable is lower in groups with a higher value of Z_j . Equation 11 means that the relationship, as expressed by the slope coefficient β_{1j} , between the dependent variable Y and the explanatory variable X depends on the value of the variable Z . If γ_{11} is positive, the effect of X on Y is larger among individuals pertaining to a group with a higher value of Z . Conversely, if γ_{11} is negative, the effect of X on Y is smaller among individuals pertaining to a group with a higher value of Z . Here, variable Z is a moderator variable for the relationship between X and Y ; this relationship varies according to the value of variable Z . u_{0j} and u_{1j} are the counterparts of e_{ij} but at the group level; they measure, for each group j , the difference between the prediction of the model and the value of β_{0j} and β_{1j} actually observed in the sample. In Equation 10 and Equation 11, all γ coefficients are not assumed to vary across groups. They therefore have no subscript j to indicate to which group they belong. Until now, because they apply to all groups, they are referred to as “fixed” coefficients. All between-group variation left in the β coefficients, after predicting these with the group variable Z_j , is assumed to be residual error variation. This is captured by the residual error terms u_j , which do have subscripts j to indicate to which group they belong. Substitution of Equation 10 and Equation 11 into Equation 9 gives:

$$Y_{ij} = \gamma_{00} + \gamma_{10}X_{ij} + \gamma_{01}Z_j + \gamma_{11}Z_jX_{ij} + u_{1j}X_{ij} + u_{0j} + e_{ij}$$

Equation 12

The first terms [$\gamma_{00} + \gamma_{10}X_{ij} + \gamma_{01}Z_j + \gamma_{11}Z_jX_{ij}$] are deterministic and correspond to the “fixed” part the model, which includes the regression coefficients. The last terms [$u_{1j}X_{ij} + u_{0j} + e_{ij}$] are the random error terms (or “variance components”) and correspond to the “random” part of the model. The term Z_jX_{ij} is an interaction term that appears in the model as a consequence of modeling the varying regression slope β_j of an individual-level variable X_{ij} with the group-level variable Z_j . Thus, the moderator effect of Z on the relationship between the dependent variable Y and the predictor X is expressed in the single equation version of the model as a cross-level interaction. As the intercepts and slopes are now assumed to vary from one group to another, the regression coefficients are now “random”. The number of variables measured at each level may be extended from 1 to several . If a model A may be constructed by adding variables to a model B, model B is said to be restricted and nested within model B. Likewise, the number of levels may be extended from 2 to several .

An **intercept-only (or “null”) model** is a multilevel model that does not include any explanatory variable. It tries to predict the value of the dependent variable on the only basis of the intercepts, that is on the basis of the overall average value of the dependent variable among individuals (γ_{00}) and the average value proper to each group of individuals (u_{0j}). In such a model, intercepts are random (because no slope is estimated). Intercept-only models do not explain any variance in Y . They only decompose this variance into two independent components: σ_e^2 which is the variance of the lowest-level errors e_{ij} , and σ_{u0}^2 which is the variance of the highest-level errors u_{0j} . An intercept-only model is written as follows:

$$Y_{ij} = \gamma_{00} + u_{0j} + e_{ij}$$

Equation 13

Intercept-only models allow computing the **intraclass correlation coefficient**. Hierarchical data must be analyzed with multilevel models because of the dependence among individuals of a single group. This dependence causes the individuals to have values of the dependent variable more similar with respect to the values of the other individuals of the same group than with respect to the values of the individuals from other groups. This violates the assumption of classical regression models that all observations are independent. The amount of dependence among individuals of a same group can be expressed as a correlation coefficient – the intraclass correlation ρ –, defined as the proportion of the variance explained by the grouping structure in the population. The proportion of group-level variance compared to the total variance may be estimated with the components of the intercept-only model, as follows:

$$\rho = \frac{\sigma_{u0}^2}{\sigma_{u0}^2 + \sigma_e^2}$$

With respect to **formal assumptions**, multilevel regression models and classical regression models mainly differ when it comes to the independence assumption. According to this assumption, in classical regression models, the observations of the sample should be completely independent from each other with respect to the value of the dependent variable. Multilevel models are mainly intended to allow the analysis of data violating the independence assumption. Multilevel models account for the nesting of observations within groups, which causes the observations to be more

similar to each other within groups than between groups. However, the independence assumption still holds in multilevel models on two respects. First, the assumption is maintained for the highest-level observations: they must be independent. In the present research, the independence assumption concerns subsystems, that are supposed to be independent with respect to the policymakers' belief change. This assumption is quite reasonable, given that policies are for the most part conducted on a sectorial basis. Second, independence also holds with respect to level-1 and level-2 *residuals* (the error terms): they must be uncorrelated among organizations and individuals. With respect to the other formal assumptions of linear models, the synthesis from several manuals by the ATS Statistical Consulting Group (2013) shows that classical and multilevel regression models are quite similar (cf. Table 23).

Table 23: Formal assumptions of classical regression models versus multilevel regression models (ATS Statistical Consulting Group, 2013)

<i>Assumptions in classical regression models</i>	<i>Assumptions in multilevel regression models</i>
Linearity: function form is linear	Linearity: function forms are linear at each level
Normality: residuals are normally distributed	Normality: level-1 residuals are normally distributed and level-2 random effects have a multivariate normal distribution
Homoskedasticity: residual variance is constant	Homoskedasticity: level-1 residual variance is constant
Independence: observations are independent from each other	Independence: level-1 residuals and level-2 residuals are uncorrelated
	Independence: observations at highest level are independent of each other

The tenability of those assumptions was analyzed with the SAS software, in the empirical part of this research. In addition to the basic tests included in the MIXED procedure of the SAS software, complementary tests were conducted with the SAS macro MIXED_DX (Bell, Schoeneberger, Morgan, Ferron, & Kromrey, 2010a, 2010b).

The parameters of multilevel regression models are estimated with the so-called “**Maximum Likelihood (ML)**” *method*. Ordinary multiple regression analysis uses an estimation technique called Ordinary Least Squares (OLS). The statistical theory behind the multilevel regression models is more complex. Based on observed data, we want to estimate the parameters of the multilevel regression model: the regression coefficients and the variance components. ML estimators estimate the parameters of a model by providing estimated values for the population parameters that maximize the so-called “likelihood function”: the function that describes the probability of observing the sample data, given the specific values of the parameter estimates. The estimation process is iterative. In a first step, the software begins with reasonable values of the parameters. In the following steps, it tries to improve the likelihood function by proposing new values to the parameters. The estimation process stops when it is not able to propose new parameter values anymore that improve the function. Hence, ML estimates are those parameters estimates that maximize the probability of finding the sample data that we have actually found. “An advantage of the maximum likelihood

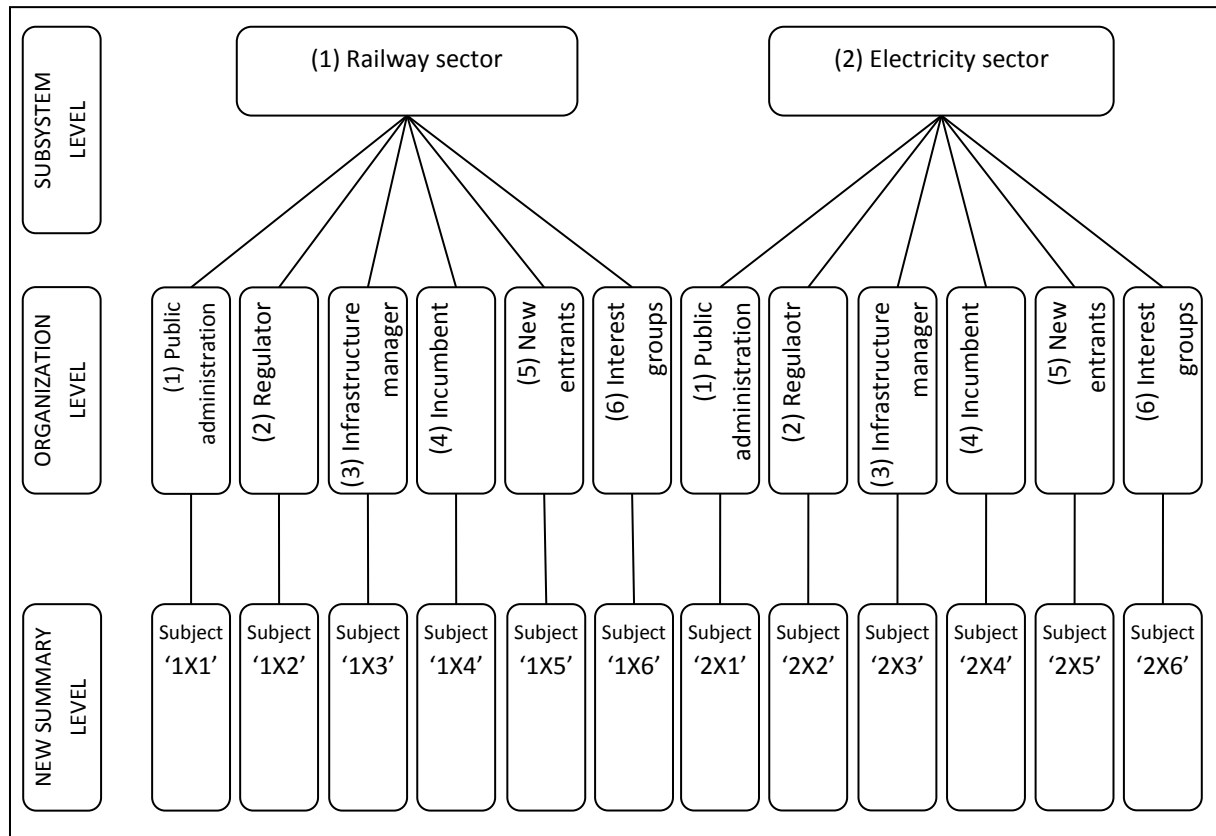
estimation method is that it is generally robust [that is, resistant to violations of model assumptions], and produces estimates that are asymptotically efficient and consistent. With large samples, ML estimates are usually robust against mild violations of the assumptions, such as having non-normal errors” (Hox, 2002, p. 40).

4.4.1.2. Multilevel regression analysis in this research

The models that are analyzed in this research share four common characteristics. First, they only include estimates of ***fixed effects at the individual level***. No variable characterizing the organizations or the subsystems will be used to predict the dependent variable in this research dedicated to the *individual* conditions of policy learning. The regression coefficients estimated for these variables may be interpreted like in classical regression models. They indicate how much the dependent variable increases after a 1-unit increase of the explanatory variable, all the other parameters remaining stable.

Second, all the models are composed of **two levels**: a first level for the individual policymakers and a second level including both the variation pertaining to the organizational level and the variation pertaining to the subsystem level. This simplifies the models. But no information is lost because the six organization types distinguished in the two subsystems include organizations that each pertain to only one subsystem. Hence, there are no cross-subsystem organizations that would blur the variation attributable to each subsystem. The articulation of the organization and subsystem levels results in one new level composed of 12 different subjects that summarizes the variation included in both original levels. This is illustrated in Figure 11.

Figure 11: subsystem level and organization level in one only level



Third, all the models in this research have **random intercepts but fixed slopes**. Indeed, I postulate that the relation between policymakers' individual characteristics and policy learning is uniform from one subsystem to another and from one organization to another. In other words, I claim that subsystems and organizations have no effect on the slope of these relations. There is no theoretical reason to think otherwise. To be sure, this postulate only concerns the neutrality of subsystems and organizations on the *slope* of the relation between policymakers' characteristics and policy learning. This postulate does not mean that I consider subsystems and organizations to be neutral on policy learning itself. From one context to another, the policymakers' average experience of the liberalization policy has varied. This variation is captured by random *intercepts*.

In the end, the equation characterizing the multilevel regression models examined in this research may be simplified with respect to the general equation, as follows:

$$Y_{ij} = \gamma_{00} + \gamma_{10}X_{ij} + u_{0j} + e_{ij}$$

Equation 14

In Equation 14, γ_{00} is the fixed intercept, general to all observations, while u_{0j} is the random intercept, specific to each of the 12 subjects at the second level. γ_{10} is the (fixed) slope of the relation between X and Y, common to all observations. Finally, e_{ij} is the residual error term which measures, for each individual, the differences between the prediction of the model and the actual value

observed in the sample. In the empirical part, the models differ from one to another in the dependent variable Y that is analysed, as well as in the number of explanatory variables X introduced in the model to predict it.

Fourth, the models are estimated with the *restricted maximum likelihood estimation* method. Several methods have been developed to estimate the likelihood function of multilevel models and their resulting parameters. In the classical “Full Maximum Likelihood” (FML) estimation method, the regression coefficients and the variance components are used to maximize the likelihood function. In the “Restricted Maximum Likelihood” (RML) function, only the variance components are used, and the regression coefficients are estimated in a second step. “FML treats the regression coefficients as fixed but unknown quantities when the variance components are estimated, but does not take into account the degrees of freedom lost by estimating the fixed effects. RML estimates the variance components after removing the fixed effects from the model (see Searle, Casella, & McCulloch, 1992, chapter 6). As a result, FML estimates of the variance components are biased; they are generally too small. RML estimates have less bias (Longford). [...] Since RML is more realistic, it should, in theory, lead to better estimates, especially when the number of groups is small (Bryk & Raudenbush, 1992; Longford)” (Hox, 2002, p. 41).

A final remark concerns the Preferences change intensity. The coefficients estimated with usual multilevel models to analyse this variable will be complemented with coefficients estimated with *tobit multilevel models*. Indeed, as the results will show, those variables share a common characteristic: their value is 0 for a large proportion of respondents. In other words, there is a large proportion of policymakers who report no belief change with respect to liberalization between the beginning of this policy process and today⁹⁴.

It may be reasonably suspected that learning intensity variables are “censored”. Censored variables are an imperfect measurement tool, because they do not allow capturing the whole range of possible values that could be observed in the population with another, accurate measurement tool. In practice, a variable is censored “on the left” when it has not enough possible values on its left tail. As a result, many respondents of the sample are situated on the left-tail extreme value of the variable, while those respondents are in fact different: some of them are very close to the other values of the variable on the right, while others are very far from these values to the left. In contrast, censored variables on the right are variables with many observations on the right-rail extreme value (Arias, 1996; Long, 1997). Learning intensity variables are suspected to be censored on the left.

Examples of censored variables exist in many fields (Jöreskog, 2002). The most classical illustration comes from the field of education. In this field, achievement tests are often conducted on students to evaluate their achievement degree in one discipline. The resulting score of the test is a variable used to operationalize their degree of knowledge in this discipline. It often occurs, however, that (too) many students perform very well in a test. Such a phenomenon results from the bad calibrating of the test: it does not allow capturing the differences between the students whose the knowledge is good, very good, or even outstanding. In other words, the test is censored on the right. Censored variables also exist in other fields. In an epidemiological 5-year follow-up study, for example, a variable is censored on the right if most patients did not recover after five years. In

⁹⁴ 20.05 % respondents reported no belief change with respect to policy decisions. For those respondents, Preferences change intensity equals 0.

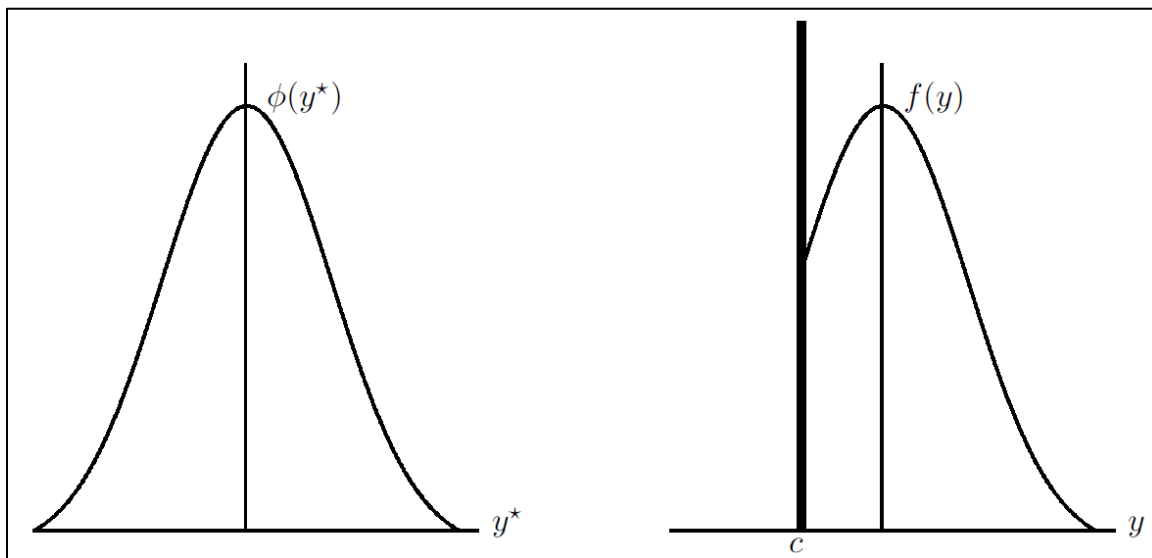
sociology, a variable measuring the number of extramarital affairs will probably be censored on the left if its possible values range from 10 to 20.

The relation between a censored variable y and the true latent variable y^* that it should measure may be represented as in Figure 12. In this Figure, the latent variable y^* has a normal distribution $\phi(y^*)$. The distribution of y , that should be the same as the distribution of y^* , is in fact different because it is limited on the left at the level of the constant c . The relation between both variables is as follows:

$$\begin{aligned} y &= c & \text{if } y^* \leq c \\ &= y^* & \text{otherwise} \end{aligned}$$

Equation 15

Figure 12: Latent and censored variable on the left (Jöreskog, 2002)



Because censored variables are not observed on their entire range, the estimates of the regression of these variables on a set of explanatory factors will be biased. In the tobit model (Tobin, 1958), the likelihood function that the estimation procedure maximizes does not simply model the linear relation between the dependent variable and the set of explanatory variables. It also compensates for the probability that the observations with value c on the observed dependent variable y have an actual value smaller than c on the latent dependent variable y^* . It was shown that the regression coefficients estimated with the tobit likelihood function for censored variables are unbiased on large samples. With respect to interpretation, those coefficients may be brought closer to the regression coefficient estimated with classical models, as the modification of the dependent variable following a one-unit increase in the explanatory variable, all other parameters remaining stable. However, this interpretation is only an approximation. McDonald & Moffitt (1980, pp. 318-319) derived formulas that suggest that the tobit regression coefficient should be more precisely interpreted as “(1) the change in y of those above the limit $[c]$, weighted by the probability of being

above the limit $[c]$; and (2) the change in the probability of being above the limit $[c]$, weighted by the expected value of y if above”⁹⁵.

Whether Preferences change intensity is actually censored or not, however, remains unclear. In prototypical examples, tobit models allow compensating for observations brought together on the limit c in the censored variable, while those observations are actually beyond this limit on the latent variable. As a result, regression coefficients estimated with tobit models are most often larger than coefficients from classical models (significance levels are not especially influenced). With respect to the intensity of policy learning, a large proportion of observations are brought together on the limit 0. Whether those observations should take negative values on a latent variable is questionable. Intensity is, by definition, a concept limited to 0. It could be acknowledged, however, that a subtler variable should be able to detect some variation among the observations taking a 0 value on the variable used in the research. Such a subtler variable could for example capture differences between those policymakers learning little, those learning very little, and those not learning at all. In this sense, the intensity variable used in this research indeed misses some variation that exists in the “true” latent variable, which could bias the estimation of regression coefficients. In his own study on policy learning, Montpetit (2007) used tobit coefficients to predict learning intensity. In the present research, classical regression coefficients are accompanied with tobit regression coefficients. Those coefficients offer a complementary view on the predictions of learning intensity and will be discussed in parallel with classical regression coefficients. They were computed with the NLMIXED procedure of the SAS software, on the basis of code fragments adapted from the UCLA Statistical Consulting Group (2013).

In general, it is expected that the results provided by the tobit multilevel regression models will be quite similar to the results provided by the classical multilevel regression models. Hence, for the sake of clarity, the tobit models will be discussed explicitly only when they differ from the classical models when it comes to the presentation of the research results.

4.4.2. Statistical testing

Statistical testing tries to infer some characteristics of a variable (θ) in the population thanks to the characteristics of a test statistic (T) observed in a sample of this population. These variables may test the relation between a dependent variable and explanatory variables (in the case of multilevel analysis, by testing the statistics Z of the explanatory variables, for example) or the whole model (in the case of multilevel analysis, by testing the likelihood ratio, for example). Statistical decisions are made according to the value of the test statistic (T): if it falls in the critical region (RC), the null hypothesis (H_0) that there is no relation or that the model is useless may be rejected; the relation or the model is said to be “significant”.

⁹⁵ Goldberger (1964) gave the nickname to the tobit model, by analogy with the probit model.

Under the conditions that the sample is representative of the population and that the phenomenon is accurately (validly) measured, two statistical errors remain possible (Van Keilegom, 2011). They are represented in Table 24. First is the error of type I, often denoted by α , that the relation supposedly detected does not in fact exist in the population. According to the actual characteristics of the population, the null hypothesis should not be rejected. Despite this, the test statistics fall in the critical region, which leads the researcher to wrongly reject the null hypothesis. Second is the error of type II, often denoted by β , which is the probability that the model fails to detect in the sample a relation that nevertheless actually exists in the population. Given the actual characteristics of the population, the null hypothesis should be rejected. But the test statistic does not fall in the critical region, which does not allow the researcher to reject the null hypothesis. The two last boxes of Table 24 illustrate scenarios in which statistical testing leads to accurate conclusions.

Table 24: Statistical testing – Decisions and types of error (Van Keilegom, 2011)

		Reality	
		<i>The relation does not exist</i> $\theta \in H_0$	<i>The relation does exist</i> $\theta \notin H_0$
Statistical decision	<i>"The relation does not exist"</i> $T \notin RC$	Ok	Error of type II (β)
	<i>"The relation does exist"</i> $T \in RC$	Error of type I (α)	Ok

The two next sections describe the tests that are conducted in the empirical part of the research to make decisions about specific explanatory variables (first section) and about the overall quality of the models (second section).

4.4.2.1. Test of variables: significance, effect size, and power

Significance tests address the error of type I (Wackerly, Mendenhall III, & Scheaffer, 2008, pp. 488-495; see also Hox, 2002). The estimated regression coefficients of explanatory variables are accompanied with a standard error that can be used in significance testing by computing the test statistic $Z = \text{parameter} / \text{standard error of the coefficient}$. This statistic is referred to as the standard normal distribution. This statistic tests whether the value of the parameter is sufficiently different from zero in the sample to infer that it is indeed different from 0 in the population. The p-value may be defined as the probability to commit an error of type I ($P[\alpha]$) by concluding that the parameter is not equal to zero. Conversely, it may be interpreted as the probability that the tested coefficient is

equal to 0 in the population. When the estimated parameter has a value that causes the p-value of Z to fall under a certain level decided by the analyst – the “significance level” –, the probability to commit the error of type I is considered reasonably weak and the null hypothesis may be rejected: it may be concluded that the value of the estimated coefficient is not equal to 0 and that the effect of the variable is actual in the population. In social research, the significance level is classically set at the tolerant value of 0.10, the most frequent value of 0.05, of the more severe value of 0.01.

Effect sizes are the counterpart of significance tests and should be discussed in quantitative as well as in qualitative research (K. Kelley & Preacher, 2012; McMillan & Foley, 2011; Onwuegbuzie, 2003). The size of an effect is the magnitude of this effect. With respect to explanatory variables in regression models, the effect size of an explanatory variable may be operationalized as the number of standard deviations that the dependent variable is predicted to increase or decrease after a one-standard-deviation increase of this explanatory variable. Effect size depends on the metric of the variables: two variables having the same influence on a dependent variable but different means and standard deviations will have different effect sizes. For this reason, it is common to standardize all variables before their introduction in regression models. Standardized variables, with a mean equal to 0 and a standard deviation equal to 1, have the same metric. The size of their effects becomes comparable *within* a single model. In addition, as the dependent variable is also standardized, the effect sizes are also comparable *between* models. In the empirical part of this research, all variables are standardized before their introduction into the multilevel regression models.

While effect sizes may be compared among , they may also be situated on a conventional scale, distinguishing “small”, “medium”, and “large” effects. This scale was first developed by Cohen (1992, 1988). With respect to the Pearson’s r correlation coefficient, for example, Cohen suggested that an absolute value of 0.10 is “small”, 0.30 is “medium”, and 0.50 is “large”. These values are conventional in the sense that they originally result from an arbitrary choice but are widely used nowadays as common research standards. According to Cohen (1988), medium-size effects are of a magnitude that would be perceptible to the naked eye of a reasonably sensitive observer, small-size effects are noticeably smaller than medium but not that small as to be trivial, and large-size effects mark the practical upper limit of predictive effectiveness. The corresponding conventional values with respect to the regression coefficients of standardized continuous variables may be derived with several formulas (see Hox, 2002). As a result, coefficients with an absolute value of around 0.10 correspond to small-size effects, 0.31 to medium-size effects, and 0.58 to large-size effects.

Power addresses the error of type II. The statistical power of research may be defined as the probability to accurately detect a relation that actually exists in the population in the sample. Conversely, it may also be defined as the probability not to commit the error of type II, as follows:

$$Power = P[1 - \beta]$$

Equation 16

Discussing the statistical power of research is important because it allows assessing whether the research has any probability to detect the phenomena it strives after. Much research has been conducted about the statistical power of multilevel models (M. P. Cohen, 1998; Moerbeek, van Breukelen, & Berger, 2000; Raudenbush, 1997; Raudenbush & Liu, 2000; Scherbaum & Ferreter, 2009; Snijders & Bosker, 1993). According to Snijders and Bosker (1993), the effect size, the significance level and the power are inter-related with the following formula:

$$Z_{1-\beta} = \frac{\text{size of the fixed effect}}{\text{standard error of the fixed effect}} - Z_{1-\alpha} \quad \text{Equation 17}$$

In this formula, the power of the statistical test of a fixed effect may be deduced from the Z score of $1-\beta$. The formula also identifies those factors which influence the power of a test: the effect size, the significance level and the sample size. First, the power increases if the effect tested is larger. This is quite logical because a larger effect is easier to “see” – and to detect statistically – than a smaller effect. Second, a stricter significance level (for example, 0.01 rather than 0.05) causes the power to be smaller. Being more severe with the error of type I increases the probability for an error of type II to occur and thus decreases the power of the test. The probability to commit an error of type I and the probability to commit an error of type II are related: the probability to commit one or other error results from a compromise. Third, the smaller the standard error of the estimated effect, the higher the power of the test. As standard errors decrease when the sample size increases, it results that increasing the sample size increases the power of the test. In practical terms, it is easier for statistical procedures to detect an effect in a larger sample than in a smaller one.

With respect to the present research, Table 25 illustrates the power of the test of one explanatory variable with respect to each dependent variable. With respect to the sample size, 413 policymakers filled in the survey questionnaire. The expected size of the effects tested in research is appraised on the basis of the results of previous studies conducted on the same effects, in other contexts. The variables used in this research generally had small-sized effects in previous studies. Hence, it may be reasonably expected that the regression coefficients of standardized explanatory variables estimated in this research will adopt values of about 0.10^{96} . The power is estimated with the significance level set at the classical value of 0.05. Finally, Bosker, Snijders, and Guldmond (2007) created software that provides estimates of the standard errors of the estimated fixed effects, based on the formulas that they derived in their 1993 research article (Snijders & Bosker, 1993; Bosker & Snijders, 2003 also wrote a useful explanatory manual for the software). These formulas require an estimate of the level-1 variance remaining after the introduction of the explanatory variable that is tested. The value used to estimate standard errors and power in Table 25 equals 95% of the level-1 residual variance of the intercept-only model of each dependent variable (in other words, it assumes that the introduction of the explanatory variable reduces the level-1 variance by 5%)⁹⁷.

⁹⁶ This expectation is conservative: if the effect sizes are in fact larger, the tests will be more powerful.

⁹⁷ In addition, the distribution of respondents among groups is assumed to be homogenous, with $413/12 = 35$ respondents per group on average. Finally, the between-group variance of the explanatory variable is set at 0 for all scenarios. Again, this is conservative with respect to the power estimation, given that increasing between-group variance increases the power.

Table 25: Power of statistical tests on the two indicators of the dependent variable of the research

<i><u>Dependent variable</u></i>	95% residual level-1 variance of the intercept-only model	STATISTICAL POWER
Preferences change direction	0.6956	0.7121
Preferences change intensity	0.7108	0.7245

The power of the present research design is very good. It is comprised between 0.7121 in the worst case (for the test of one explanatory variable against Preferences change direction) and 0.7245 in the best case (for the test of one explanatory variable against Preferences change intensity), considering that the effects considered are weak. To conclude, with a significance level set at 0.05, the probability to detect in the sample a weak effect that actually exists in the population is comprised between 71% and 72%. In a context where the researcher is free to choose the financial, human and time resources that he allocates to his survey, a common standard is to set the power of a research design at the level of 0.80 (Hox, 2002, p. 241). Considering this standard, the time and human resources of the present research, and, most of all, the expected size of the effects that are investigated, this level of power is very convenient.

4.4.2.2. Test of models: fit statistics

Multilevel models are accompanied with test statistics that help the analyst make decisions on their overall quality. Nested models may be assessed thanks to the “*log likelihood ratio test*” (or “deviance test”). As mentioned earlier, the maximum likelihood procedure produces a statistic, called the “likelihood function”, which describes the probability of observing the sample data, given the specific values of the parameter estimates. The highest is the likelihood function, the best is the model. Another statistic called “deviance” is computed on the basis of the likelihood function as follows:

$$Deviance = -2 \ln(likelihood) \quad \text{Equation 18}$$

Deviance is a logarithmic version of the likelihood function that better contrast good and less good models. In addition, it is a negative version of the function. Hence, the highest is the deviance, the worst is the model. Conversely, the lowest is the deviance, the best is the model. It indicates the extent to which the model “deviates” from a good model. However, those statistics used alone do not allow making a decision about the quality of multilevel models because the likelihood function and the deviance are idiosyncratic to each model; they are not standardized measures. However, if two models are nested, the deviances of the two models can be used to compare their fit statistically. This difference in deviances is written as follows:

$$Diff. in deviances = -2 \ln \left(\frac{likelihood \text{ of the null (restricted) model}}{likelihood \text{ of the alternative (augmented) model}} \right) \quad \text{Equation 19}$$

For nested models, “the difference in deviance has a chis-square distribution, with degrees of freedom equal to the difference in the number of parameters that are estimated in the two models. The deviance test can be used to perform a formal chi-square test, [the “likelihood ratio test”], in order to test whether the [alternative] model fits significantly better than the [null] model” (Hox, 2002, p. 16). In other words, the likelihood ratio test helps to decide whether a new set of variables, added to a simpler nested model, is worthwhile. The Likelihood Ratio Test is often denoted by its initials: LRT.

Several scenarios are possible. If one only new variable is added to a model, the likelihood ratio test allows making a decision about this particular variable. By contrast, if a set of variables is added, it is the set of variables which is tested as a whole. In addition, if some variables are added to a model already including other variables, the set of new variables is tested. By contrast, if a set of variables is included in an intercept-only model, it is the overall quality of the new model which is tested. In this research, the likelihood ratio tests were computed MIXED_FIT SAS macro (Ene, Smiley, & Bell, 2013b, 2013a).

The **Akaike's Information Criterion** (Akaike, 1987) allows comparing non-nested models (which the likelihood ratio test does not). Like the likelihood ratio test, the Akaike's information criterion is essentially a measure of the deviance of models, denoted by d . But, on the ground that science is made to simplify complexity, the AIC also penalizes the models according to the number of parameters, denoted by q , that they include to attain such a level of deviance. The Akaike's information criterion is constructed as follows:

$$AIC = d + 2q \quad \text{Equation 20}$$

Best models are those with a lower AIC. Resulting from the $2q$ term, those models with more parameters are penalized because they have a higher Akaike's information criterion than models with a similar deviance but less parameters. The Akaike's information criterion allows comparing non-nested models whereas the likelihood ratio test is only valid to compare nested models. But the likelihood ratio test allows making formal statistical decisions according to a given significance level, which the Akaike's information criterion does not allow to do: the decision resulting from the comparison of the Akaike's information criterion values is “qualitative”; it does not flow from a formal test of the difference between both values. The Akaike's information criterion is often denoted by its initials: AIC.

The overall quality of a model may be assessed with the **pseudo – R^2** computed at the individual level with the Snijders and Bosker (1994)'s algorithm. In classical regression analysis, the coefficient of determination, denoted by R^2 , is defined as the proportion of total variation of the dependent variable explained by the model. If y_i is the value of the dependent variable observed for each individual i , and $\hat{y}_i$ is the value of y predicted by the model, the three following components may be constructed:

$$SS_{tot} = \sum_i (y_i - \bar{y})^2 \text{ is the total sum of squares} \quad \text{Equation 21}$$

$$SS_{exp} = \sum_i (\hat{y}_i - \bar{y})^2 \text{ is the explained sum of squares} \quad \text{Equation 22}$$

$SS_{res} = \sum_i (y_i - f_i)^2$ is the residual sum of squares

Equation 23

With those three components, the R^2 may be computed as follows:

$$R^2 = 1 - \frac{SS_{res}}{SS_{tot}}$$

Equation 24

Given that $SS_{tot} = SS_{exp} + SS_{res}$, the R^2 is always comprised between 0 and 1, with 0 meaning that the model does not explain any variance of the dependent variable and 1 meaning that the models completely explain the total variance.

While it is tempting to apply this computation of the R^2 to multilevel models, Snijders and Bosker (1994) show that this would produce the wrong results. As summarized by (Recchia, 2010, p. 3), “the complications arise from the fact that variation in the response variable of a two-level [model] is assumed to come from multiple sources, namely the two levels underlying the data. Descriptions of the variability at each level require [the examination of the variance of both the random effects and the error term], but estimates of these variance components do not necessarily behave as one might expect. Indeed, the addition of an explanatory variable to a [multilevel model] can simultaneously increase some of the variance components and decrease others. This means that examining the individual components of variance separately by way of a traditional R^2 can lead to surprising outcomes, such as negative values or values that decrease when a new regressor is added to the model. Instead, Snijders and Bosker (1994) suggest separate examinations of the levels of variance. They show that the population values of the resulting measures possess the appealing properties that they are always non-negative and that additional explanatory variables will never cause them to decrease, assuming that the fixed-effects portion of the model is specified correctly”. These measures are called “pseudo- R^2 ”, because they are not the true value of the R^2 but rather an estimator of this statistic resulting from its adaptation to multilevel models.

The Snijders and Bosker (1994)’s estimator is particularly useful in the context of this research on the individual conditions of policy learning because it is twofold: the pseudo- R^2_2 may be interpreted as the explained proportion of the variance of the dependent variable at the second level of the data structure, while the pseudo- R^2_1 may be interpreted as the explained proportion of the variance of the dependent variable situated at the first level of the data structure⁹⁸. By comparing this second part of the estimator for two different models, it provides information about how well each model fits the data at the only level that this research is interested in: the individual level. If the two models compared are nested, the differences between the pseudo- R^2_1 of both models provide more specific information about how well the variable(s) added from the restricted to the augmented model improve(s) the quality of the prediction. As for the likelihood ratio test, several scenarios are possible. In particular, the comparison informs us about the overall quality of the model if this is compared with the intercept-only model. In this research, the *pseudo- R^2_1* was computed with the MLT Stata module (Moehring & Schmidt, 2012, 2013).

A last fit statistic that will be used in this research is the *percentage of studentized residuals* that fall outside the interval [-2;+2]. In regression models, error terms (or “residuals”) give an idea for

⁹⁸ Together, $R^2_2 + R^2_1$ may be interpreted as an estimator of the classical R^2 for the whole model.

each observation of how far or how close the value predicted by the model from the value actually is observed in the sample. Regression models try to find a linear relationship that homogeneously reduces the error term as much as possible for as many observations as possible. Hence, a percentage of big residuals gives a good idea of how badly a model fits with the data it is supposed to predict. But what is a “big” residual? The first problem to answer this question is that the size of residuals depends upon the metric of the data that are modelled. Models applied the same data but once measured in centimetres and once measured in meters will automatically provide bigger residuals in the first case than in the second, while their predictive quality is similar.

Studentized residuals are a standardized version of residuals that are comparable in different contexts. Their computation is described in full detail, for example, by Fox (2008). Again, good models are characterized by few big studentized residuals. Probability theory, however, teaches us that models always fail to predict several observations that behave differently than others. Hence, even very good models should include about 5% of studentized residuals outside $[-2;+2]$, about 1% outside $[-2.6;+2.6]$, etc (Fox, 2008, p. 248). In the end, studentized residuals provide us with two kinds of information. On the one hand, it gives an idea of how close or far a model is from this expectation. But this information does not allow making a formal decision about the model. On the other hand, the comparison of the percentage of big residuals produced by two different models provides us with information about the respective quality of both models *and* thus to make a decision on what model is the best. In this research, the percentage of residuals falling outside $[-2;+2]$ was computed for each model with the MIXED procedure, plus a little additional basic programming in the SAS software.

To compare models according to their fit statistics, they should be estimated on the same set of data with the FML method (rather than with the RML method). As mentioned above, the likelihood function and the resulting deviance of a model are idiosyncratic rather standardized measures and depend on the data that the model is applied to. For this reason, in the empirical part of this dissertation, the LRT and AIC are always performed on models applied to the same data. This also holds for augmented models tested against the intercept-only models: the observations that have missing values for the explanatory variables introduced in the augmented model are retrieved before comparing it to intercept-only models. In addition, as the RML method does not include the regression coefficients, only models that differ on their random part may be compared with the LRT and the AIC. The FML method, by contrast, includes both parts of the models in the likelihood function. Hence, the deviance of all models estimated with this method may be compared. In this research, models do not differ in the random part but in their fixed part. Hence, such models estimated with the RML may not be compared on the basis of the LRT or the AIC. As RML provides more realistic estimates of model parameters, it is used for estimating regression coefficients. But models estimated with FML will be used to compute the fit statistics. The accuracy of the *pseudo* – R_1^2 and studentized residuals does not depend on the estimation. However, by coherence they will be computed on FML models too, like the LRT and the AIC.

4.4.3. Graphical presentation of the results

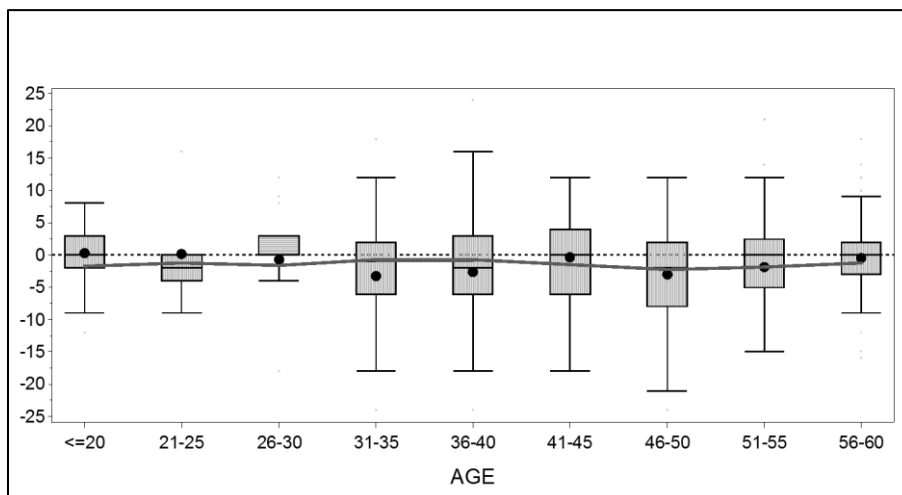
For the sake of clarity, common graphical guidelines are used for the presentation of the results of multilevel regression models. The independent variable always appears on the abscissa, while the dependent variable – Preferences change direction or Preferences change intensity – is on the ordinate. A dotted line always indicates the null level of the dependent variable, where preferences with respect to the liberalization policy did not change over time. The box plots and their content should be understood as a descriptive tool, while the line is a predictive, regression line.

A box plot describes the distribution of the dependent variable for each value of the independent variable. The box itself is traced on the values of the dependent variable between which 50 % of the respondents are situated. Within the box, the continuous line separates the observations in two groups of 25 %. The range between the extreme values of the boxes is called the “interquartile” range. Outside the box, some observations are situated within the distance between the borders of the box and 1.5 times the interquartile range, whereas more extreme observations are situated outside this distance. Above and below each box, the whiskers are traced up to the last observation whose value is situated within this distance. Beyond this distance, observations are represented with dots because they are outlier candidates. Hence, it should be clear that the whiskers may include 25 % of the observations above or below the box, but not necessarily. Finally, the point represents the average value of the dependent variable for each value of the independent variable.

The regression line is based on the results of the multilevel regression model. Sometimes, the independent variable on the abscissa is the only variable of the model, whereas, in other cases, the independent variable may be part of a set of explanatory variables introduced in the same model. For each value of the independent variable, the line passes through the value of the dependent variable predicted by the model.

In Figure 13, for example, the results of the multilevel regression of Preferences change direction on Age are presented (the regression as its results will be discussed in section 5.2.2). The box plot of the respondents being less than or equal to 20 years old is quite classical. 25 % of the respondents of this category have a value of the dependent variable, the Preferences change direction, comprised between about - 2.5 and 0. Similarly, there are 25 % to have a value comprised between about 0 and 2.5. The whiskers of this box suggest that there are 25 % having a value between 2.5 and 7.5 while there are nearly 25 % with a value comprised between - 2.5 and - 10. However, one respondent of this category has a more “extreme” value (i.e. outside 1.5 times the interquartile range), of about 12.5. The mean value of the dependent variable for this category of respondents is equal to about 0. With respect to the category of 21-25 year olds, the box has no superior whisker: this means that no observation superior to the superior border of the box has a value within the distance of 1.5 times the interquartile range from the box. Indeed, the closer superior observation has a value of about 7.5. Hence, it is represented with a dot. With respect to the model results, the regression line suggests that those respondents being less than or equal to 20 years old are predicted to have a value of the dependent variable equal to about -2.5, while the prediction is 0 for those respondents with an Age comprised between 21 and 25.

Figure 13: Prediction of Preferences change direction with Age



Chapter 5. Results

The research sample is composed of 413 respondents distributed in 32 organizations. In the railways, 199 respondents come from 13 organizations. In the electricity sector, 214 respondents come from 19 organizations. Statistical analyses were conducted on this sample according to the methodological guidelines described in the previous part of this dissertation. In this part, the results of these analyses are described in five sections.

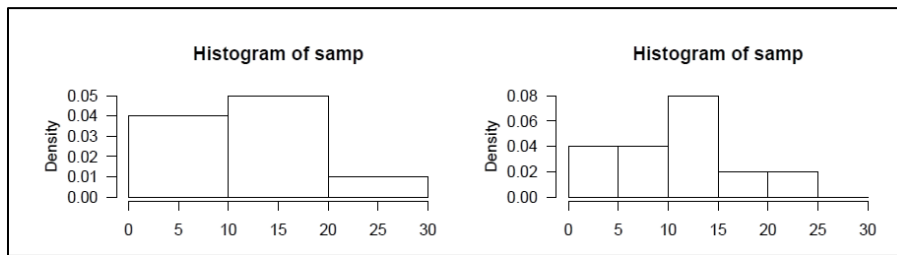
The *first section* describes the results for the two indicators of the dependent variable of the research. The direction of preferences indicates whether policymakers' preferences have changed positively or negatively with respect to the European liberalization policy between the nineties (time 0) and today (time 1), in the Belgian railways and electricity sectors. The intensity of preferences change indicates how much those preferences have changed, independently of the direction. Before the presentation of those two variables, some information is provided about the policymakers' preferences at time 0 and at time 1. The *second section* examines the relations between the covariates of the research and preferences change. Covariates include socio-demographic characteristics – gender, age, and the education level – and political predispositions to policy learning – political interest and satisfaction with democracy. In the *three next sections* of this part, the relations between the explanatory variables and preferences change are examined. The follows a discussion about whether they validate the research hypotheses . The research hypotheses concern the influence of interests and trust on Preferences change.

For the sake of clarity, the descriptive statistics and the results of multilevel regression analyses are introduced in the dissertation. The statistics related to the internal consistency of construct variables appear in the Appendix.

5.1. Dependent variable

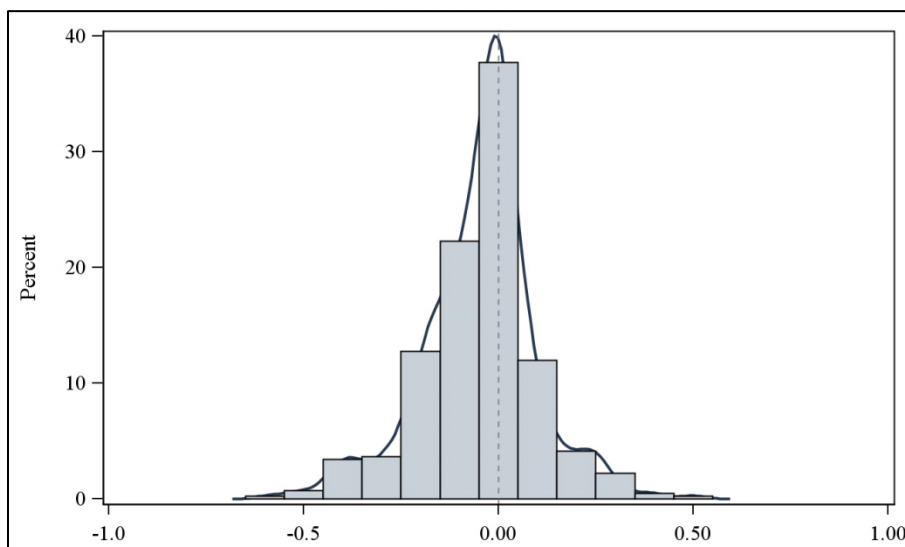
This section provides some empirical information about the distribution of the two indicators of the dependent variable of the research: Preferences change direction and Preferences change intensity. The frequency distribution of those indicators is computed with *kernel estimators*. The two indicators of the dependent variable of the research are ordinal and result from the addition of several indicators. One way to illustrate the frequency distribution of ordinal or continuous variables is to use histograms. However, the appearance of histograms, and thus the information they provide about the variables, is strongly dependent upon the width of the bins. Zucchini (2003) shows this problem with an illustrative sample and two possible histograms reproduced in Figure 14.

Figure 14: Different histograms of a same variable distribution (from Zucchini, 2003)



Some non-parametric estimation methods (called “kernel”) allow smoothening the distribution of histograms. The passage from a histogram to a kernel estimation of the frequency distribution of a variable is illustrated with another imaginary sample in Figure 15. Rather than a purely descriptive account of the frequency distribution, each point of the distribution line resulting from kernel estimation should be interpreted as the highest probability that a given proportion of the sample takes a given interval of values of the variable. For example, it is most probable that about 40 % of the observations of the sample should take a value of the variable around 0. Another possible consequence of the estimation is to give a non-null probability that a proportion of the sample will take values which, in fact, no observation actually has. To conclude, the kernel estimation of frequency distribution is not very good at providing very precise information about each value of the variable. But it is better than histograms in giving a general overview of the distribution of variables, which is the objective of this section of the research.

Figure 15: From a histogram to a kernel estimation of the frequency distribution of a variable - Illustration



5.1.1. Past and current preferences

Past and current policymakers' preferences with respect to liberalization are compared in Table 26. As a reminder, past preferences operationalize the average degree of policymakers' support at the beginning of the implementation of the European liberalization policy in their sector. In the railways, the beginning of the liberalization process may be situated in 1991 and, in the electricity sector, in 1996.

Table 26: Past and current preferences – Descriptive statistics

Variable	Mean	Std dev
Preferences on liberalization decisions in the railways at time 0	-1.07	10.18
Preferences on liberalization decisions in the railways at time 1	-0.72	11.23
Preferences on liberalization decisions in the electricity sector at time 0	4.01	10.25
Preferences on liberalization decisions in the electricity sector at time 1	0.71	11.97
<i>Preferences on liberalization decisions in the overall sample at time 0</i>	<i>1.50</i>	<i>10.52</i>
<i>Preferences on liberalization decisions in the overall sample at time1</i>	<i>0.02</i>	<i>11.63</i>

Two empirical lessons may be drawn from Table 26. First, the perception of the liberalization policy is, on average, negative in the railways, whereas it is positive rather positive in the electricity sector. This holds for past preferences, at the beginning of the liberalization process, as well as today. Second, on average, the evolution of preferences is slightly positive in the railways – in this sector, the opinion of policymakers about the liberalization policy is a little better than before, though still negative – and more substantially negative in the electricity sector – in this sector, the opinion of policymakers about the liberalization policy is worse than before, though still positive.

Overall, past preferences of the policymakers from the electricity sector were more positive (4.01) than the past preferences of the policymakers from the railways were negative (- 1.07). As a result, the average opinion of the policymakers in the whole sample is slightly positive (1.50, due to the policymakers from the electricity sector). In the railways as well as in the electricity sector, current preferences are nearly equal to 0. As a result, in the whole sample, the average value of policymakers' preferences with respect to the liberalization policy is equal to 0.02.

The standard deviation of all measures of policy preferences are comprised between 10 and 12. The extreme values of the six scales are -24 and 24. Hence the average deviation from the mean, which is close to 0 is situated about midway between 0 and the extreme values. It may be concluded that policymakers have quite diverging preferences with respect to the liberalization policy: many of them are quite neutral, but a substantial number are also quite negative or positive with respect to this policy. All these remarks are illustrated in Figure 16, Figure 17 , and Figure 18. The internal consistency of the measure of policy preferences at time 0 and time 1 is good in the railways (cf. Table 55 and Table 56) and acceptable in the electricity sector (cf. Table 57 and Table 58).

Figure 16: Past and current preferences in the railways – Kernel estimation of the frequency distribution

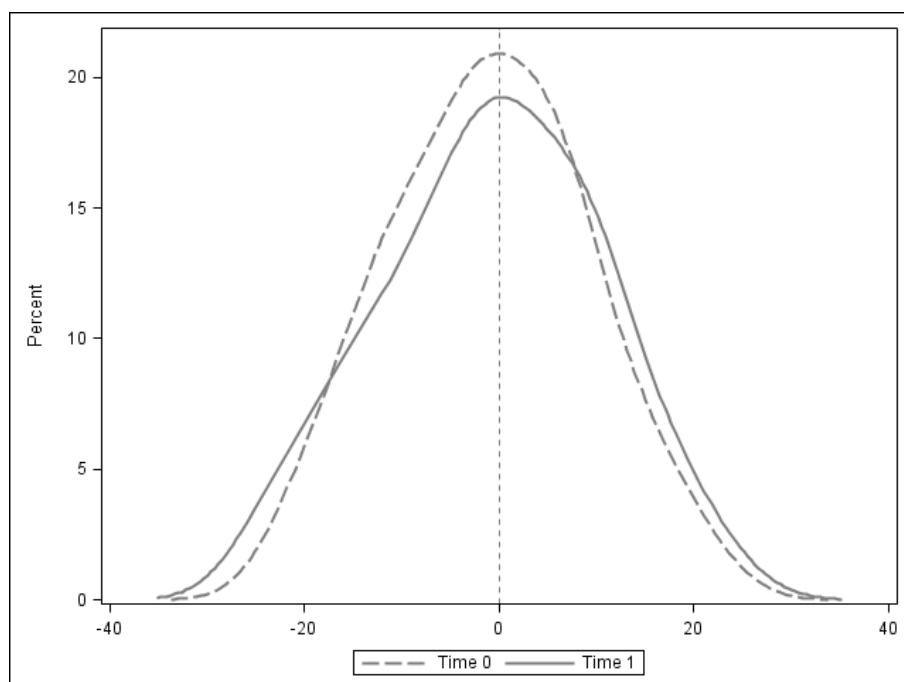


Figure 17: Past and current preferences in the electricity sector – Kernel estimation of the frequency distribution

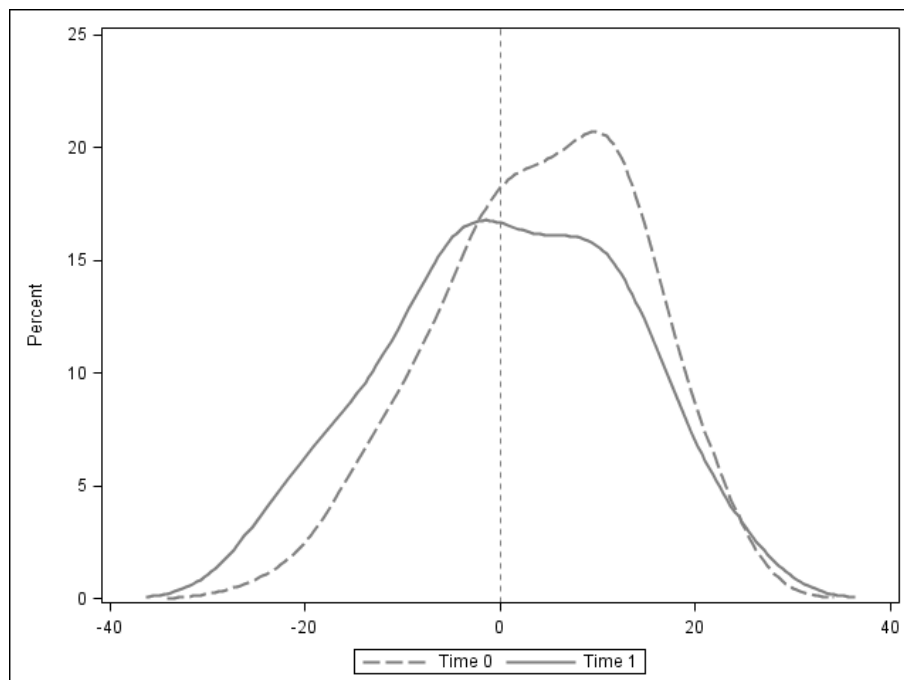
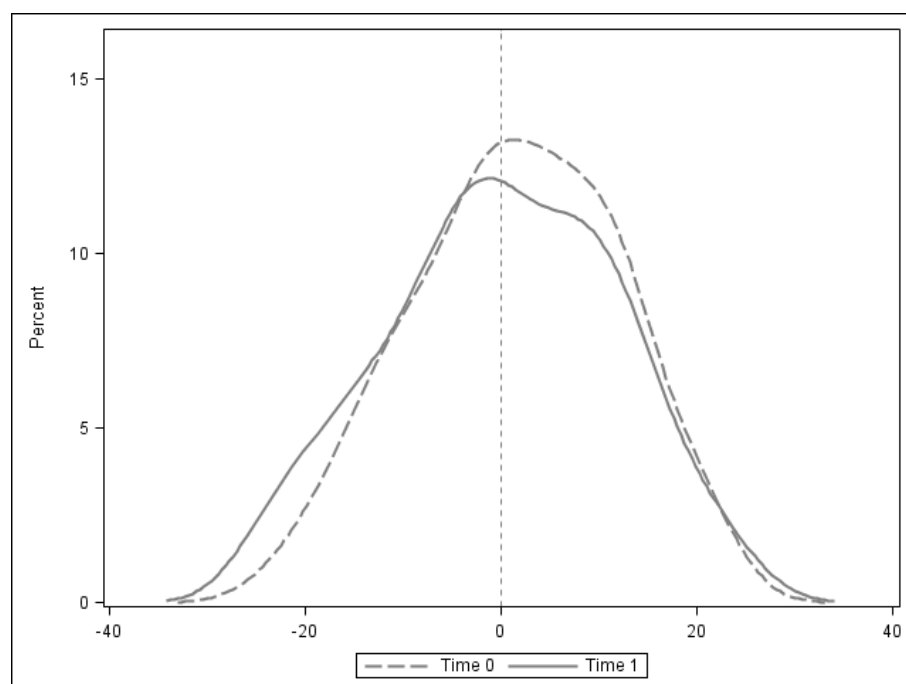


Figure 18: Past and current preferences in the overall sample – Kernel estimation of the frequency distribution



5.1.2. First indicator of the dependent variable: Preferences change direction

Descriptive statistics about Preferences change direction are provided in Table 27. Preferences change direction captures the evolution of the policymakers' preferences with respect to liberalization between time 0 – at the beginning of the implementation of the policy in the Belgian railways and electricity sectors – and time 1 – today.

Table 27: Preferences change direction – Descriptive statistics

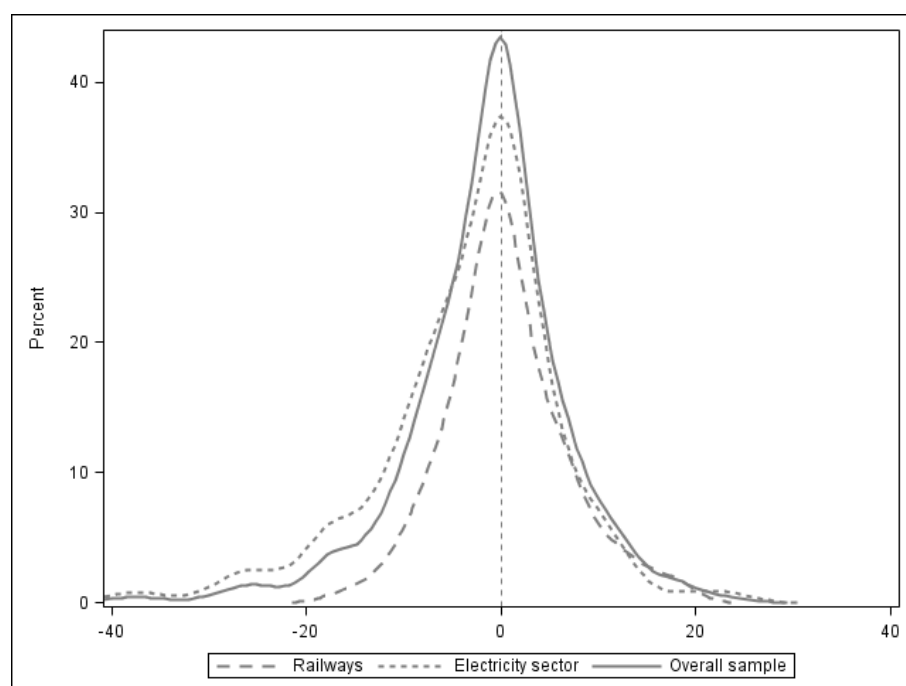
Sector	Mean	Std Dev	Possible minimum	Observed minimum	Possible maximum	Observed maximum
Railways	0.39	6.14	-48	-16	48	18
Electricity sector	-3.16	9.19	-48	-39	48	24
<i>Overall sample</i>	<i>-1.45</i>	<i>8.06</i>	<i>-48</i>	<i>-39</i>	<i>48</i>	<i>24</i>

The information provided by Table 27 about Preferences change direction is coherent with the comparison of past and current preferences: in the railways, preferences have changed positively, whereas they have changed negatively in the electricity sector. The general pattern of the evolution

in the whole sample is negative: today, policymakers have an opinion about the liberalization policy which is worse than before (and close to 0, as was indicated by the measurement of current preferences, in the previous section). The internal consistency of Preferences change direction is questionable in the railways (cf. Table 59) and acceptable in the electricity sector (cf. Table 60)⁹⁹.

The amplitude of preferences change is very limited. The extreme negative value of the variable is equal to -48, for a policymaker who was the most supportive of liberalization, at the beginning of the process in the nineties, and who became the most negative with respect to this process, today. Conversely, 48 is the positive extreme value of policymakers who were very negative to the liberalization policy and who have turned to be very positive. With an average value of -1.45 and a standard deviation equal to 8.06, it may be concluded that policymakers “have not learned” very much between the beginning of the liberalization process and today. This conclusion is completely consistent with the ACF assumption that the policy preferences of policymakers are very resistant to change. These observations are illustrated in Figure 19.

Figure 19: Preferences change direction – Kernel estimation of the frequency distribution



⁹⁹ Two items of Preferences change direction seem responsible for its questionable consistency in the railways. On the one hand, the policymakers’ opinions have evolved less positively with respect to the introduction of competition in the railway freight transport than with respect to the other items of the scale. On the other hand, their opinion has evolved more positively with respect to the introduction of competition in the international railway passenger transport (cf. Table 59).

5.1.3. Second indicator of the dependent variable: Preferences change intensity

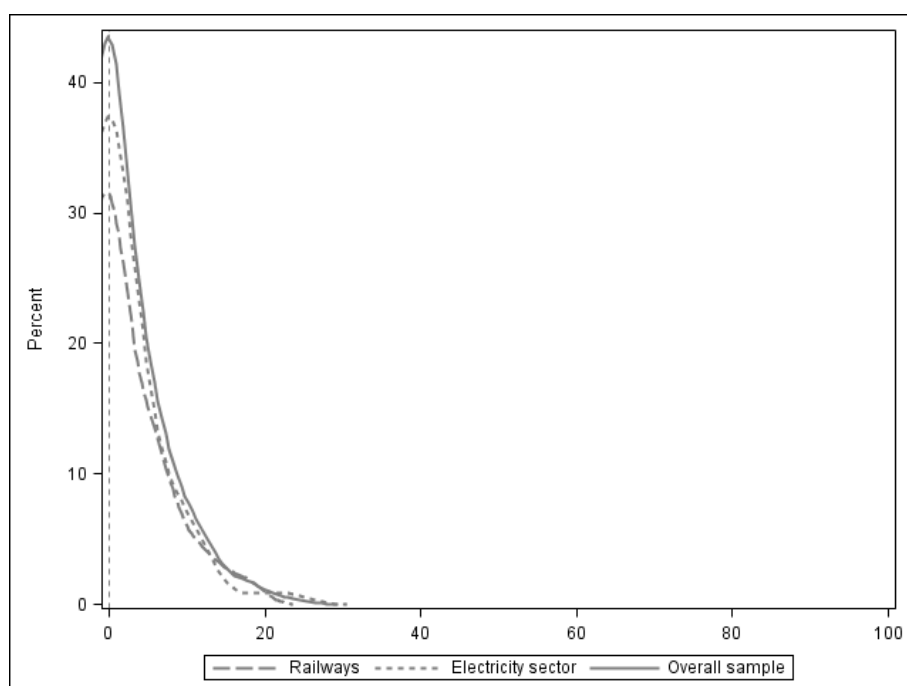
Preferences change intensity provides a better image of policy learning, because it captures all changes in preferences, independently of the direction, rather than an average measure of direction. Descriptive statistics about Preferences change intensity are provided in Table 28.

Table 28: Preferences change intensity – Descriptive statistics

Sector	Mean	Std Dev	Possible minimum	Observed minimum	Possible maximum	Observed maximum
Railways	6.00	4.72	0	0	48	20
Electricity sector	7.79	7.35	0	0	48	39
<i>Overall sample</i>	<i>6.93</i>	<i>6.29</i>	<i>0</i>	<i>0</i>	<i>48</i>	<i>39</i>

The information provided in Table 28 confirms that, with a mean of 6.93 and an extreme value of 48, the intensity of preferences change is actually weak. However, the Table suggests that policymakers may also have a nuanced view on the evolution of their policy preferences. Indeed, the addition of the mean (6.93) and the standard deviation (6.29) equals 13.22, whereas this addition was equal to -9.51 or 6.61 in the case of Preferences change direction. Hence, the respondents of the survey did not judge that their opinions have evolved in the same way on all aspects of the liberalization policy. The evolution was, perhaps, more negative on some items than on others. The evolution was perhaps even positive on some items and negative on others. As a result, learning is more than the simple aggregate evolution of preferences with respect to a policy; policymakers have differentiated opinion on the different aspects of the policy. Preferences change intensity is more than the simple absolute value of Preferences change direction. The internal consistency of Preferences change intensity is poor in the railways (cf. Table 61) and questionable in the electricity sector (cf. Table 62). This is not very problematic for the measurement of Preferences change intensity, however. The kernel estimation of the frequency distribution of Preferences change intensity appears in Figure 20.

Figure 20: Preferences change intensity – Kernel estimation of the frequency distribution



5.1.4. Intercept-only models of Preferences change direction and intensity

Intercept-only models of Preferences change direction and Preferences change intensity are presented in Table 29. As these models do not include any explanatory variables, the individual-level pseudo- R^2 (proportion of variance explained by the explanatory variables at the individual level) may not be computed. Similarly, as the Likelihood Ratio Test (LRT) tests the significance of the deviance reduction involved by the introduction of explanatory variables, it may not be computed either. The lessons of these two models are threefold.

First, both models include 399 observations. This means that, over the 413 respondents of the sample, (only) 14 had to be excluded because their degree of conviction in their beliefs was too weak for Preferences change to be considered enduring enough. Operationally, this means that 14 respondents reported that they were either “completely unconvinced” [-2] or “rather unconvinced” [-1] about their current preferences, or “completely unconvinced” about their past preferences [-2].

Second, the models provide information about the degree of dependence among respondents at the group level. The proportion of group-level variance compared to the total variance of the variable may be estimated with an intraclass correlation coefficient. This coefficient is computed as follows:

$$\text{In the case of Preferences change direction: } \rho = \frac{0.15}{0.15+0.92} = 0.1402$$

$$\text{In the case of Preferences change intensity: } \rho = \frac{0.05}{0.05+0.96} = 0.0495$$

In the case of Preferences change direction, up to 14.02 % of the variance of the variable may be attributed to the levels of the organization or the sector. This proportion is substantial. In this case, the multilevel design of analyses is very useful to get an unbiased view on the extent to which individual conditions of policy learning influence individual-level Preferences change. In the case of Preferences change intensity, the proportion of variance due to the group-level is weaker: 4.95 % (but 9.93% with the tobit coefficients). Hence, the influence of the degree of the dependence among the policymakers of a single sector and/or organization on the analyses conducted at the individual level is weaker. However, the multilevel design remains useful to have a precise view, thanks to the computation of the Snijders & Bosker's pseudo-R², on the extent to which individual-level explanatory variables contribute to reducing the variance of the variables at the individual level (rather than at the group level).

Third, these models predict the value of Preferences change direction and Preferences change intensity on the single basis of the overall average value of these variables among individuals and the average value proper to each group of individuals. Hence, the percentage of studentized residuals outside the interval [-2;+2] gives an idea of the quality of the prediction of the two indicators of the dependent variable on the basis of this single parameter. As noted in the methodological part of the dissertation, very good models include about 5% of studentized residuals outside this range. Hence, there is no particular problem on this respect with the intercept-only models of Preferences change direction (5.26 %) and Preferences change intensity (3.51 %) on this respect.

Table 29: Intercept-only models of the two indicators of the dependent variable

Dependent variable: PREFERENCES CHANGE DIRECTION and INTENSITY	Model 1 (intercept-only)	Model 2 (intercept-only)	
	PREFERENCES CHANGE DIRECTION	PREFERENCES CHANGE INTENSITY	
	b (std error)	b (std error)	Tobit b (std error)
Fixed effects:			
Intercept	0.04 (0.13)	0.01 0.09	-0.36* (0.16)
Random part:			
Sector-Organization level: σ^2_{u0}	0.15* (0.09)	0.05 (0.04)	0.15 (0.12)
Individual level (residuals): σ^2_e	0.92*** (0.07)	0.96 (0.07)	1.36*** (0.08)
Fit statistics:			
Pseudo R ² at the individual level	/	/	
-2 full log likelihood	1115.3	1125.4	
P-value of the likelihood ratio test	/	/	
% studentized residuals outside [-2;+2]	5.26 %	3.51 %	
Number of cases	399	399	
Standard coefficients (b) are computed with a restricted maximum likelihood estimation method (standard errors are within brackets). * p < 0.10 ** p < 0.05, *** p < 0.01.			

The models in Table 29 are completely empty. As explained earlier in this dissertation, however, several covariates are considered in this research. Several models will examine their influence on the dependent variable in the next section. To assess whether the covariates significantly improve our understanding of the dependent variable, these models will be compared to the empty models just presented (Model 1 and Model 2). In the next sections, several models will examine the influence of the explanatory variables of the research on the dependent variable. To assess whether the explanatory variables significantly improve our understanding of the dependent variable, these models will also be compared to intercept-only models. It should be very clear, however, that those models will *not* be Model 1 and Model 2. Rather, the basis for comparing models with explanatory variables will be the models which include all the covariates of the research (Model 13 and Model 14).

5.2. Covariates

This section examines the relations between preferences change and the covariates considered in the research. The covariates include socio-demographic characteristics – gender, age, and the education level – as well as political predispositions to policy learning – political interest and satisfaction with democracy. In a first section, empirical information is provided about the distribution of the five covariates in the research sample. As it is postulated that the sample is representative of the subsystem population of policymakers, the empirical information gives an idea

about the basic characteristics of this population. In addition, descriptive statistics sometimes allow having a better understanding of the results of regression models. In a second section, the influence of the covariates on the dependent variable of the research is analysed with multilevel regression models. Some expectations about the influence of the covariates on the dependent variable have justified their introduction in this research. Hence, the results of the regression models are discussed in a third section, with regard to these expectations.

5.2.1. Descriptive analysis

Descriptive statistics about the gender, the age, and the education level of the policymakers of the research sample appear in Table 30, Table 31, and Table 32. The distribution patterns of socio-demographic characteristics, among respondents, are primarily the result of two factors. First, policy subsystems being composed of actors involved in the policy process, these actors most often have positions in which they are able to influence the course of decisions. In practice, this means that most of them are decision makers with senior positions in the hierarchy of the most important organizations in their sectors¹⁰⁰. This influences their socio-demographic characteristics. For example, in general, older people are better represented than younger people in top positions. Second, as decision makers are often experienced people, they have also spent a substantial part of their career in the same sector. As a result, subsystem members are, to a certain extent, representative of the sector they are members of. The data do not allow verifying the validity of those two factors, whether they exhaust the explanation of the socio-demographic patterns of the sample, nor their relative importance.

Table 30: Gender – Descriptive statistics

Gender	Frequency	Cumulative frequency	Percent	Cumulative percent
Man [- 0.5]	349	349	84.50 %	84.50 %
Woman [0.5]	64	413	15.50 %	100.00 %
<i>Frequency missing = 0</i>				

With respect to gender (Table 30), both subsystems are predominantly male: 84.50 % of their members are men. This tendency is very similar in the railways (85.43 %) and in the electricity sector (83.64 %).

¹⁰⁰ Indeed, as explained in the methodological part, the preliminary qualitative survey and the implementation of the snowball sampling method resulted in the construction of a sample including people corresponding to these criteria.

Table 31: Age – Descriptive statistics

Age	Frequency	Cumulative frequency	Percent	Cumulative percent
21-25 [- 5.5]	5	5	1.24 %	1.24 %
26-30 [- 4.5]	25	30	6.20 %	7.44 %
31-35 [- 3.5]	28	58	6.95 %	14.39 %
36-40 [- 2.5]	61	119	15.14 %	29.53 %
41-45 [- 1.5]	59	178	14.64 %	44.17 %
46-50 [- 0.5]	43	221	10.67 %	54.84 %
51-55 [0.5]	71	292	17.62 %	72.46 %
56-60 [1.5]	77	369	19.11 %	91.56 %
61-65 [2.5]	27	396	6.70 %	98.26 %
66-70 [3.5]	4	400	0.99 %	99.26 %
71-75 [4.5]	2	402	0.50 %	99.75 %
>= 76 [5.5]	1	403	0.25 %	100.00 %
<i>Frequency missing = 10</i>				

With respect to the Age, subsystem members are rather elderly: 45.16 % of the respondents are more than 50 years old. As most subsystems members are experienced decision makers, this pattern is quite natural. It is stronger, however, in the railways than in the electricity sector. In the railways, up to 52.06 % of the respondents are more than 50 years old, whereas they represent only 38.76% in the electricity sector. In the railways, the population pyramid is elderly in the overall sector¹⁰¹. 10 values are missing for this variable. Figure 21 provides a histogram of the frequency distribution of age in the overall sample.

¹⁰¹ The phenomenon is well-known and put forward by the NMBS/SNCB itself, in the framework of its recruitment processes: “the population pyramid (of the NMBS/SNCB) is so negative that, by 2020, the half of the personnel will retire” (NMBS/SNCB Holding, 2013).

Figure 21: Age – Histogram of the frequency distribution

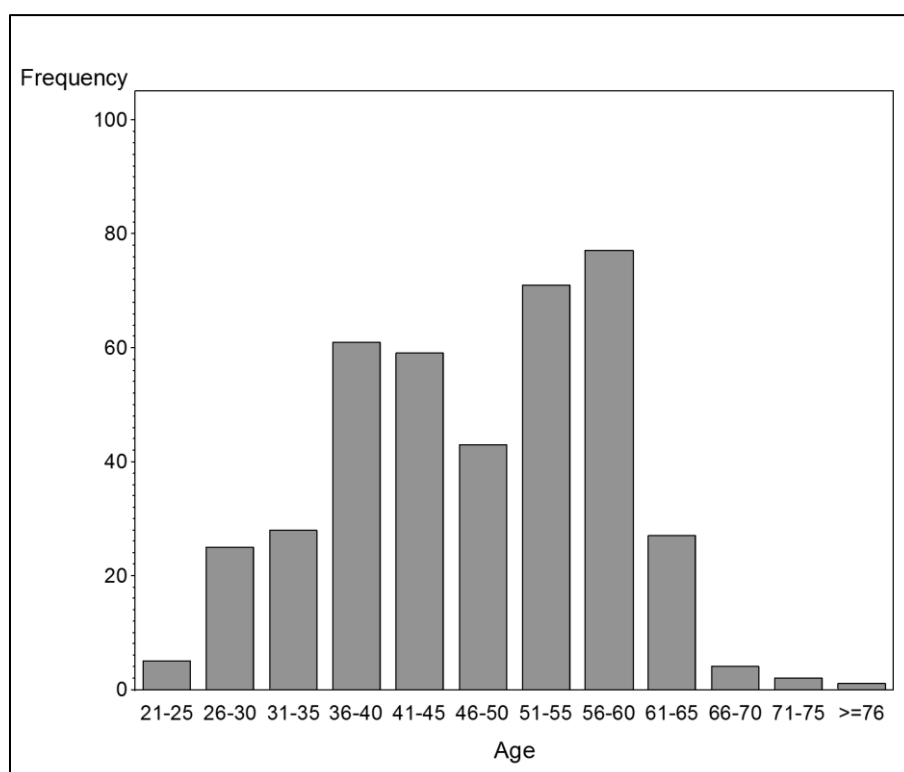


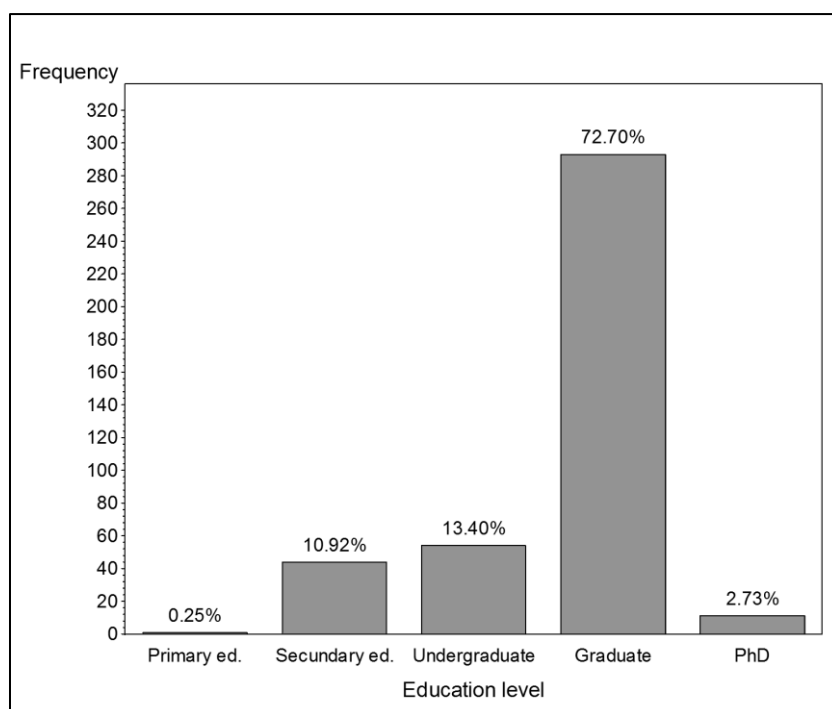
Table 32: Education level – Descriptive statistics

Education level	Frequency	Cumulative frequency	Percent	Cumulative percent
Primary education [- 2]	1	1	0.25 %	0.25 %
Secondary education [- 1]	44	45	10.92 %	11.17 %
Undergraduate [0]	54	99	13.40 %	24.57 %
Graduate [1]	293	392	72.70 %	97.27 %
PhD [2]	11	403	2.73 %	100.00 %
Frequency missing = 10				

With respect to the education level, most respondents are graduates (72.70 %). Again, it is not surprising that, subsystems being composed of decision makers, their education level is quite high. The proportion of PhDs is weak (2.73 %). In the electricity sector, 16.35 % of subsystem members are undergraduates or graduated from secondary education, while they are 33.33 % in the railways. This difference is related to the composition of the population in the overall rail sector. Indeed, this sector is known to recruit more people with no university diploma than in other sectors. Hence, it is natural they are relatively more numerous to become subsystem members in the railways than in other sectors. Like for the age variable, 10 values are missing for the education level.

Figure 22 provides a histogram of the frequency distribution of the education level in the overall sample.

Figure 22: Education level – Histogram of the frequency distribution



Descriptive statistics about political interests and satisfaction with democracy appear in Table 33 and Table 34.

Table 33: Political interest – Descriptive statistics

Political interest	Frequency	Cumulative frequency	Percent	Cumulative percent
Not at all interested [Very low: - 2]	20	20	4.84 %	4.84 %
Not very interested [Low: - 1]	40	60	9.69 %	14.53 %
Somewhat interested [Average: 0]	65	125	15.74 %	30.27 %
Fairly interested [High: 1]	187	312	45.28 %	75.54 %
Very interested [Very high: 2]	101	413	24.46 %	100.00 %
<i>Frequency missing = 0</i>				

With respect to political interest, most respondents reported that they are fairly interested (45.28 %) or even very interested (24.46 %) in politics. At the same time, this result could be viewed to be normal – people engaged in the policy process are interested in politics – or surprising – people involved in the working of the organization are not interested in the interferences of politics. I suggest that this is more normal than surprising because, most often, people who have become organizational decision makers are, to a certain extent, willing to wield power. As power is related to politics, it is not surprising that subsystem members are interested in politics. Figure 23 provides a histogram of the frequency distribution of political interest in the overall sample.

Figure 23: Political interest – Histogram of the frequency distribution

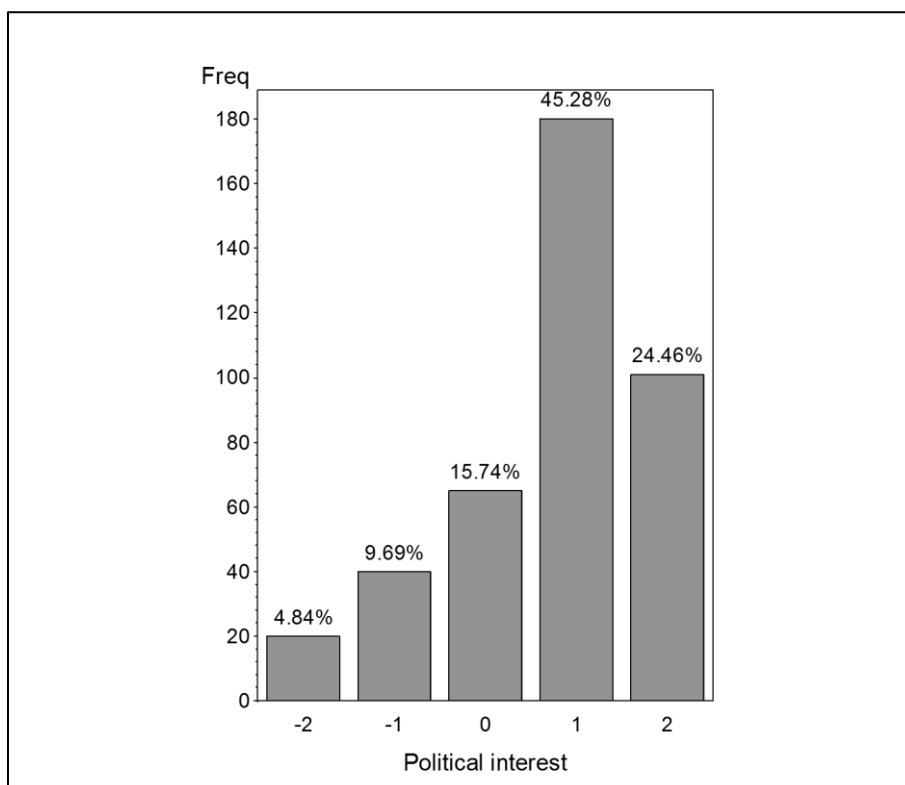
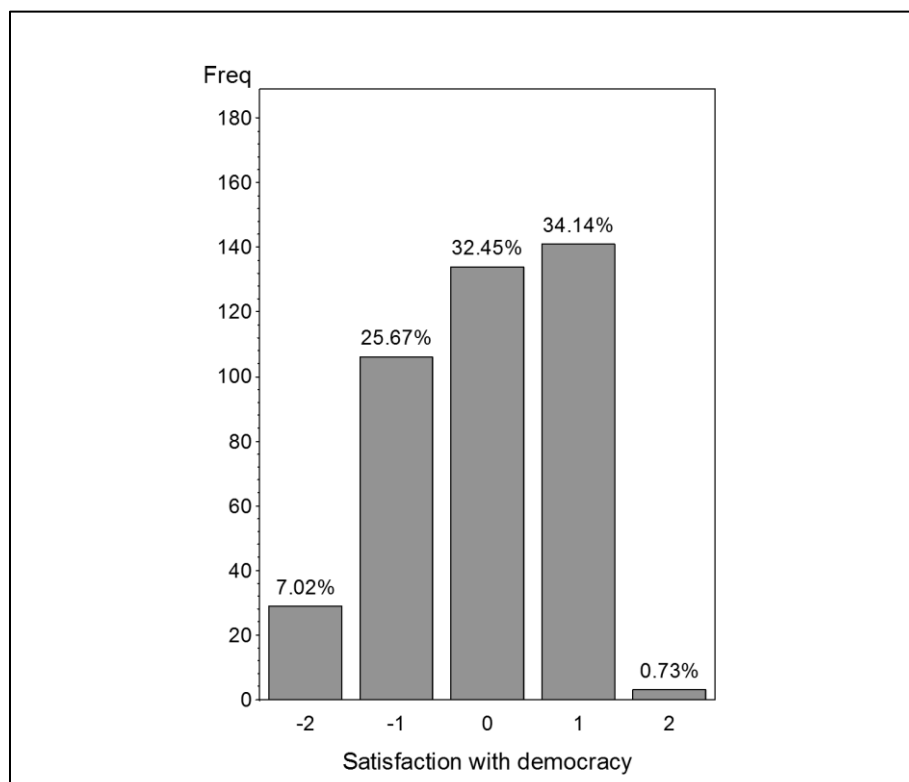


Table 34: Satisfaction with democracy – Descriptive statistics

Satisfaction with democracy	Frequency	Cumulative frequency	Percent	Cumulative percent
It does not work well and needs to be completely changed [Very low: -2]	29	29	7.02 %	7.02 %
It does not work well and needs a lot of changes [Low: -1]	106	135	25.67 %	32.69 %
Don't know [Average: 0]	134	269	32.45 %	65.13 %
It works well but needs some changes [High: 1]	141	410	34.14 %	99.27 %
It works well and needs no changes [Very high: 2]	3	413	0.73 %	100.00 %
<i>Frequency missing = 0</i>				

The distribution of satisfaction with democracy is more central than the distribution of political interests. Most respondents are moderately satisfied with Belgian democracy, with few respondents reporting that they view it as completely perfect (0.73 %) or completely imperfect (7.02 %). Figure 24 provides a histogram of the frequency distribution of satisfaction with democracy in the overall sample.

Figure 24: Satisfaction with democracy – Histogram of the frequency distribution



The construct validity of political interest and satisfaction with democracy cannot be assessed, because information is lacking in Battaglio (2009) and Battaglio and Legge (2009) for performing this assessment.

Finally, as explained in the methodological part of the dissertation, missing values of covariates will be replaced by their mean value in the sample before their introduction into multilevel regression models (see the section 4.1.4). However, as shown by the descriptive analysis of covariates, missing values are not very numerous in the research sample for those variables (10 missing values in the case of age and education level, no missing value in the other cases). As a result, this correction should not bias the analyses very much.

5.2.2. Multilevel regression analysis

In this section, the relation between covariates and the two indicators of the dependent variable of the research are examined. Table 35 presents multilevel regress models which examine the relation between each covariate and Preferences change direction, while Table 36 presents models which examine the relation between each covariate and Preferences change intensity. The significance of all these models is tested with regard to intercept-only models (Model 1 and Model 2).

Table 35: Multilevel regression analysis of covariates – Preferences change direction

Dependent variable: PREFERENCES CHANGE DIRECTION	Model 3 against Model 1	Model 4 against Model 1	Model 5 against Model 1	Model 6 against Model 1	Model 7 against Model 1
	b (std error)	b (std error)	b (std error)	b (std error)	b (std error)
Fixed effects:					
Gender	0.10** (0.05)				
Age		0.07 (0.05)			
Education level			-0.13 (0.13)		
Political interest				0.02 (0.05)	
Satisfaction with democracy					- 0.01 (0.05)
Intercept	0.04 (0.13)	0.05 (0.13)	0.08 (0.14)	0.04 (0.07)	0.04 (0.13)
Random part:					
Sector-Organization level: σ^2_{u0}	0.14* (0.09)	0.16* (0.10)	0.15* (0.10)	0.15* (0.09)	0.15* (0.09)
Individual level (residuals): σ^2_e	0.91*** (0.65)	0.91*** (0.07)	0.92*** (0.07)	0.92*** (0.07)	0.92*** (0.07)
Fit statistics:					
Pseudo R ² at the individual level	0.0159 (+ 0.0159)	- 0.0048 (- 0.0048)	0.0206 (+ 0.0206)	- 0.0013 (- 0.0013)	0.0002 (+ 0.0002)
-2 full log likelihood	1110.8 (- 4.51)	1113.3 (- 2.04)	1114.1 (- 1.16)	1115.1 (- 0.23)	1115.3 (- 0.03)
P-value of the likelihood ratio test	0.03	0.15	0.28	0.63	0.85
% studentized residuals outside [-2;+2]	5.51 %	5.76 %	5.26 %	5.26 %	5.26 %
Number of cases	399	399	399	399	399
Standard coefficients (b) are computed with a restricted maximum likelihood estimation method (standard errors are within brackets). * p < 0.10 ** p < 0.05, *** p < 0.01. The pseudo R ² is individual-level only and based on the Snijders & Bosker (1999) algorithm. Fit statistics are computed and compared with a full maximum likelihood estimation method and on models including a same number of observations (fit changes are within brackets).					

Table 36: Multilevel regression analysis of covariates – Preferences change intensity

Dependent variable: PREFERENCES CHANGE INTENSITY	Model 8 against Model 2		Model 9 against Model 2		Model 10 against Model 2		Model 11 against Model 2		Model 12 against Model 2	
	b (std error)	Tobit b (std error)	b (std error)	Tobit b (std error)	b (std error)	Tobit b (std error)	b (std error)	Tobit b (std error)	b (std error)	Tobit b (std error)
Fixed effects:										
Gender	0.01 (0.05)	0.03 (0.08)								
Age			- 0.13*** (0.05)	- 0.19** (0.08)						
Education level					0.13* (0.08)	0.20 (0.13)				
Political interest							- 0.11** (0.05)	- 0.12 (0.08)		
Satisfaction with democracy									-0.07 (0.05)	- 0.11 (0.08)
Intercept	0.01 (0.09)	- 0.36** (0.16)	- 0.01 (0.09)	- 0.38** (0.17)	- 0.02 (0.08)	- 0.41** (0.14)	- 0.01 (0.08)	- 0.36** (0.16)	-0.01 (0.09)	- 0.37 (0.16)
Random part:										
Sector-Organization level: σ^2_{u0}	0.05 (0.04)	0.15 (0.11)	0.05 (0.04)	0.17 (0.13)	0.035 (0.035)	0.09 (0.09)	0.04 (0.04)	0.14 (0.11)	0.05 (0.04)	0.16 (0.12)
Individual level (residuals): σ^2_e	0.96*** (0.07)	1.36*** (0.09)	0.94*** (0.07)	1.34*** (0.08)	0.96*** (0.07)	1.36*** (0.08)	0.95*** (0.07)	1.35*** (0.08)	0.96*** (0.07)	1.36*** (0.08)
Fit statistics:										
Pseudo R ² at the individual level	0.0003 (+ 0.0003)		0.0148 (+ 0.0148)		0.0181 (+ 0.0181)		0.0138 (+ 0.0138)		0.0045 (+ 0.0045)	
-2 full log likelihood	1125.3 (- 0.09)		1118.5 (- 6.88)		1122.3 (-3.02)		1120.7 (- 4.69)		1123.6 (- 1.79)	
P-value of the likelihood ratio test	0.76		< 0.01		0.08		0.03		0.18	
% studentized residuals outside [-2;+2]	3.51 %		4.01 %		3.76 %		3.51 %		3.76 %	
Number of cases	399		399		399		399		399	
Standard coefficients (b) are computed with a restricted maximum likelihood estimation method (standard errors are within brackets). * p < 0.10 ** p < 0.05, *** p < 0.01. The pseudo R ² is individual-level only and based on the Snijders & Bosker (1999) algorithm. Fit statistics are computed and compared with a full maximum likelihood estimation method and on models including a same number of observations (fit changes are within brackets).										

The effect of Gender on ***Preferences change direction*** is tested in Model 3. This model shows that gender is significantly related to the dependent variable. The individual-level pseudo- R^2 of the model is equal to 0.0159, which is substantially different from 0. The LRT is rather significant (p-value = 0.03). The evolution of the policy preferences of the women with respect to the liberalization policy was less negative than the evolution of the preferences of the men. In fact, on average, Preferences change direction was positive among women (0.48), whereas it was negative among men (- 1.81). However, as women are much less numerous in the sample than men, the general pattern of Preferences change direction in the overall sample is negative. The effect of Age is tested in Model 4. This effect is insignificant. The individual-level pseudo- R^2 of the model is close to 0 and the LRT is insignificant. Preferences change direction does not significantly depend on the age of the respondents. The effect of education level is estimated in Model 5. This model suggests that education level is not significantly related to the dependent variable. Like for the age covariate, the individual-level pseudo- R^2 of the model is close to 0 and the LRT is insignificant. Preferences change direction does not significantly depend on the education level of the respondents. Similar observations may be formulated for the political predispositions to policy learning, whose effect is tested in Model 6 (political interest) and Model 7 (satisfaction with democracy). The individual-level pseudo- R^2 of the model is close to 0 and the LRT is insignificant. The individual-level pseudo- R^2 of these models is close to 0 and their LRT is insignificant. Hence, Preferences change direction does not significantly depend on Political interest, nor on satisfaction with democracy.

The effect of gender on ***Preferences change intensity*** is tested in Model 8. In contrast with the significant effect of gender on Preferences change direction, this effect is insignificant. The fit statistics of the model (quasi-null pseudo- R^2 and insignificant LRT) confirm this diagnostic. Preferences change intensity does not depend on gender. The effect of age is tested in Model 9. This model shows that the negative relation between age and the dependent variable is significant. The individual-level pseudo- R^2 of the model is equal to 0.0148, which is substantially different from 0. The LRT is very significant (p-value < 0.01). The evolution of the policy preferences of the older respondents with respect to the liberalization policy was less intense than the evolution of the preferences of younger respondents. Model 10 suggests that the positive relation between the education level and the dependent variable is also significant. The individual-level pseudo- R^2 of the model is equal to 0.0181, which is substantially different from 0. The LRT is just significant (p-value = 0.08). The evolution of the policy preferences of the more educated respondents with respect to the liberalization policy was more intense than the evolution of the preferences of less educated respondents. Again, Model 11 suggests that the negative relation between political interest and the dependent variable is significant. The individual-level pseudo- R^2 of the model is equal to 0.0138, which is substantially different from 0. The LRT is rather significant (p-value = 0.03). The evolution of the policy preferences of respondents interested in politics, with respect to the liberalization policy, was less intense than the evolution of the preferences of respondents less interested in politics. Finally, the effect of satisfaction with democracy is tested in Model 12. This effect is insignificant. The fit statistics of the model (pseudo- R^2 < 0.005 and insignificant LRT) confirm this diagnosis .

When significant, all the effects of the covariates on the dependent variable turn around 0.10. Hence these effects, though substantial, may be said to be “small” (in Cohen’s terms).

5.2.3. Discussion of the results

The expectations related to the effect of the covariates on the dependent variable of the research were introduced in Section 4.1.4. With respect to **gender**, considering that the compulsory implementation of the European liberalization policy process may be brought to a “group-pressure” situation, the expectation was that women should adhere to the liberalization process more spontaneously than men, over time. This expectation was confirmed: Model 3 showed that Preferences change direction was positive for women and negative for men and this difference was significant. Related to the first one, another expectation was that Preferences change intensity should be higher among women than among men. This expectation was not confirmed by Model 8.

Figure 25: Prediction of Preferences change direction with gender (Model 3)

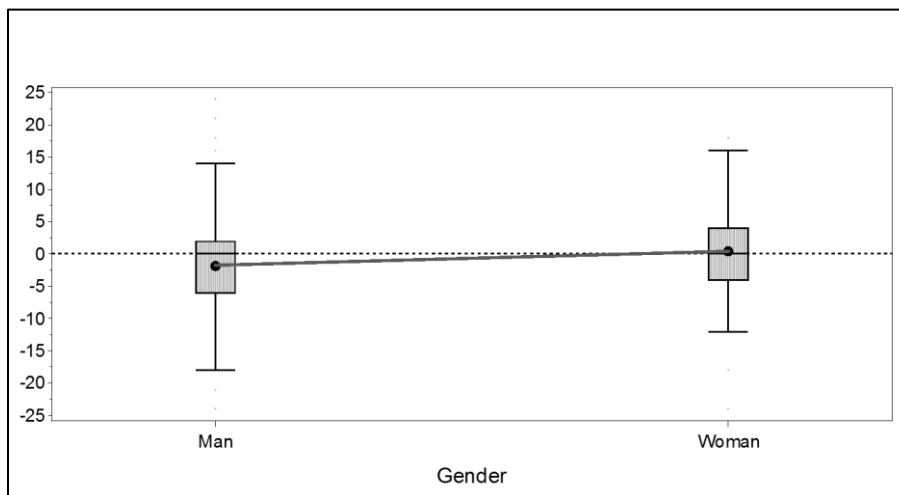
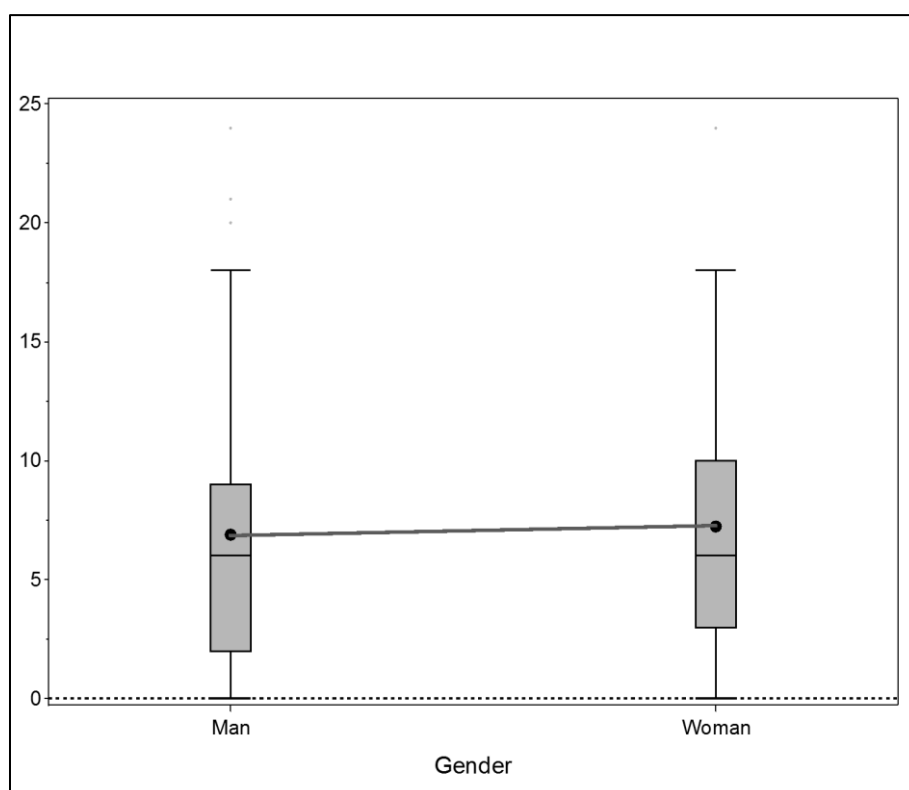


Figure 26: Prediction of Preferences change intensity with gender (Model 8)



With respect to **age**, younger people were expected to adhere more strongly to the liberalization policy process over time (policy Preferences change direction) than the older people were expected to. This expectation was not confirmed by Model 4. By contrast, Model 9 confirmed that the preferences of younger people with respect to the liberalization policy were more subject to change than the preferences of older people. This confirms the expectation that younger people, who are closer to the study time than older people, are more susceptible to attitudinal change and thus to preferences change.

Figure 27: Prediction of Preferences change direction with Age (Model 4)

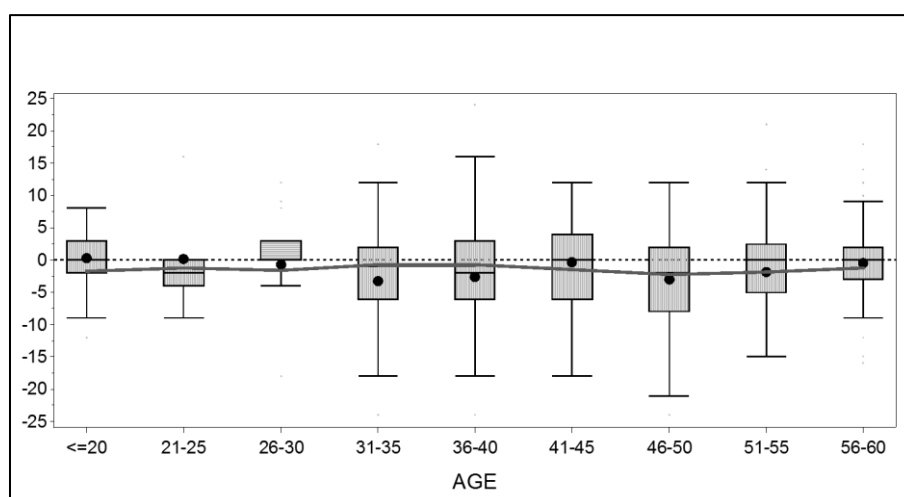
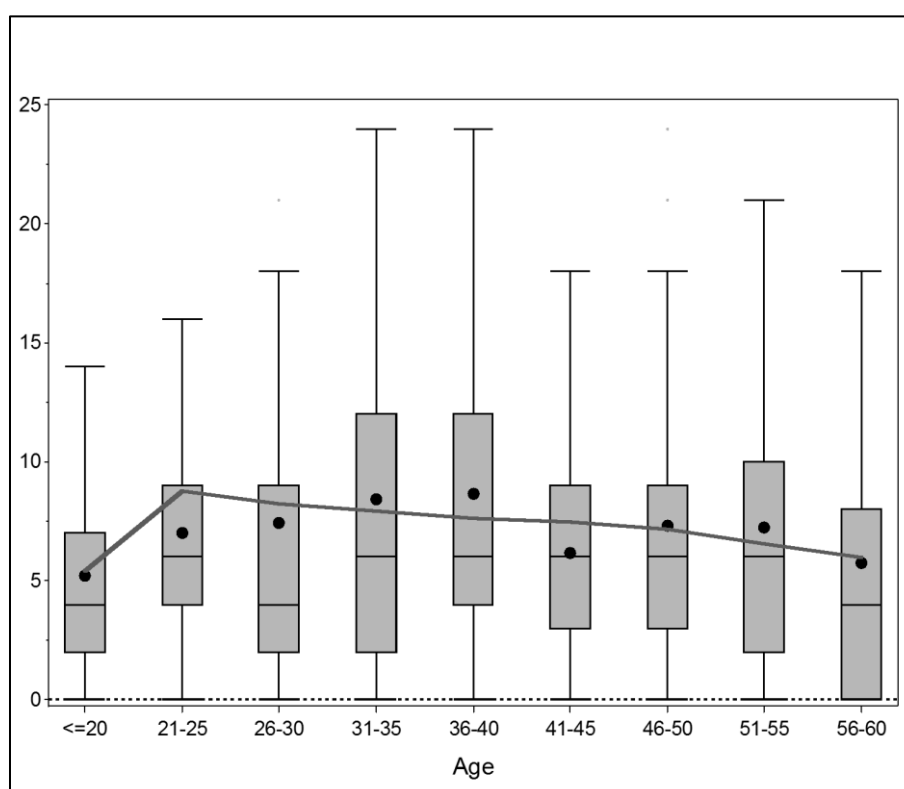


Figure 28: Prediction of Preferences change intensity with Age (Model 9)



As existing studies are inconclusive about the direct effect of **education level** on attitude change and conformity to compliance, there was no expectation about the effect of education level on Preferences change. The results of Model 5 show that education level is not significantly related to Preferences change direction. Model 10, however, shows that education level is significantly related to Preferences change intensity. There were two alternative lines of argument about the relation between education level and the susceptibility to attitudinal change. According to the first

line, more educated people are less susceptible to attitudinal change because their belief system is more “consistent” and “solid”. According to the second line, more educated people are more susceptible to attitudinal change because they are more “open-minded”. As the preferences of more education people with respect to the liberalization policy were more subject to change than the preferences of less educated people, the second line of argument seems more correct than the first one. It should be noted, however, that the coefficient resulting from the tobit model does not confirm the significance of the relation.

Figure 29: Prediction of Preferences change direction with education level (Model 5)

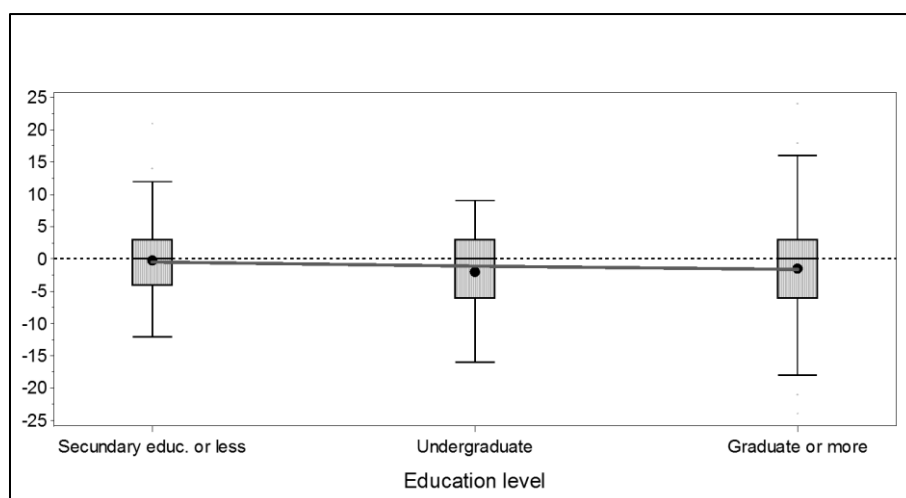
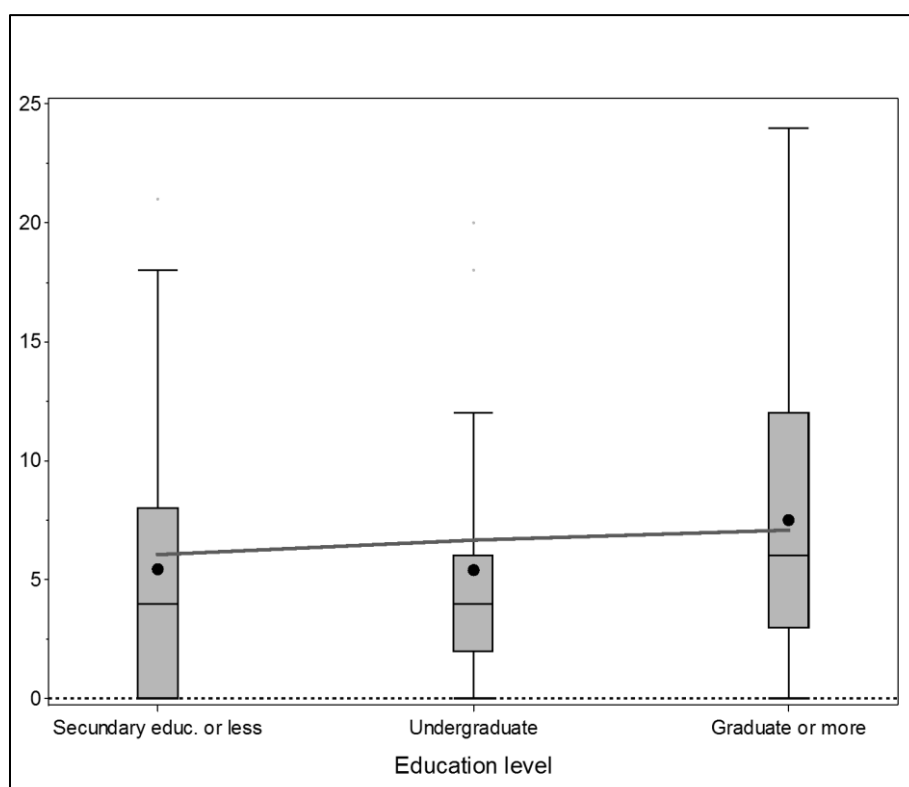


Figure 30: Prediction of Preferences change intensity with education level (Model 10)



The policy preferences of people with a higher **Political interest** were suspected to be more elaborated, more consistent, and thus more resistant over time. This expectation was confirmed by the results of Model 11: according to this model, the negative connection between political interests and Preferences change intensity is significant. It should be noted, however, that the coefficient in the tobit model does not confirm the significance of the relation. There was no expectation regarding the connection between Political interest and Preferences change direction. Accordingly, Model 6 does not show any significant relation between those two variables.

Figure 31: Prediction of Preferences change direction with political interest (Model 6)

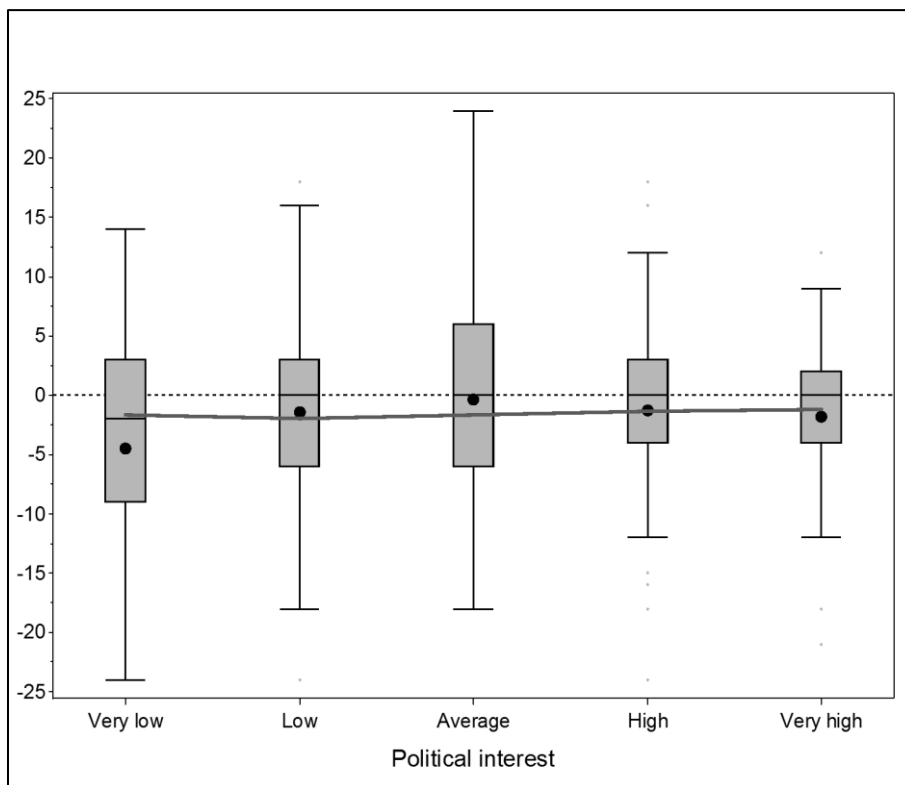
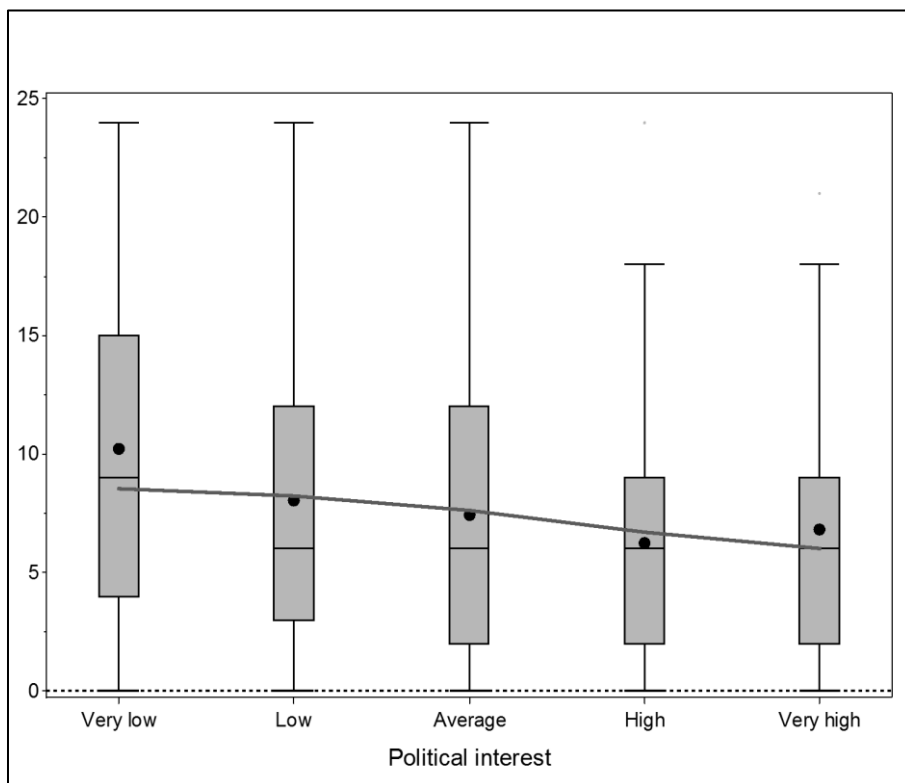


Figure 32: Prediction of Preferences change intensity with political interest (Model 11)



Finally, it was suspected that *satisfaction with democracy* could be positively related to Preferences change intensity due to the confidence, familiarity and openness that satisfied people have with respect to the political system and political experimentations. However, Model 12 did not confirm this expectation. There was no expectation regarding the connection between satisfaction with democracy and Preferences change direction. Accordingly, Model 7 does not show any significant relation between those two variables.

Figure 33: Prediction of Preferences change direction with satisfaction with democracy (Model 7)

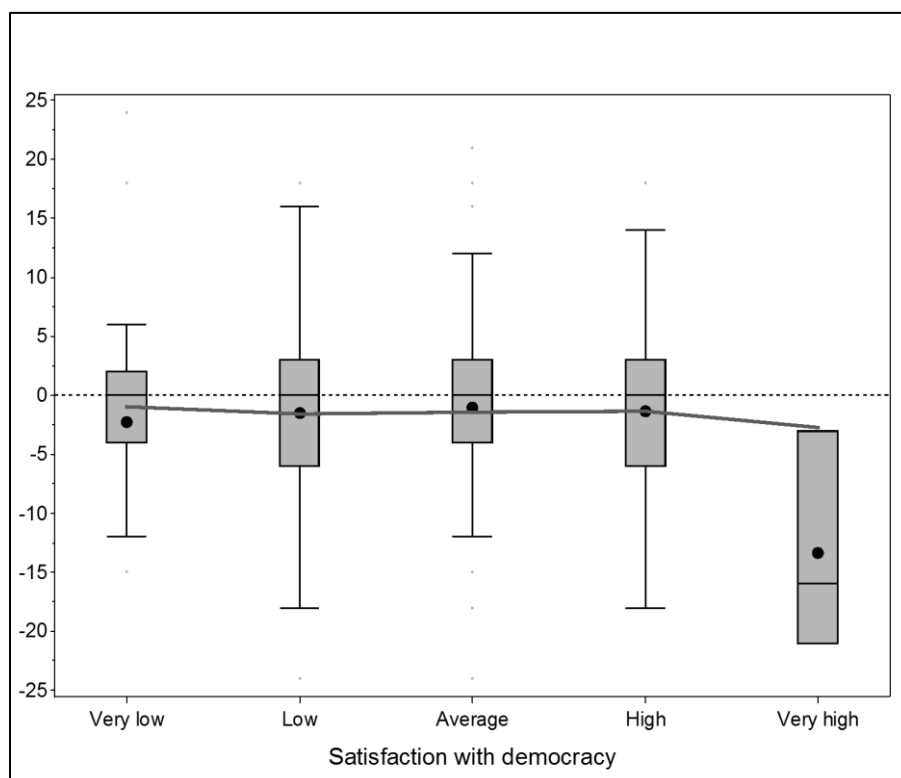
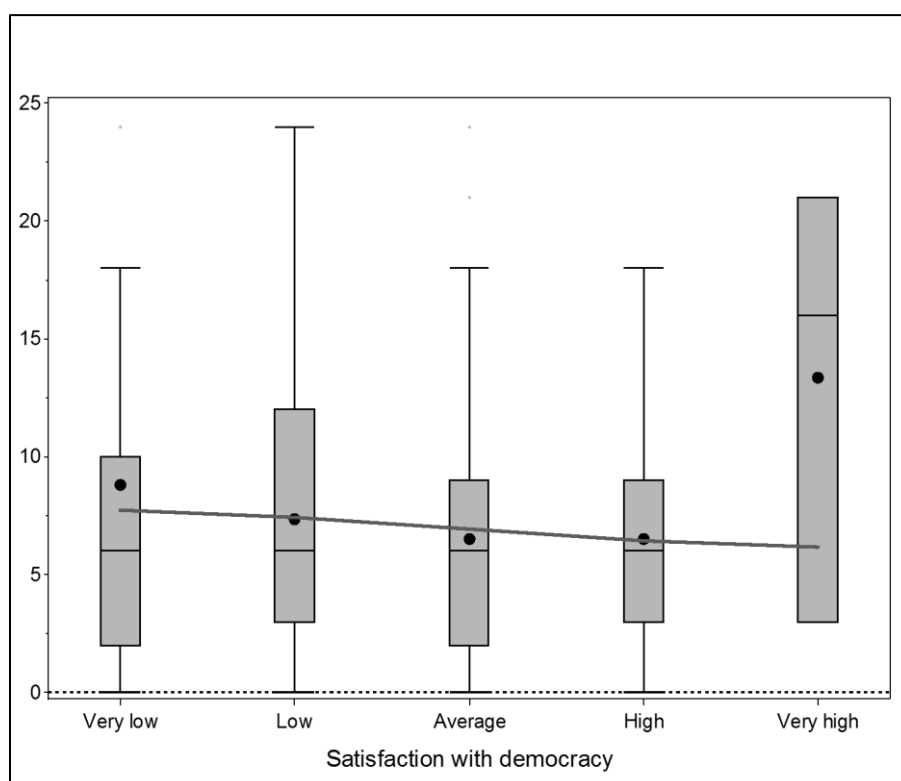


Figure 34: Prediction of Preferences change intensity with satisfaction with democracy (Model 12)



Finally, two **complete models** of covariates are presented in Table 37. Model 13 aims to predict Preferences change direction with all the covariates, whereas Model 14 does the same for Preferences change intensity. Three lessons may be retrieved from these two models. First, the LRT of both models is significant, which is not surprising, given that both include variables which, alone, were already able to significantly improve the prediction of the dependent variable.

Second, globally, the effect size of each covariate does not change a lot, in comparison with the simple models. However, the effect of gender on Preferences change direction becomes stronger (from 0.10 in the simple model to 0.13 in the complete model). Similarly, the effect of age increases, in such a way that it becomes significant. As the coefficients of the other independent variables do not change at all, it may be supposed that the effect of gender on Preferences change direction becomes clearer when observed in each age category. Similarly, the effect of age becomes clearer when observed in each category of gender. With respect to Preferences change intensity, the only notable change concerns the effect of education level, which, being slightly weaker, is not clear enough to be considered significant.

Third, those models give an estimation of the proportion of the variance of the dependent variable explained, at the individual level, by the whole set of covariates considered in this research. This proportion is equal to 3.74 % in the case of Preferences change direction and 4.82 % in the case of Preferences change intensity. While those proportions are not enormous, they are worth being accounted for in subsequent analyses.

Table 37: Multilevel regression analysis of covariates – Complete models

Dependent variable: PREFERENCES CHANGE DIRECTION and INTENSITY	Model 13 against Model 1	Model 14 against Model 2	
	PREFERENCES CHANGE DIRECTION	PREFERENCES CHANGE INTENSITY	
	b (std error)	b (std error)	Tobit b (std error)
Fixed effects:			
Gender	0.13*** (0.05)	-0.02 (0.05)	- 0.01 (0.08)
Age	0.10** (0.05)	-0.12** (0.05)	- 0.17* (0.08)
Education level	- 0.13 (0.13)	0.12 (0.08)	0.19 (0.13)
Political interest	0.03 (0.05)	- 0.10** (0.05)	- 0.11 (0.08)
Satisfaction with democracy	-0.03 (0.53)	- 0.04 (0.05)	-0.08 (0.08)
Intercept	0.09 (0.14)	-0.03 (0.08)	- 0.41** (0.15)
Random part:			
Sector-Organization level: σ^2_{u0}	0.15* (0.10)	0.04 (0.04)	0.11 (0.11)
Individual level (residuals): σ^2_e	0.90*** (0.06)	0.94*** (0.07)	1.33*** (0.08)
Fit statistics:			
Pseudo R ² at the individual level	0.0374 (+0.0374)	0.0482 (+ 0.0482)	
-2 full log likelihood	1105.0 (- 10.32)	1110.2 (- 15.12)	
P-value of the likelihood ratio test	0.07	0.01	
% studentized residuals outside [-2;+2]	6.01 %	4.01 %	
Number of cases	399	399	
Standard coefficients (b) are computed with a restricted maximum likelihood estimation method (standard errors are within brackets). * p < 0.10 ** p < 0.05, *** p < 0.01. The pseudo R ² is individual-level only and based on the Snijders & Bosker (1999) algorithm. Fit statistics are computed and compared with a full maximum likelihood estimation method and on models including a same number of observations (fit changes are within brackets).			

In the next sections, the effect of the explanatory variables of the research will be examined in new models. These models will include, by default, the five covariates of the research. For the sake of clarity, however, the coefficients associated with these covariates will not be displayed each time. To test whether the explanatory variables significantly improve our understanding of the dependent variable, the models will be compared with Model 13, in the case of Preferences change direction, and with Model 14, in the case of Preferences change intensity. These models are intercept-only models, i.e. without any explanatory variable. They are not empty, however, given that they include all the covariates of the research.

5.3. Interests

The preferences of policymakers with respect to the liberalization policy should change, over time, according to their interests. To examine this general hypothesis of the research, four operational hypotheses relating Preferences change to policymakers' interests were formulated in the analytical chapter of this dissertation.

In a *first section*, some descriptive statistics of the explanatory variables related to interests will be presented. In a *second section*, the added value of a subjective approach of mental constructs like interests is empirically demonstrated on the basis of the results of the survey. In a *third section*, several multilevel regression models testing the relations between the explanatory variables and the dependent variable will be examined. In a *fourth section*, the hypotheses of the research will be tested on the basis of the results of these models. In a *fifth section*, the results are discussed.

5.3.1. Descriptive analysis

This section provides some empirical information about the explanatory variables of the research related to interests. The Valence of interests is the subjective importance given by the policymaker to his interests. Vested interests measure the subjective hedonistic relevance of an attitudinal and behavioral object. In practice, vested interests measure whether the respondent believes that the consequences of the liberalization policy on his interest were positive, neutral or negative. As the valence of interests and vested interests in the liberalization policy are considered separately with respect to personal interests and organizational interests, there are four variables related to interests in this research.

Personal vested interests in the liberalization policy is a construct variable based on three indicators. The α_c of this variable is equal to 0.76 and each indicator contributes to the construct quite homogenously. The internal consistency of the variable may be said to be "acceptable" (Table 63). Descriptive statistics of the variable are provided in Table 38. The Frequency distribution of the variable appears in Figure 35.

Table 38: Personal vested interests in the liberalization policy – Descriptive statistics

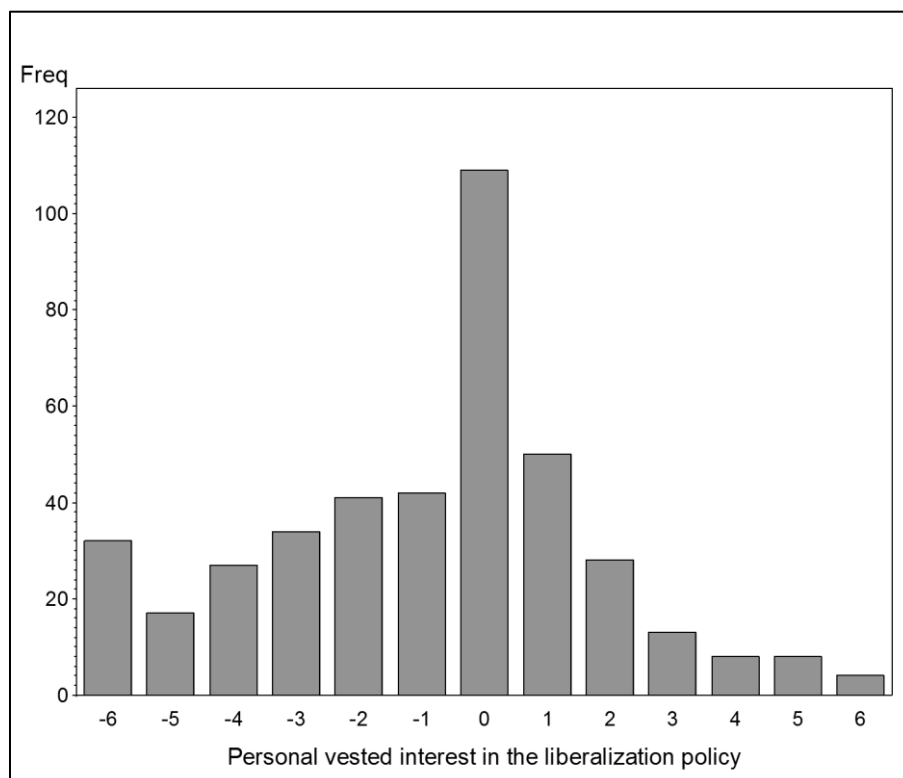
Variable	Mean	Std Dev	Possible minimum	Observed minimum	Possible maximum	Observed maximum
Personal vested interests in liberalization	-0.89	2.67	- 6	- 6	6	6

On average, the respondents reported that the liberalization policy had rather negative consequences on their personal interests. As shown by Table 38, the mean value of Personal vested

interests is negative and equal to -0.89 . As illustrated by Figure 35, the respondents who think that the liberalization policy has had neutral effects on their personal interests are the most numerous (about 25 % of the sample). However, as confirmed by the standard deviation (2.67), the opinion of the other respondents is quite disparate, with some respondents thinking that the effects of the policy were rather positive to very positive and even more respondents thinking that the effects of the policy were rather negative to very negative.

The frequency distribution of the variable is a little different in the railways and the electricity sectors. Indeed, in the railways, up to 52.76 % of the respondents reported that the liberalization policy had negative impacts on their personal interests. There are 25.63 % who think that the effect of the policy was neutral and 21.61% to think that its effects were positive. By contrast, in the electricity sector only, 41.12 % of the respondents reported negative impacts of the liberalization policy on their personal interests. 27.10 % think that its effects were neutral and 31.78 % reported positive effects. This result is mostly surprising when paralleled with the distribution of Preferences change direction in the subsystem. As described earlier in this dissertation, on average, the evolution of policymakers' preferences was slightly positive (0.39) in the railways – where the reported effects of the liberalization policy on personal interests are worse – and more substantially negative in the electricity sector (-3.16) – in which the reported effects are stronger.

Figure 35: Personal vested interests in the liberalization policy – Histogram of the frequency distribution



The ***Generalized valence of personal interests*** is a construct variable based on three indicators. Each indicator contributes to the construct quite homogeneously, with the importance

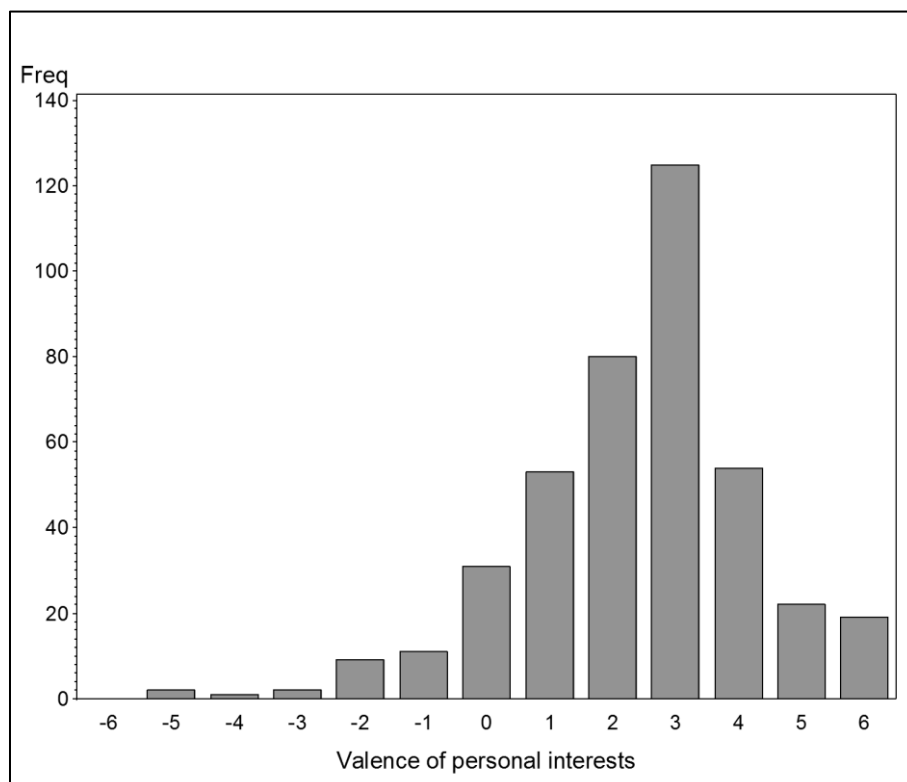
given to salary being a more stable indicator among respondents (std dev. = 0.69) than the importance given to the material working environment (std dev. = 0.81) or the professional opportunities (std dev. = 0.85). The α_c of this variable is equal to 0.69: the internal consistency of the variable is nearly “acceptable” (Table 64). Descriptive statistics about the variable are provided in Table 39. The Frequency distribution of the variable appears in Figure 36. It is quite similar in the railways and the electricity sector.

Table 39: Generalized valence of personal interests – Descriptive statistics

Variable	Mean	Std Dev	Possible minimum	Observed minimum	Possible maximum	Observed maximum
Generalized valence of personal interests	2.39	1.84	- 6	- 5	6	6

On average, the respondents reported that the generalized importance they give to their interests is rather high. The mean value of the variable equals 2.39. The centre of the normal-looking distribution of the variable is situated on the half of the positive side of the variable, at value 3. Few respondents reported a negative or null average value on the indicators of this variable (13.69 %). This point is important with respect to the assumption supporting the hypothesis I.P1 that policymakers should give a positive valence to their personal interests, even if very weak. This will be discussed in the introduction of section 5.3.3.

Figure 36: Generalized valence of personal interests – Histogram of the frequency distribution



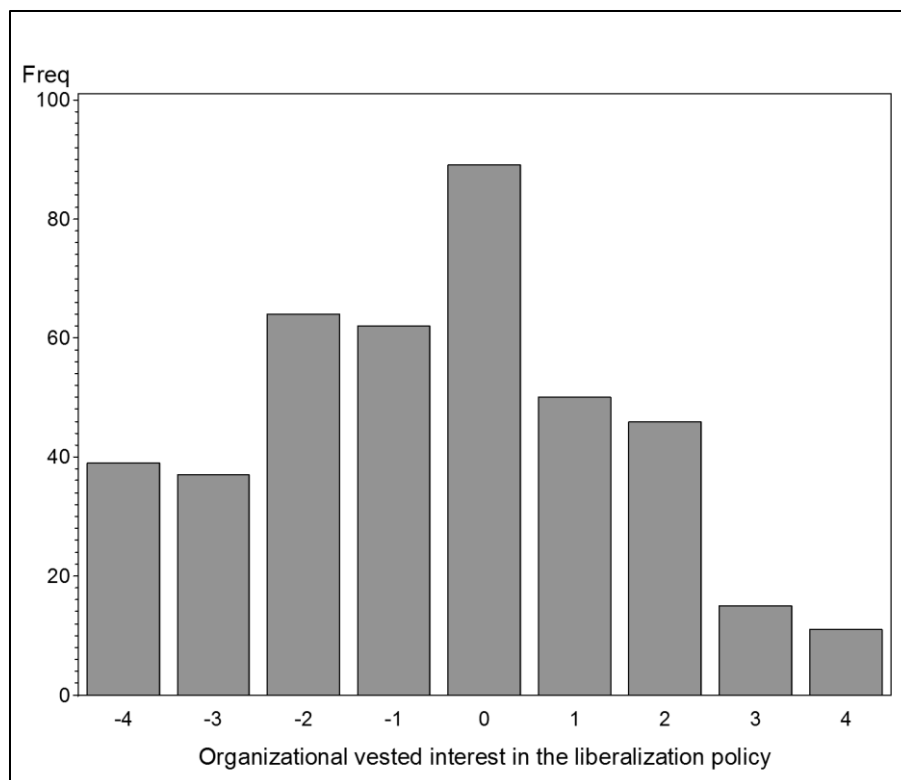
Organizational vested interests in the liberalization policy is a construct variable based on two indicators. The α_c of this variable is equal to 0.76: the internal consistency of the variable may be said to be “acceptable” (Table 65). Descriptive statistics about the variable are provided in Table 40. The Frequency distribution of the variable appears in Figure 37. It is comparable in the railways and the electricity sector.

Table 40: Organizational vested interests in the liberalization policy – Descriptive statistics

Variable	Mean	Std Dev	Possible minimum	Observed minimum	Possible maximum	Observed maximum
Organizational vested interests in liberalization	- 0.55	2.03	- 4	-4	4	4

Like the distribution of Personal vested interests, the distribution of Organizational vested interests is normal-looking and centred on 0, meaning that many respondents (21.55 %) reported a neutral effect of the liberalization policy on the interests of their organization. But more respondents are situated on the left of the centre than on the right. As a result, the mean value of the variable is negative: on average, the respondents reported that the liberalization policy had negative effects on their organizational interests. The distribution of Organizational vested interests is also more disparate than the distribution of Personal vested interests, with a weaker proportion of respondents at the centre of the distribution and a higher proportion on the extremes. Respondents are more divided on Organizational vested interests than on Personal vested interests. This result is not surprising when considering the liberalization policy is more concerned with collective issues related to the organization of network industries than with personal issues related to the material well-being of individual policymakers.

Figure 37: Organizational vested interests in the liberalization policy – Histogram of the frequency distribution



The **Generalized valence of organizational interests** is a construct variable based on two indicators. The α_c of this variable is equal to 0.77: the internal consistency of the variable may be said to be “acceptable” (Table 66). Descriptive statistics about the variable are provided in Table 41. The Frequency distribution of the variable appears in Figure 38. It is very similar in the railways and in the electricity sector.

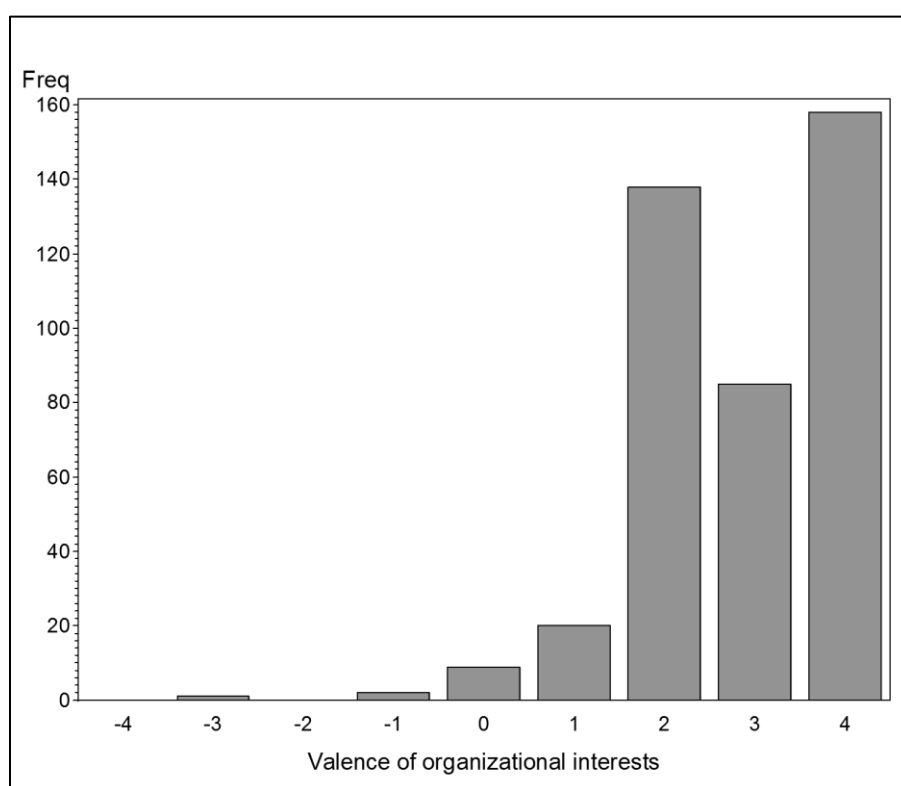
Table 41: Generalized valence of organizational interests – Descriptive statistics

Variable	Mean	Std Dev	Possible minimum	Observed minimum	Possible maximum	Observed maximum
Generalized valence of organizational interests	2.85	1.12	- 4	-3	4	4

The Generalized valence of organizational interests has the most surprising distribution. Respondents agree that the interests or their organizations are very important to them. The mean value of the variable is equal to 2.85, which is very high when considering that the possibilities range from -4 to 4. The consensus among respondents is also confirmed by quite a weak standard deviation (1.12). Very few respondents reported a negative or null average value on the indicators of this variable (2.91 %). The point is important with respect to the assumption supporting hypothesis I.O1, that policymakers should give a positive valence to their organizational interests, even if very weak. It will be discussed in the introduction to section 5.3.3.

While the overall image provided by the statistics distribution of the Generalized valence of organizational interests, it should be recognized that the research context may have caused this to be slightly overestimated by the respondents. The research context could be remembered here: the respondents were invited to participate in the survey on their professional email address. Many of them probably filled in the questionnaire during a working day. It was made, admittedly, very clear that the survey was confidential and anonymous. However, even in such conditions, some respondents could feel social pressure, even unconscious, to estimate very favourably the importance they give to their organization. To be clear, even anonymously, I may feel uncomfortable to answer, at work, on a professional email address, and on a professional computer, that my professional organization has absolutely no importance in my eyes.

Figure 38: Generalized valence of organizational interests – Histogram of the frequency distribution



Finally, the matrix of the correlation coefficients among the independent variables of the research related to interests is presented in Table 42. It shows that Personal vested interests and Organizational vested interests are significantly correlated, as well as the Valence of personal interests and the Valence of organizational interests (albeit to a lesser extent). The implications of these correlations on results are discussed in Section 5.3.5.

Table 42: Correlation matrix of the independent variables related to interests

Pearson correlation coefficient (p-value of the significance test)	Personal vested interests	Valence of personal interests	Organizational vested interests	Valence of organizational interests
Personal vested interests	1.00	-0.06 (0.24)	0.56 (< 0.01)	0.01 (0.97)
Valence of personal interests	-0.06 (0.24)	1.00	-0.07 (0.13)	0.26 (< 0.01)
Organizational vested interests	0.56 (< 0.01)	-0.07 (0.13)	1.00	-0.04 (0.42)
Valence of organizational interests	0.01 (0.97)	0.26 (< 0.01)	-0.04 (0.42)	1.00

5.3.2. Interests: subjective versus objective

There are two approaches to conceptualize and measure interests and trust (as well as many other constructs): a subjective and an objective approach. The subjective approach is more demanding because it supposes conducting a survey to get the self-reported beliefs of policymakers. This is the case in this research. This approach, however, has great added value. In the case of interest, for example, it allows avoiding two postulates: (1) the conceptual postulate that the research and the subject agree on what is part and what is not part of the interests of the subject; and (2) the measurement postulate that the analysis of the researcher and the analysis of the subject converge about the impacts of the behaviour on the interests of the subject. When those postulates are not met, the subsequent analyses may be misleading. For example, a researcher deduces from an objective situation that a policymaker has no vested interest in a policy. This policymaker, however, believes that he has vested interests and that the policy has positive impacts on his interests. If this policymaker has policy preferences or policy behaviours supportive of this policy, the researcher will conclude that it is not related to interests whereas it actually is. In this case, the role of interests in policy learning is underestimated. To take another example: a researcher deduces from an objective situation that a policymaker has interests vested in a policy. This policymaker, however, believes he has no vested interest. If this policymaker has policy preferences or policy behaviours supportive of this policy, the researcher will conclude that they may be explained with the role played by interests, whereas it actually may not. In this case, the role of interests in policy learning is overestimated.

In this research, the approach of policymakers' organizational interests is subjective: they are viewed and measured as the result of self-reported beliefs. Measurement details and descriptive statistics are provided above in sections 4.1.5.1 and 5.3.1. Those subjective organizational interests will be compared with objective organizational interests. Objective interests should be measured on the basis of deductions made by the researcher and related to the observable position of the actors. In this research, each policymaker is a member of one organization in the two subsystems considered in this research. Based on the documentary analysis conducted for describing the liberalization process in Chapter 3, it may be argued that each organization type was influenced by the

liberalization policy process in different ways: in terms of success, power or finances, some organization types may be considered “winners”, whereas other organization types may be considered “losers”. Those deductions will be compared with the average subjective organizational interests of policymakers in each organization.

The following deductions may be made with respect to the influence of liberalization on each organization type considered in this research. Generally speaking, Public administration lost much power as a consequence of the liberalization process. On the one hand, the liberalization process is a European policy. Previously, national public administrations were responsible for all tasks related to advice and implementation of (national) policies in the railways. Since Europe made policies in the railways, policy advice has been shared with other national public administrations as well as with powerful European actors such as the European Commission or the European Railway Agency. The influence of national administrations on the implementation of European policies is also limited and subject to obligations or recommendations from the European level or to coordination requirements with other national administrations. In addition, the liberalization process involved the creation of sector-specific regulators which are responsible for a number of regulative tasks (e.g. controlling the respect of security requirements). Previously, national administrations were responsible for all regulative tasks. In conclusion, it may be deduced that policymakers being members of Public administrations should consider that their organizational interests have been negatively influenced by the liberalization policy.

Regulators and Infrastructure managers obviously gained power and success in relation with the liberalization process because their creation flows from this policy. They are empowered with important activities related to regulation and infrastructure investments and management. Hence, it may be deduced that policymakers being Regulators and Infrastructure managers should consider that their organizational interests were positively influenced by the liberalization policy.

By contrast, incumbents lost very much. On the one hand, many of their competences were transferred to other actors such as the infrastructure managers (e.g. infrastructure management and investments) or the regulators (e.g. security). On the other hand, for providing transport services for train clients, Incumbents are now subject to the competition of New entrants, while they were previously in a situation of a monopoly. Hence, it may be deduced that policymakers being members of Incumbents should consider that their organizational interests were negatively influenced by the liberalization policy.

The liberalization process allowed New entrants to enter into the market of train transport services. Most often, New entrants emanate from existing private or public companies which were given the opportunity to provide new services and to make profits in the railways. Hence, it may be deduced that policymakers being member of New entrants should consider that their organizational interests were positively influenced by the liberalization policy.

Finally, the composition of Interest groups is more heterogenous. Some of them represent given organization types (e.g., Navetteurs.be), while others are forums where representatives from various organizations engage in dialogue and make compromises (e.g. the Sectorial Committee of

consultation on security in the railways). Hence, no uniform objective organizational interests may be deduced for this group of policymakers¹⁰².

Objective and subjective organizational interests are compared in Table 43. Objective interests result from the deductions which have just been made. Two types of information are provided about the subjective vested interests of respondents for each organization type within each subsystem. The sign of the mean of subjective vested interests is given in the first columns. In the next three columns, the percentage of respondents considering that their interests were negatively, positively or not influenced by the liberalization policy is given.

When the sign of the average objective interests is compared with the sign of the average subjective interests, it may be recognized that objective interests perform quite well. There is concordance between the predictions based on documentary analysis (objective interests) and the average opinion of policymakers collected with the research survey (subjective interests) in nearly all cases, except for the Infrastructure manager in the electricity sector: for this organization, the deductions predict that policymakers' preferences should have evolved positively whereas, on average, they actually evolved negatively.

Objective interests become far less satisfactory when looking at the percentage of correct predictions they make at the individual level. In Table 43, the percentage of correct predictions made appears in bold . There are groups of policymakers in which the prediction performs very well. For example, it is predicted that policymakers being Regulators should consider that their organizational interests were positively influenced by the liberalization policy. When looking at the subjective opinion of the respondents, this prediction is correct for 100% of them in the railways and 88.46% in the electricity sector. In many other cases, however, objective deductions are far less good at predicting the opinion of policymakers on the influence of the liberalization policy on their organizational interests, for example among policymakers of the infrastructure manager in the railways (47.92%).

Most of all, the total percentage of correct predictions should be considered. This is the percentage of correct predictions in each organization type pondered by the number of respondents belonging to each of them. In total, the deduction of organizational interests based on the position of policymakers (objective organizational interests) corresponds to the actual perception of respondents (subjective organizational interests) in only 48.40% of the cases. This means that analyses based on objective interests would be based, in this research, on wrong data in up to 51.60% of the cases.

These results clearly show the added value of viewing and measuring interests as a result of subjective beliefs, in comparison with an objective approach of interests. This applies to trust as well.

Table 43: Comparison of objective and subjective organizational interests

Organization type (frequency)	Objective vested interests	Subjective vested interests
-------------------------------	----------------------------	-----------------------------

¹⁰² Of course, the arguments presented here are more illustrative than definitive. Other deductions could be made on the basis of the documentary analysis. This suggests that the measurement of objective interests is actually considerably influenced by the interpretations of the researchers.

	Sign	Sign of the mean	% of respondents		
			-	0	+
IN THE RAILWAYS					
Public administration (13)	NEG	NEG	30.77%	53.85%	15.38%
Regulator (3)	POS	POS	0	0	100.00%
Infrastructure manager (48)	POS	POS	25.00%	27.08%	47.92%
Incumbent (75)	NEG	NEG	80.00%	9.33%	10.67%
New entrant (8)	POS	POS	25.00%	25.00%	50.00%
Interest group (52)					
IN THE ELECTRICITY SECTOR					
Public administration (16)	NEG	NEG	18.75%	62.50	18.75
Regulator (26)	POS	POS	7.69%	3.85%	88.46%
Infrastructure manager (129)	POS	NEG	60.47%	18.60%	20.93%
Incumbent (16)	NEG	NEG	68.75%	18.75%	12.50%
New entrant (9)	POS	POS	11.11%	0.00%	88.89%
Interest group (18)					

In bold: percentage of the correct predictions made by the objective approach

5.3.3. Multilevel regression analysis

In this section, multilevel regression models connecting the dependent variable of the research to the four explanatory variables related to interests are examined. The models connecting Preferences change direction to the variables related to personal interests appear in Table 44. The models connecting Preferences change intensity to the variables related to personal interests appear in Table 45. The models connecting Preferences change direction to the variables related to organizational interests appear in Table 46. Finally, the models connecting Preferences change intensity to the variables related to organizational interests appear in Table 47.

In Table 44 and Table 46, the relations between Personal vested interests and Organizational vested interests with Preferences change direction are modelled. Those models test hypotheses I.P1 and I.O1, according to which Preferences change direction should be positively related with Personal/Organizational vested interests in the liberalization policy. Hypotheses I.P1 and I.O1 are based on the following assumption flowing out of the analytical framework of the research: for policymakers to change their policy preferences over time according to their vested interests, they should give a minimum valence to their interests, even if very weak. If, on the contrary, their interests have absolutely no valence, neither negative nor positive, there is no reason for them to adapt their preferences with respect to the liberalization policy according to the impacts of this policy on their interests. If policymakers even give a negative valence to their material interests, the relation between Preferences change direction and vested interests should actually be inverted.

The assumption supporting I.P1 and I.O1, that policymakers give a positive valence to their interests, raises two problems. The first problem is the possible contradiction between this assumption and the opportunity for respondents to report that they give a negative or null value to the valence of their interests. In this case, the assumption is contradicted and the hypothesis should not be confirmed. The second problem related to this assumption is that the influence of the valence of interests on the relation between vested interests and Preferences change direction (i.e. the interaction between both independent variables) is itself the subject of hypotheses I.P2 and I.O2. Hence, hypotheses I.P1 and I.O1 assume a relation that is only tested in the hypotheses I.P2 and I.O2. Again, the problem is only effective for those respondents who report that the valence of their interests is negative or null.

In practice, it was expected that few respondents to the survey would report a null or even a negative valence of their personal interests. Indeed, the descriptive results confirmed that 86.31 % of the respondents reported a positive value for the valence of their personal interests. How to deal, however, with the remaining 13.69 % of respondents who reported that, on average, they have nothing to do with their personal interests (7.58%) or even reported a negative valence (6.11%) ? Two solutions were possible. On the one hand, it would have been possible to delete those respondents from the research sample. This would have allowed the sample to fit with the assumption supporting hypothesis I.P1. This solution, however, would have raised two problems. A first problem would have been theoretical: this would have prevented the researcher from analyzing whether or not this category of respondents has a particular response with respect to hypothesis I.P2. A second problem would have been methodological: a smaller sample would have reduced the power of the analyses. The second solution was to keep all respondents in the sample. This solution allows avoiding the two problems just mentioned. In this case, of course, 13.69 % of the respondents do not fit the assumption supporting hypothesis I.P1 (i.e. they reported a negative or null valence for their personal interests). But this solution was preferred to the first one because, if hypothesis I.P1 may be validated with these respondents included in the sample, it should be *a fortiori* validated with those respondents excluded from the sample¹⁰³.

¹⁰³ Only 2.91 % of respondents reported a negative or null valence for their organizational interests. The arguments just presented with respect to hypothesis I.P1 for the respondents who reported a negative or null valence for their personal interests, however, also hold with respect to hypothesis I.O1 for the respondents who reported a null or negative value for their organizational interests.

Table 44: Multilevel regression analysis of personal interests – Preferences change direction

Dependent variable: PREFERENCES CHANGE DIRECTION	Model 15 against Model 13	Model 16 against Model 13	Model 17 against Model 13	Model 18 against Model 17
	b (std error)	b (std error)	b (std error)	b (std error)
Fixed effects:				
Personal vested interests in liberalization	0.15*** (0.05)		0.15*** (0.05)	0.16*** (0.05)
Valence of personal interests		- 0.09* (0.05)	- 0.09* (0.05)	- 0.10** (0.05)
Interaction term				- 0.06 (0.05)
Intercept	0.06 (0.13)	0.08 (0.14)	0.06 (0.13)	0.05 (0.13)
Random part:				
Sector-Organization level: σ^2_{u0}	0.13* (0.09)	0.17* (0.11)	0.14* (0.09)	0.14* (0.09)
Individual level (residuals): σ^2_e	0.89*** (0.09)	0.90*** (0.07)	0.89*** (0.06)	0.89*** (0.06)
Fit statistics:				
Pseudo R ² at the individual level	0.0766 (+ 0.0392)	0.0407 (+ 0.033)	0.0808 (+ 0.0434)	0.0840 (+ 0.0032)
-2 full log likelihood	1096.1 (- 8.84)	1093.6 (- 11.36)	1085.0 (- 19.94)	1083.7 (- 1.36)
P-value of the likelihood ratio test	< 0.01	< 0.01	< 0.01	0.24
% studentized residuals outside [-2;+2]	6.52 %	4.56 %	6.07 %	6.07 %
Number of cases	395	395	395	395
Standard coefficients (b) are computed with a restricted maximum likelihood estimation method (standard errors are within brackets). * p < 0.10 ** p < 0.05, *** p < 0.01. The pseudo R ² is individual-level only and based on the Snijders & Bosker (1999) algorithm. Fit statistics are computed and compared with a full maximum likelihood estimation method and on models including a same number of observations (fit changes are within brackets). Control variables include socio-demographic characteristics (Gender, Age, and Education level) and political predispositions to policy learning (Political interest and Satisfaction with democracy).				

Table 45: Multilevel regression analysis of personal interests – Preferences change intensity

Dependent variable: PREFERENCES CHANGE INTENSITY	Model 19 against Model 14		Model 20 against Model 14		Model 21 against Model 14		Model 22 against Model 21	
	b (std error)	Tobit b (std error)	b (std error)	Tobit b (std error)	b (std error)	Tobit b (std error)	b (std error)	Tobit b (std error)
Fixed effects:								
Personal vested interests in liberalization	0.02 (0.05)	0.01 (0.08)			0.02 (0.05)	0.01 (0.08)	0.02 (0.05)	0.01 (0.09)
Valence of personal interests			0.07 (0.05)	0.1337 (0.08)	0.07 (0.05)	0.13 (0.08)	0.07 (0.05)	0.14 (0.08)
Interaction term							0.02 (0.05)	0.05 (0.08)
Intercept	- 0.03 (0.08)	- 0.41** (0.15)	- 0.01 (0.09)	- 0.38** (0.15)	- 0.02 (0.09)	- 0.38** (0.15)	-0.01 (0.09)	- 0.39** (0.15)
Random part:								
Sector-Organization level: σ^2_{u0}	0.04 (0.04)	0.11 (0.11)	0.04 (0.04)	0.11 (0.11)	0.05 (0.05)	0.11 (0.11)	0.05 (0.04)	0.11 (0.11)
Individual level (residuals): σ^2_e	0.94*** (0.07)	1.33*** (0.08)	0.93*** (0.07)	1.31*** (0.08)	0.93*** (0.07)	1.32*** (0.08)	0.93*** (0.07)	1.32*** (0.08)
Fit statistics:								
Pseudo R ² at the individual level	0.0475 (+ 0.0007)		0.0580 (+ 0.0098)		0.0571 (+ 0.0089)		0.0582 (+ 0.0011)	
-2 full log likelihood	1110.1 (- 0.09)		1094.8 (- 2.08)		1094.7 (- 2.18)		1094.4 (- 0.28)	
P-value of the likelihood ratio test	0.77		0.15		0.34		0.59	
% studentized residuals outside [-2;+2]	4.01 %		4.05%		4.05 %		4.30 %	
Number of cases	395		395		395		395	
Standard coefficients (b) are computed with a restricted maximum likelihood estimation method (standard errors are within brackets). * p < 0.10 ** p < 0.05, *** p < 0.01. The pseudo R ² is individual-level only and based on the Snijders & Bosker (1999) algorithm. Fit statistics are computed and compared with a full maximum likelihood estimation method and on models including a same number of observations (fit changes are within brackets). Control variables include socio-demographic characteristics (Gender, Age, and Education level) and political predispositions to policy learning (Political interest and Satisfaction with democracy).								

Table 46: Multilevel regression analysis of organizational interests – Preferences change direction

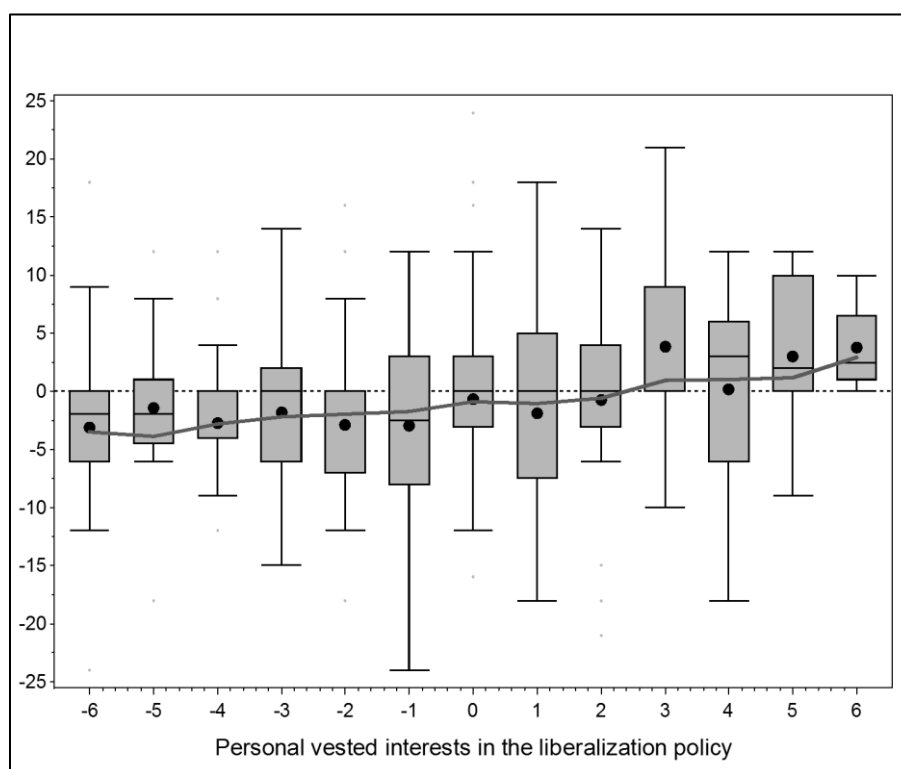
Dependent variable: PREFERENCES CHANGE DIRECTION	Model 23 against Model 13	Model 24 against Model 13	Model 25 against Model 13	Model 26 against Model 25
	b (std error)	b (std error)	b (std error)	b (std error)
Fixed effects:				
Organizational vested interests in liberal.	0.23*** (0.05)		0.23*** (0.05)	0.22*** (0.05)
Valence of organizational interests		- 0.01 (0.05)	0.01 (0.05)	- 0.01 (0.05)
Interaction term				0.05 (0.05)
Intercept	0.03 (0.11)	0.09 (0.14)	0.03 (0.11)	0.03 (0.10)
Random part:				
Sector-Organization level: σ^2_{u0}	0.08 (0.06)	0.16* (0.11)	0.08 (0.06)	0.07 (0.06)
Individual level (residuals): σ^2_e	0.88*** (0.06)	0.91*** (0.06)	0.88*** (0.06)	0.88*** (0.06)
Fit statistics:				
Pseudo R ² at the individual level	0.1256 (+ 0.0882)	0.0372 (- 0.0002)	0.1259 (+ 0.0885)	0.1326 (+ 0.0067)
-2 full log likelihood	1086.5 (- 18.51)	1105.0 (- 0.01)	1086.5 (- 18.51)	1085.1 (-1.31)
P-value of the likelihood ratio test	< 0.01	0.96	< 0.01	0.25
% studentized residuals outside [-2;+2]	5.51 %	6.01 %	5.51 %	5.51 %
Number of cases	395	395	395	395
Standard coefficients (b) are computed with a restricted maximum likelihood estimation method (standard errors are within brackets). * p < 0.10 ** p < 0.05, *** p < 0.01. The pseudo R ² is individual-level only and based on the Snijders & Bosker (1999) algorithm. Fit statistics are computed and compared with a full maximum likelihood estimation method and on models including a same number of observations (fit changes are within brackets). Control variables include socio-demographic characteristics (Gender, Age, and Education level) and political predispositions to policy learning (Political interest and Satisfaction with democracy).				

Table 47: Multilevel regression analysis of organizational interests – Preferences change intensity

Dependent variable: PREFERENCES CHANGE INTENSITY	Model 27 against Model 14		Model 28 against Model 14		Model 29 against Model 14		Model 30 against Model 29	
	b (std error)	Tobit b (std error)	b (std error)	Tobit b (std error)	b (std error)	Tobit b (std error)	b (std error)	Tobit b (std error)
Fixed effects:								
Organizational vested interests in liberal.	- 0.01 (0.05)	- 0.04 (0.09)			- 0.01 (0.05)	- 0.04 (0.09)	0.01 (0.05)	0.02 (0.09)
Valence of organizational interests			0.11** (0.05)	0.19** (0.08)	0.11** (0.05)	0.19** (0.08)	0.11** (0.05)	0.20** (0.08)
Interaction term							-0.09* (0.05)	- 0.20** (0.09)
Intercept	- 0.03 (0.08)	- 0.41** (0.15)	- 0.02 (0.08)	- 0.40** (0.14)	- 0.02 (0.08)	- 0.39** (0.13)	-0.03 (0.08)	- 0.42** (0.14)
Random part:								
Sector-Organization level: σ^2_{u0}	0.03 (0.04)	0.09 (0.10)	0.03 (0.03)	0.07 (0.09)	0.03 (0.03)	0.06 (0.08)	0.03 (0.04)	0.10 (0.10)
Individual level (residuals): σ^2_e	0.94*** (0.07)	1.33*** (0.08)	0.93*** (0.07)	1.33*** (0.08)	0.94*** (0.07)	1.33*** (0.08)	0.93*** (0.07)	1.32*** (0.08)
Fit statistics:								
Pseudo R ² at the individual level	0.0508 (+ 0.0026)		0.0619 (+ 0.0137)		0.0639 (+ 0.0157)		0.0709 (0.0070)	
-2 full log likelihood	1110.0 (- 0.21)		1105.5 (- 4.75)		1105.3 (- 4.98)		1102.1 (- 3.12)	
P-value of the likelihood ratio test	0.64		0.03		0.08		0.08	
% studentized residuals outside [-2;+2]	4.01 %		4.01 %		4.26 %		4.01 %	
Number of cases	395		395		395		395	
Standard coefficients (b) are computed with a restricted maximum likelihood estimation method (standard errors are within brackets). * p < 0.10 ** p < 0.05, *** p < 0.01. The pseudo R ² is individual-level only and based on the Snijders & Bosker (1999) algorithm. Fit statistics are computed and compared with a full maximum likelihood estimation method and on models including a same number of observations (fit changes are within brackets). Control variables include socio-demographic characteristics (Gender, Age, and Education level) and political predispositions to policy learning (Political interest and Satisfaction with democracy).								

The effect of the explanatory variables related to personal interests on Preferences change direction is considered in Table 44. The effect of Personal vested interests in the liberalization policy on Preferences change direction is tested in Model 15. This model shows that the positive coefficient (0.15) of the explanatory variable is very significant ($p\text{-value} < 0.01$). The individual-level pseudo- R^2 of the model is equal to 0.08, which means that it provides a substantial reduction of 4% of the individual-level variance of the dependent variable with respect to the intercept-only model¹⁰⁴. The LRT is very significant ($p\text{-value} < 0.01$). As a result, it may be concluded that policymakers' preferences with respect to the liberalization policy evolved significantly more among the respondents who reported more positive Personal vested interests in that policy than among the respondents who reported more negative Personal vested interests. It should be noted, however, that the percentage of studentized residuals outside $[-2; +2]$ is a little unsatisfactory (6.52 %), though not overly problematic.

Figure 39: Prediction of Preferences change direction with Personal vested interests in the liberalization policy (Model 15)

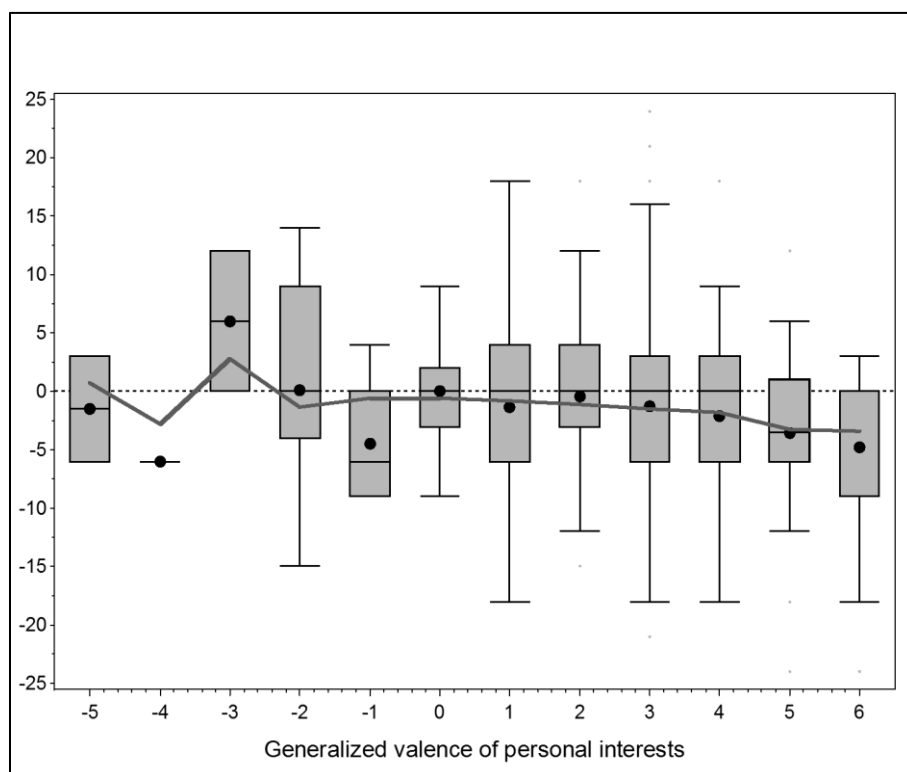


The effect of the Generalized valence of personal interests on Preferences change direction is tested in Model 16. This model shows that the negative coefficient (-0.09) of the explanatory variable is significant ($p\text{-value} < 0.10$). The individual-level pseudo- R^2 of the model is equal to 0.04, which means that it provides a reduction of 3 % of the individual-level variance of the dependent

¹⁰⁴ To be sure, in this and the next sections on explanatory variables, the intercept-only model must be understood as the model which include all (and only) the five covariates of the research (i.e. Model 13 in the case of Preferences change direction and Model 14 in the case of Preferences change intensity).

variable with respect to the intercept-only model. The LRT is very significant ($p\text{-value} < 0.01$). As a result, it may be concluded that policymaker's preferences with respect to the liberalization policy evolved significantly more negatively among the respondents who reported a higher Valence of personal interests than among the respondents who reported a lower Valence.

Figure 40: Prediction of Preferences change direction with the Generalized valence of personal interests (Model 16)



The combined effect of Personal vested interests and the Generalized valence of personal interests on Preferences change direction is tested in Model 17. In this model, the size of the effect of the explanatory variables does not change at all, nor its significance. The LRT remains very significant ($p\text{-value} < 0.01$). A more surprising result relates to the individual-level pseudo- R^2 , which does not equal the sum of the pseudo- R^2 of the two simpler models, not even approximately. The percentage of studentized residuals outside $[-2; +2]$ is higher (6.07 %) than in Model 15.

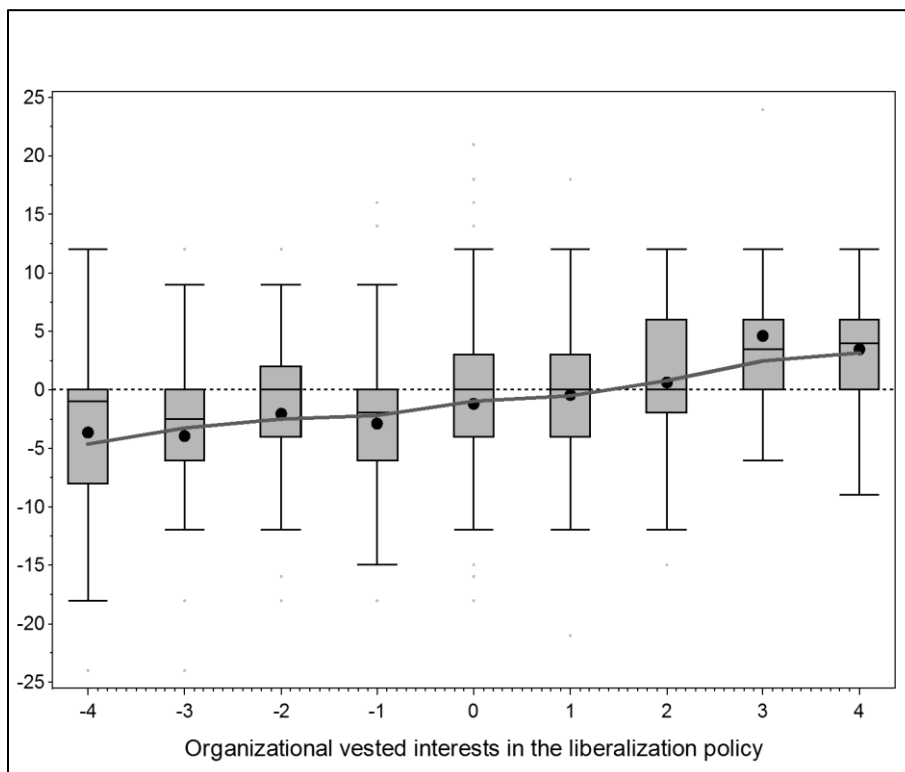
The effect of the interaction term between Personal vested interests and the Generalized valence of personal interests on Preferences change direction is tested in Model 18, of which the fit statistics are compared with Model 17. The model shows that the effect of this interaction term is insignificant. The fit statistics of the model (quasi-null pseudo- R^2 and insignificant LRT) confirm this diagnosis. As a result, it may be concluded that the relation between Personal vested interests and Preferences change direction is not significantly stronger when the Generalized valence of Personal interests is higher. Conversely, the relation between the Generalized valence of personal interests

and Preferences change direction is not significantly stronger when Personal vested interests are higher.

The effect of the explanatory variables related to personal interests on Preferences change intensity is considered in Table 45, with Model 19, Model 20, Model 21, and Model 22. These models do not include any significant coefficient. This result is confirmed by the fit statistics of all these models. All the individual-level pseudo- R^2 are nearly equal to 0, while none of the LRT is significant; these models do not improve our understanding of the dependent variable. As a global result, it may be concluded that the explanatory variables related to personal interests are not significantly connected to Preferences change intensity.

The effect of the explanatory variables related to organizational interests on Preferences change direction is considered in Table 46. The effect of Organizational vested interests in the liberalization policy on Preferences change direction is tested in Model 23. This model shows that the positive coefficient (0.23) of the explanatory variable is very significant (p -value < 0.01). The individual-level pseudo- R^2 of the model is equal to 0.13, which means that it provides a substantial reduction of 9% of the individual-level variance of the dependent variable with respect to the intercept-only model. The LRT is very significant (p -value < 0.01). As a result, it may be concluded that policymakers' preferences with respect to the liberalization policy evolved significantly more among the respondents who reported more positive Organizational vested interests in that policy than among the respondents who reported more negative Organizational vested interests.

Figure 41: Prediction of Preferences change direction with Organizational vested interests in the liberalization policy (Model 23)



The effect of the Generalized valence of organizational interests on Preferences change direction is tested in Model 24. The model shows that the effect of this explanatory variable is insignificant. The fit statistics of the model (quasi-null pseudo- R^2 and insignificant LRT) confirm this diagnosis. In addition, the percentage of studentized residuals outside $[-2; +2]$ is not as good in Model 24 (6.01 %) as in Model 23 (5.51 %). As a result, it may be concluded that the evolution of policymakers' preferences with respect to the liberalization policy was not significantly different among the respondents who reported a higher Valence of organizational interests than among the respondents who reported a lower Valence.

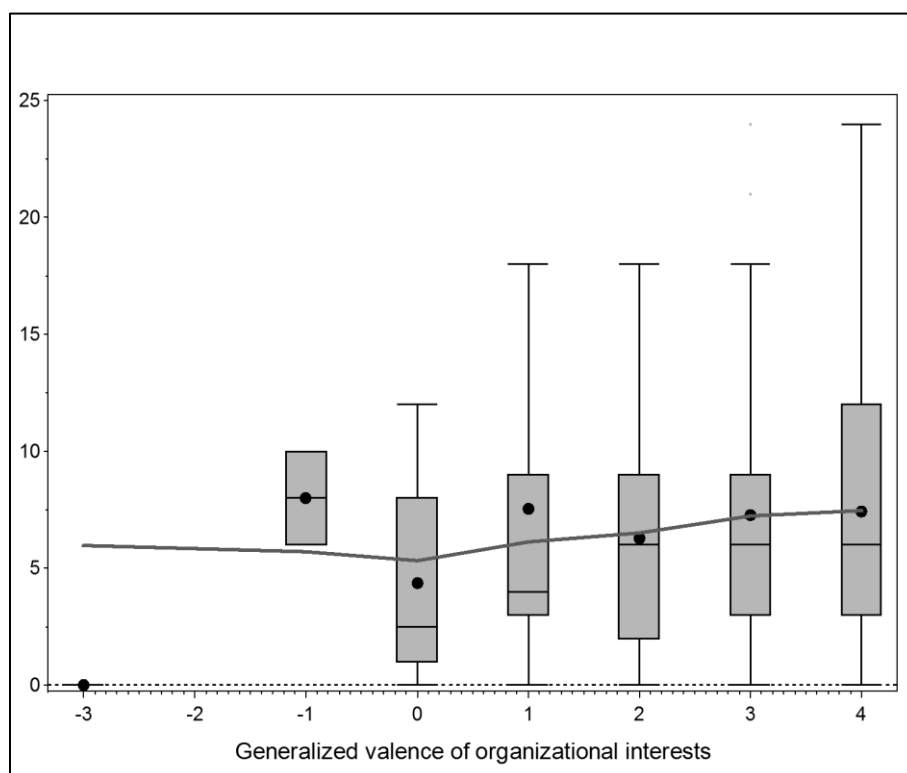
The combined effect of Organizational vested interests and the Generalized valence of organizational interests on Preferences change direction is tested in Model 25. In this model, the size of the effect of the explanatory variables does not change very much, nor its significance. The significance of the LRT (p -value < 0.01) should be attributed to the effect of Organizational vested interests. Similarly, the value of the individual-level pseudo- R^2 is very similar to its value in Model 23, only considering Organizational vested interests.

The effect of the interaction term between Organizational vested interests and the Generalized valence of organizational interests on Preferences change direction is tested in Model 26, of which the fit statistics are compared with Model 25. The model shows that the effect of this interaction term is insignificant. The fit statistics of the model (quasi-null pseudo- R^2 and insignificant LRT) confirm this diagnosis. As a result, it may be concluded that the relation between Organizational vested interests and Preferences change direction is not significantly stronger when the Generalized valence of Organizational interests is higher.

The effect of the explanatory variables related to organizational interests on Preferences change intensity is considered in Table 47. The effect of the Organizational vested interests in the liberalization policy on Preferences change intensity is tested in Model 27. The model shows that the effect of this explanatory variable is insignificant. The fit statistics of the model (quasi-null pseudo- R^2 and insignificant LRT) confirm this diagnosis. As a result, it may be concluded that the intensity of preferences change was not significantly different among the respondents who reported more positive Organizational vested interests in the liberalization policy than among the respondents who reported more negative Personal vested interests.

The effect of the Generalized valence of organizational interests on Preferences change intensity is tested in Model 28. This model shows that the positive coefficient (0.11) of the explanatory variable is significant (p -value < 0.05). However, the individual-level pseudo- R^2 of the model is equal to 0.06, which means that it provides a truly modest reduction of 1% of the individual-level variance of the dependent variable with respect to the intercept-only model. The LRT is significant, however (p -value = 0.03). As a result, it may be concluded that the intensity of preferences change was significantly higher among the respondents who reported a higher Generalized valence of organizational interests than among the respondents who reported a lower valence.

Figure 42: Prediction of Preferences change intensity with the Generalized valence of organizational interests (Model 28)



The combined effect of Organizational vested interests and the Generalized valence of organizational interests on Preferences change intensity is tested in Model 29. In this model, the size of the effect of the explanatory variables does not change at all, nor its significance. The LRT remains (just) significant ($p\text{-value} = 0.08$). The individual-level pseudo- R^2 is approximately equal to the sum of the pseudo- R^2 of the two simpler models. Hence, most of the estimated reduction of variance of the dependent variable provided by the explanatory variables should be attributed to the effect of the Generalized valence of organizational interests.

Finally, the effect of the interaction term between Organizational vested interests and the Generalized valence of organizational interests on Preferences change intensity is tested in Model 30, whose fit statistics are compared with Model 29. The model shows that the negative coefficient (-0.09) of the term is just significant ($p\text{-value} < 0.10$), and even substantially significant when considering the coefficient resulting from the tobit model. The individual-level pseudo- R^2 of the model, however, is equal to 0.0709, which means that it provides a very weak reduction of 0.07 % of the individual-level variance of the dependent variable, with respect to Model 29. The LRT is just significant ($p\text{-value} = 0.08$). Given these fit statistics, any conclusion based on the significance of this interaction term should be very prudent.

When significant, all the effects of the variables related to interests on the dependent variable turn around 0.10. Hence these **effects**, though substantial, may be said to be “small” (in Cohen’s terms). The only exception is coefficient (0.23), measuring the effect of Organizational vested interests in the liberalization policy on Preferences change direction. As this coefficient closer

to 0.31 than to 0.10, it may be said to be “medium”. Given the context, the sample size and the type of phenomena investigated in this research, this effect is relatively important.

5.3.4. Test of the hypotheses and other results

Four operational hypotheses were formulated in the theoretical part of this dissertation with respect to the connection between Preferences change direction and the variables related to interests. According to ***hypothesis I.P1***, Preferences change direction should be positively related with Personal vested interests in the liberalization policy. This hypothesis was clearly confirmed by Model 15. As illustrated by Figure 39, the relation between the explanatory variable and the dependent variable is quite homogenous. On average, the model predicts that the policy preferences of the policymakers who reported a value equal or superior to 3 for Personal vested interests evolved positively with respect to the liberalization policy, over time¹⁰⁵.

According to ***hypothesis I.P2***, the relation between Preferences change direction and Personal vested interests should be stronger when policymakers give more importance (valence) to their personal interests. This hypothesis was not confirmed by Model 18, considering the interaction term between Personal vested interests and the Generalized valence of personal interests.

According to ***hypothesis I.O1***, Preferences change direction should be positively related with Organizational vested interests in the liberalization policy. In other words, policymakers’ preferences with respect to the liberalization policy should change according to their organization’s vested interests in that policy, over time. This hypothesis was even more clearly confirmed by Model 23 than was hypothesis I1 about Personal vested interests. The effect size of this explanatory variable is “medium”. As illustrated by Figure 41, the relation between the explanatory variable and the dependent variable is very homogenous. On average, the model predicts that the policy preferences of the policymakers who reported a value equal or superior to 2 for Organizational vested interests evolved positively with respect to the liberalization policy, over time¹⁰⁶.

According to ***hypothesis I.O2***, the relation between Preferences change direction and Organizational vested interests should be stronger when policymakers given more importance (valence) to their organizational interests. This hypothesis was not confirmed by Model 26,

¹⁰⁵ As detailed in the introduction of section 5.3.3, the research sample includes 13.69% of respondents who reported a negative or a null value for the valence of their personal interests, in contradiction with the assumption supporting hypothesis I.P1. Given this, all analyses were repeated with those respondents excluded from the research sample. As expected, the results did not change very much and in a sense gave a stronger validation to the hypothesis.

¹⁰⁶ The research sample only includes 2.91% of respondents who reported a negative or a null value for the valence of their organizational interests. All analyses were repeated with those respondents excluded from the research sample. As expected, the results did not change very much and in a sense gave a stronger validation to the hypotheses related to organizational interests.

considering the interaction term between Organizational vested interests and the Generalized valence of organizational interests.

Overall, policymakers' preferences evolved in close relationship with their interests, personal or organizational, vested in the liberalization policy. The relation between these factors and Preferences change direction is very significant and of small to medium size. On the other hand, hypotheses I.P2 and I.O2 did not prove to be relevant: the relation between Preferences change direction and the perception of vested interests in the liberalization policy does not depend on the valence of interests.

Additional results were provided by the models related to interests. First, according to Model 15 and Model 17, when the valence of their personal interests is higher, the adhesion of policymakers to the liberalization policy decreases over time (**additional result 1**). As illustrated by Figure 40, the preferences of the policymakers who reported a value equal or superior to 4 for the valence of their personal interests evolved very negatively with respect to the liberalization policy¹⁰⁷. It could be suspected that this relation is due to a correlation between the Valence of personal interests and Personal vested interests, policymakers perceiving vested interests in the liberalization being those who attach a lot of importance to their interests, for example. But this is not the case: the Person correlation coefficient between the two variables is equal to - 0.06 (p-value = 0.24). Hence, the two constructs measure very different things, both of them influencing Preferences change direction. By contrast, the valence of organizational interests is not related to Preferences change direction.

Second, according to Model 16 and Model 17, when the valence of organizational interests is higher, the intensity of Preferences change over time is higher (**additional result 2**). Figure 42 illustrates this prediction. Figure 38 also shows that this tendency is related to the interval [2;4] of the explanatory variable, where most observations (92.25 %) are situated.

¹⁰⁷ The behavior of the regression line for the negative values of the Valence of personal interests, in Figure 40, is more disparate. This is related to the particular distribution of the explanatory variable. As noted in the descriptive analysis, only 6.11 % of the respondents of the sample reported negative values. As a result, the disparate behavior of the regression line for these values of the explanatory variable is not representative of the sample. Attention should be focused on the null and positive values of the explanatory variable, where the decreasing tendency is very clear.

Figure 43: Results related to personal interests

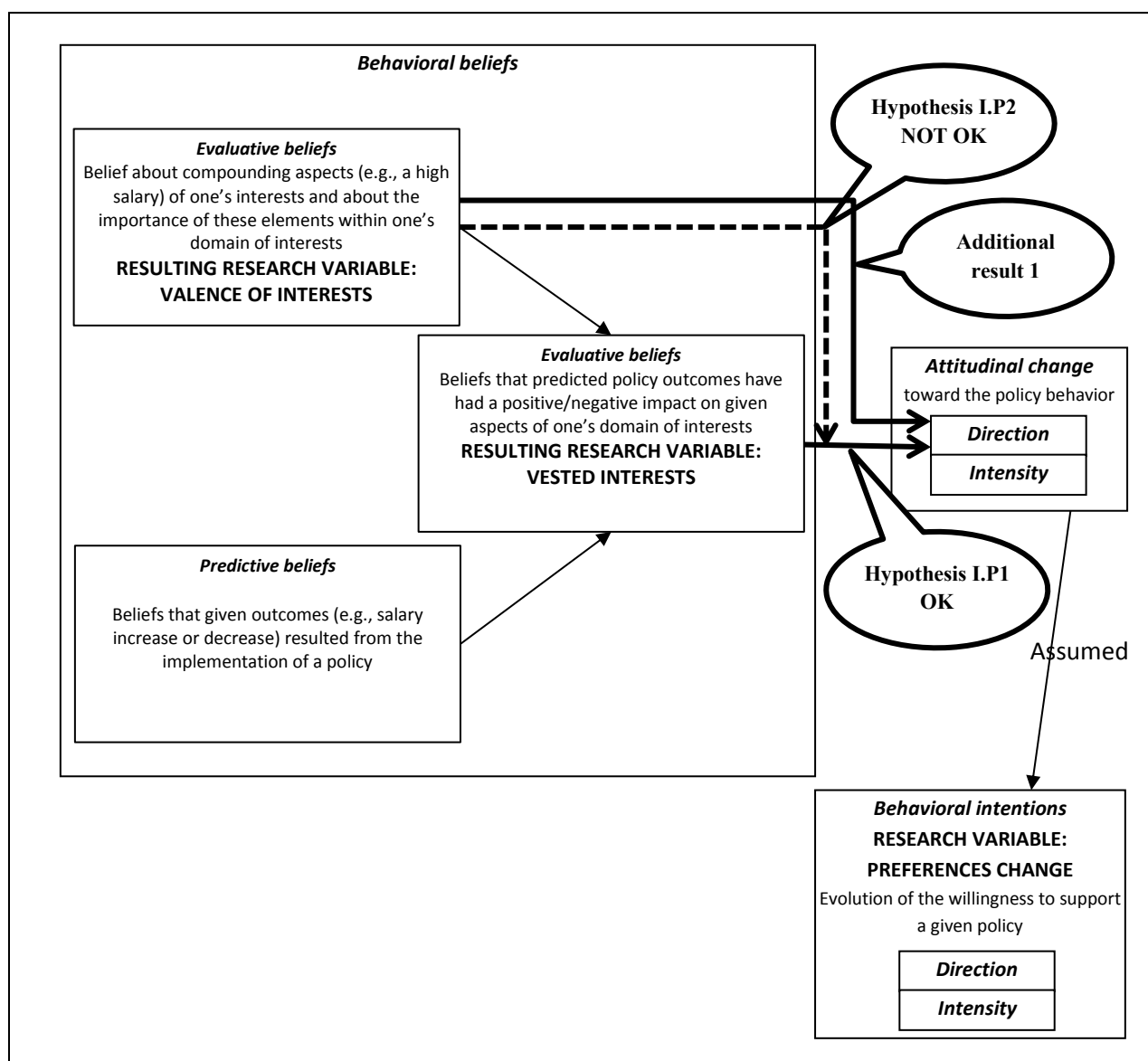
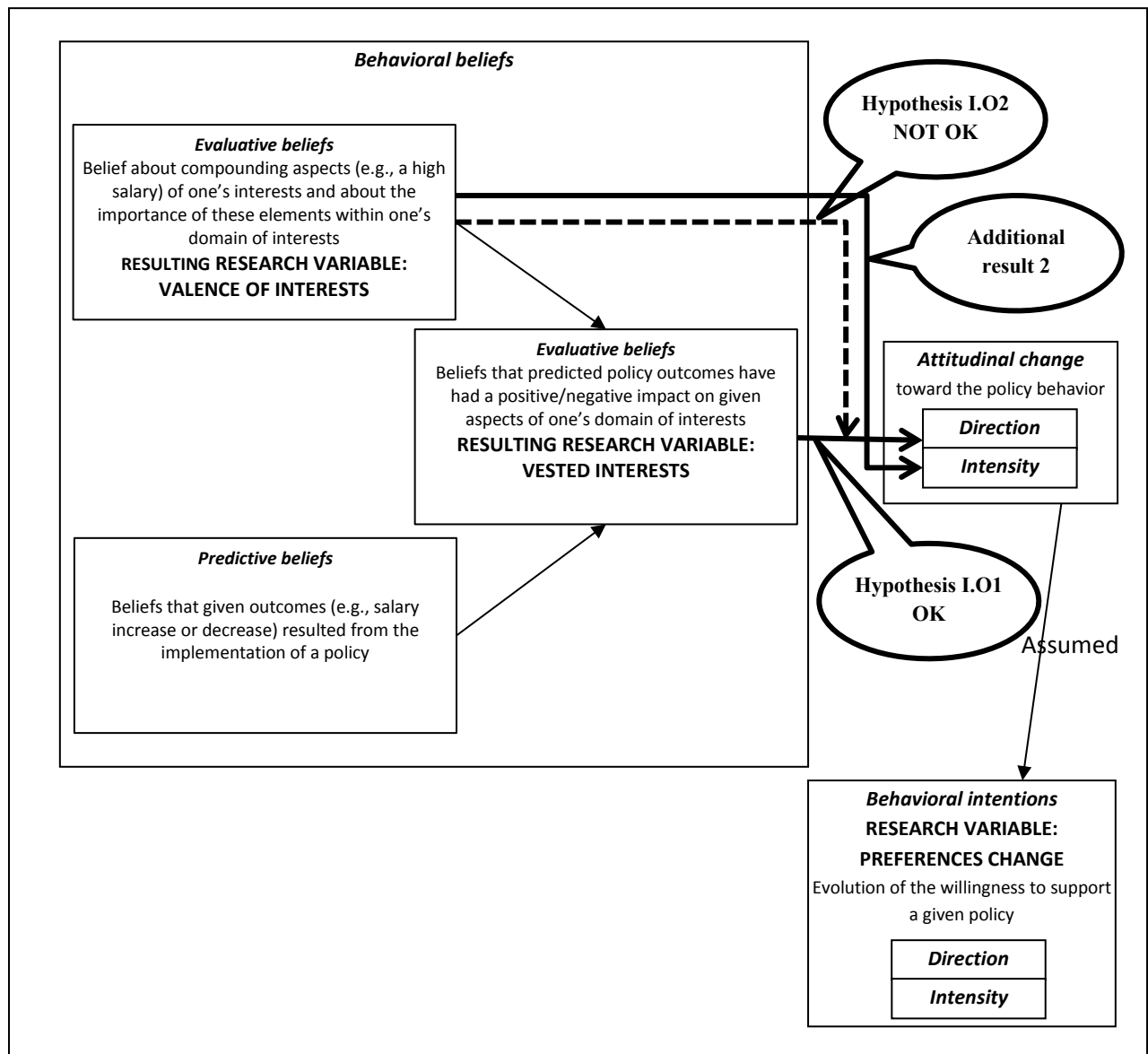


Figure 44: Results related to organizational interests



Overall, Vested interests had the expected effect on Preferences change direction: policymakers' preferences with respect to the liberalization changed over time according to their perception of the impact of this policy on their interests. This relation is significant and strong for personal interests as well as for organizational interests. The Valence of interests, by contrast, did not have the expected interaction effect on the relation between Vested interests and Preferences change direction: the strength of the relations between Vested interests and Preferences change does not depend upon the Valence of interests. The valence of interests, however, had two unexpected effects. First, Preferences change direction is more negative when the valence of personal interests is higher. Second, Preferences change intensity is higher when the Valence of organizational interests is higher. Hence, the valence of interests not only alters the relations between Vested interests and Preferences change but is even more important than this: it directly alters policy learning itself.

5.3.5. Discussion of the results

How do the results presented in the previous section relate to the existing literature? The connections between this research and the following streams of studies will be discussed in this section: ACF-based studies, studies on social and political attitudes, as well as public choice research.

In existing ACF-based studies, interests received less attention than beliefs with respect to policy learning and policy change (Weible et al., 2009). The present research examined the role interests in policy learning and confirms the general hypothesis that this role is significant. In particular, policymakers' preferences change over time according to the (perceived) impact of policies on their personal and organizational interests. This finding converges with Hoberg (1996) and Nohrstedt (p. 211)'s results. In those studies, however, interests were viewed as concepts separated from and opposed to beliefs. Hence, their influence on policy learning was considered complementary to the ACF hypothesis that beliefs determine policy learning and policy change. In the present research, interests were viewed and measured as a result of a network of beliefs. Hence, the finding that they relate to policy learning takes another sense, in accordance with the ACF hypothesis that beliefs are determining in the policy process. The Valence of interests does not influence the strength of the relation between Vested interests and Preferences change. As suggested by additional results 1 and 2, however, it plays an even more determining role as it is directly connected to Preferences change.

According to additional result 1, the policy preferences of those policymakers who allot much importance to their personal interests tend to evolve more negatively than the preferences of the other policymakers. It could be suggested that this finding is related to the general tendency of individuals to value losses more than gains. This tendency, demonstrated by prospect theory, results from the average attitude of people with respect to risks resulting from an attitudinal object on their interests: confronted with risks, on average, people rely on a heuristic valuing expected losses more than expected gains to make decisions. There is an average belief, among people, that this attitude is the best way of maximizing their utility function (Gilovich, Griffin, & Kahneman, 2003; Kahneman & Tversky, 1979). Not surprisingly, policymakers who are more attentive to their interests, if they follow this heuristic and look at the future, should experience past negative policy outcomes more strongly than past positive outcomes. As a result, their policy preferences evolve more negatively than the policy preferences of other policymakers. Three remarks may complement this interpretation of additional result 1.

This interpretation remains, of course, only a suggestion that would fit with the theory justifying the other results. To confirm this interpretation formally, future research should demonstrate that policymakers with a high Valence of interests actually value negative policy outcomes more than positive outcomes. There are two additional indications suggesting that this interpretation could be correct. First, it applies to the valence of personal interests, whereas no result was found that the valence of organizational interests negatively influence Preferences change direction. As the heuristic about losses and gains primarily concerns personal risks, it is quite coherent that it is less applicable to organizational interests (except for policymakers who more intimately connect their future to the future of their organization). Second, prospect theory already provides the basis, in the ACF, for the devil shift and for coalition formation. Consequently, this

would be coherent to find the heuristic on losses and gains behind the role of the Valence of personal interests in policy learning as well.

The Valence of interests was defined as an “emotional” notion – “I like, I don’t like”. Hypothesis I.P2 suggested that the relation between Preferences change direction and Personal vested interests should be stronger when policymakers give more importance (valence) to their personal interests. With respect to an emotion, this hypothesis was probably too dependent on the rationality and coherence of individuals. The direct connection between the Valence of personal interests and Preferences change direction suggested by additional result 1 involves that policymakers see more “dangers” when they are attentive to their interests *independently* of the actual impact of the policy on their interests. This finding is coherent with the idea that the Valence of interests is more emotional than rational.

According to additional result 2, the policy preferences of those policymakers who give much importance to their organizational interests tend to evolve more (negatively or positively) than the preferences of the other policymakers. For personal interests, it was argued that the Valence is an emotional notion which raises a heuristic weighting losses more than gains. In comparison, the Valence of organizational interests is probably less emotional. Hence, as the heuristics on losses and gains is not playful, there is unsurprisingly no independent, negative influence of the Valence of organizational interests on the Preferences change direction. On the other hand, when policymakers are attentive to the interests of their organization, they are probably more responsive to the (perceived) impacts, negative or positive, of the policy on their organizations: according to these impacts, they are more prone to revising their preferences.

Additional result 2 actually highlights a weakness of the models tested in this research. The interaction terms were introduced into the model to test hypotheses I.P2 and I.O2 that the relation between Preferences change direction and vested interests should be stronger when policymakers give more importance (valence) to their interests. Statistically speaking, for the interpretation of a significant interaction term to make sense, the main effects of the model should be significant, either in the interactive model itself or at least in a model with only the main effects. In Model 18 and Model 26, the simple effects come from the Vested interests as well as the Valence of interests. The significance of the connection between Vested interests and Preferences change direction raises no problem, as was shown by the confirmation of hypotheses I.P1 and I.O1. The significance of the connection between the Valence of interests and Preferences change direction is far less obvious. Indeed, no hypothesis was formulated about it and it was not observed in the results. Hence, even if interactions were found to be significant, hypotheses I.P2 and I.O2 could not have been validated.

With respect to the literature on social and political attitudes, this research has addressed an empirical challenge, which can considerably improve theory. The research has adopted a subjective measure of interests, based on self-reported beliefs. As explained earlier in this dissertation, most studies examining the connection between interests and political attitudes use indirect, objective measures of interests, based on proxy factors. However, the indirect approximation of policy relevance can be hazardous and can result in biased measurements and results if the researcher makes wrong deductions. This was demonstrated in section 5.3.2. Those biases could partly explain the inconclusive results about the connection between interests and political attitudes. Crano (1997a, 1997b) “suggested that the survey literature underestimated the link between self-interest

and attitudes because individuals' self-interests were assumed on the basis of proxy factors (e.g., that one's children would fail at school) rather than assessed using more direct subjective measures (e.g., Would it be bad for you personally if your children failed at school ?)" (Darke & Chaiken, 2005, p. 865). The empirical part of this research is based on a subjective evaluation of interests by the policymakers who participated in the survey. Of course, this measurement is subject to the respondents' interpretation of their situation. Their bounded rationality, in addition to other psychological predispositions, can lead them to overestimate or underestimate the impacts of the policy on their interests with respect to given objective criteria (Simon, 1985; Lau & Heldman, 2009). But the measurement errors resulting from these problems are supposed to be normally distributed (i.e. unbiased). Hence, the drawbacks of the subjective approach of interests (possible random errors) are much smaller than the drawbacks of the indirect approach (possible non-random bias).

In addition, studies using proxy factors often use organizational belonging as a proxy for the measurement of personal interests. The present research distinguishes the role of personal interests from that of organizational interests. It also contributes to the literature on political attitudes by considering an attitudinal change, rather an attitude at one point in time. Many existing studies investigate the role of interests on policy attitudes at one point in time. The role played by interests in attitudinal change is far less documented¹⁰⁸.

Finally, rational choice theory is often criticized because it makes strong assumptions on the rationally interested nature of the human being. These assumptions are, admittedly, regularly softened by complementary studies on, for example, the role of trust and reciprocity in ongoing interactions (e.g., Ostrom, 2003). The present research shows that such assumptions may be put aside without denying that human beings are – partly – rational and – partly – interested. In this research, those traits, as well as their influence on policy learning, are empirically assessed.

By way of conclusion, two models of Preferences change direction and Preferences change intensity bringing together the variables related to personal interests and the variables related to organizational interests are presented in Table 48. With respect to Preferences change intensity, Model 32 does not change the effect of the explanatory variables. With respect to Preferences change direction, the effect of the Generalized valence of personal interests remains similar. The effect of Personal vested interests in the liberalization policy, however, disappears, while its size was double and very significant in Model 15 and Model 17. It may be suspected that this result is due to some collinearity between Personal vested interests and another explanatory variable. The correlation matrix of the explanatory variables of Model 31 and Model 32 is presented in Table 42. This matrix reveals that Personal and Organizational vested interests are strongly correlated (0.56). There are three alternative explanations for this result. First, the two variables can in fact measure similar concepts. Second, there may be some confusion in the respondents' minds about the differences between the two variables and concepts. Third, the two variables are actually different but are related to other variables and concepts with similar theoretical relations. For example, it could be suspected that the effects of the liberalization policy on the interests of the organizations and the interests of their members were convergent, the organizations favoured by the liberalization process henceforth also able to improve the personal well-being of their members. The results do not allow to clarify this third alternative explanation. But I reject the two first possible explanations,

¹⁰⁸ Exceptions include studies based on panel surveys, such as Margalit (2013).

because the two variables were operationalized with very different indicators, Organizational vested interests being related to the success and finances of the organization and Personal vested interests being related to the salary, professional opportunities and working environment of individual policymakers. Similar arguments could be applied to the correlation, significant though weaker (0.26), which the matrix shows between the Valence of personal interests and the Valence of organizational interests.

An indication that organizational interests seem more determining than personal interests is connected with the descriptive statistics of the Personal vested interests. Earlier in the dissertation, it was put forward that, on average, the evolution of policymakers' preferences was slightly positive (0.39) in the railways – where the reported effects of the liberalization policy on personal interests are worse – and more substantially negative in the electricity sector (-3.16) – in which the reported effects are stronger. There is no such surprising result in the case of Organizational vested interests. This is a descriptive indication that organizational interests are more efficient than personal interest to explain Preferences change.

Table 48: Multilevel regression analysis of explanatory variables related to interests – Complete models

Dependent variable: PREFERENCES CHANGE DIRECTION or INTENSITY	Model 31 against Model 13	Model 32 against Model 14
	DIRECTION	INTENSITY
	b (std error)	b (std error)
Fixed effects:		
Personal vested interests in liberal.	0.06 (0.06)	0.03 (0.06)
Valence of personal interests	- 0.08* (0.05)	0.04 (0.05)
Organizational vested interests in liberal.	0.20*** (0.06)	- 0.03 (0.06)
Valence of organizational interests	0.02 (0.05)	0.09* (0.05)
Intercept	0.02 (0.11)	- 0.01 (0.08)
Random part:		
Sector-Organization level: σ^2_{u0}	0.09* (0.07)	0.04 (0.04)
Individual level (residuals): σ^2_e	0.88*** (0.06)	0.93*** (0.07)
Fit statistics:		
Pseudo R ² at the individual level	0.1323 (+ 0.0949)	0.0718 (+ 0.0236)
-2 full log likelihood	1074.7 (- 22.27)	1090.8 (- 6.01)
P-value of the likelihood ratio test	< 0.01	0.20
% studentized residuals outside [-2;+2]	5.57 %	4.30 %
Number of cases	395	395
Standard coefficients (b) are computed with a restricted maximum likelihood estimation method (standard errors are within brackets). * p < 0.10 ** p < 0.05, *** p < 0.01. The pseudo R ² is individual-level only and based on the Snijders & Bosker (1999) algorithm. Fit statistics are computed and compared with a full maximum likelihood estimation method and on models including a same number of observations (fit changes are within brackets). Control variables include socio-demographic characteristics (Gender, Age, and Education level) and political predispositions to policy learning (Political interest and Satisfaction with democracy).		

5.4. Trust

Two general hypotheses about the relation between trust and policy learning were formulated in the analytical chapters of this dissertation. On the one hand, confident policymakers should be more willing to search for and handle new information and experience, in situations of uncertainty. As a result, Preferences change intensity should be higher among confident policymakers. On the other hand, being less suspicious with respect to new information and experience, the preferences of confident policymakers should evolve more favourably with respect to the liberalization policy than the preferences of distrustful policymakers.

In a *first section*, some descriptive statistics of the explanatory variables related to trust will be presented. In a *second section*, several multilevel regression models testing the relations between

these variables and the dependent variable will be examined. In a *third section*, the hypotheses of the research will be discussed on the basis of the results of these models. In a *fourth section*, the results are discussed.

5.4.1. Descriptive analysis

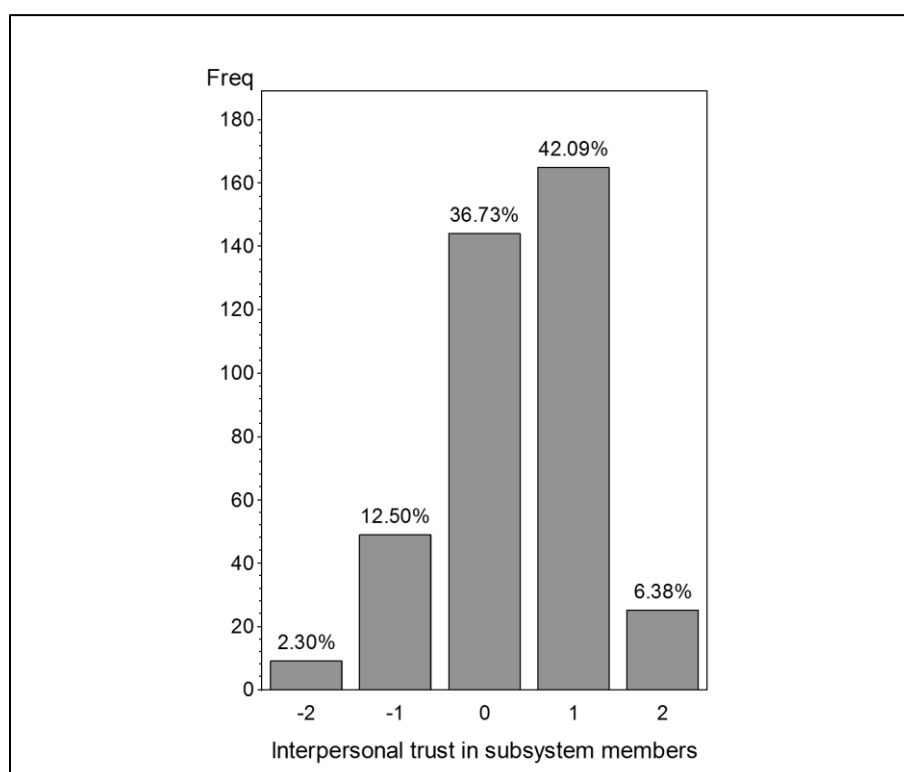
This section provides some empirical information about the explanatory variables of the research related to trust. The research considers three variables related to trust. “Generalized trust” in people and in politicians is distinguished from a contextualized measure of trust called “Interpersonal trust”. Generalized trust may be defined as the general degree of individual’s confidence in others’ fairness as well as the general degree of individual’s confidence in politicians’ fairness. Interpersonal trust in subsystem members may be defined as the specific degree of policymakers’ confidence in other subsystem members’ fairness. As presented above, only interpersonal trust is subsystem-specific. Generalized trust, by contrast, is not subsystem-specific: it concerns all people and all politicians from any policy subsystem.

Some descriptive statistics of *Interpersonal trust in subsystem members* are provided in Table 49. Half of the respondents have a high (42.09%) to very high (6.38%) trust in the policymakers they work with in their subsystem. Consistently, very few respondents (2.30 %) have a low degree of trust in other policymakers. But there are up to 12.50 % having a low degree of trust, which nevertheless is substantial. The central answer (moderate degree of trust) was reported by 36.73 % of the respondents. The frequency distribution of this variable is presented in Figure 45. It is quite similar in the railways and the electricity sector.

Table 49: Interpersonal trust in subsystem members – Descriptive statistics

Interpersonal trust in subsystem members	Frequency	Cumulative frequency	Percent	Cumulative percent
Very low [- 2]	9	9	2.30 %	2.30 %
Low [- 1]	49	58	12.50 %	14.80 %
Moderate [0]	144	202	36.73 %	51.53 %
High [1]	165	367	42.09 %	93.62 %
Very high [2]	25	392	6.38 %	100.00 %
Frequency missing = 21				

Figure 45: Interpersonal trust – Histogram of the frequency distribution



Some descriptive statistics of **Generalized trust in people** appear in Table 50. According to these statistics, a majority of respondents (77.88 %) are confident policymakers. It should be noted, however, that the frequency of missing values, for this variable, is higher than for other variables, on average. There may be two possible reasons for this result. First, it may be attributed to the “general” character of the question. Respondents, perhaps, felt not easy giving a general measure of trust without reference to any particular situation or group of people. Second, contrary to many other variables based on Likert-type items, Generalized trust in people was based on an *ad hoc* question. This, perhaps, led people to bypass the question¹⁰⁹. Finally, the distribution of the variable is quite different in two subsystem of the research, confident policymakers representing 82.25 % in the railways and only 73.53 % in the electricity sector. The proportion of missing values is similar in both sectors.

¹⁰⁹ If this is the case, this is an illustration of the fact that the recourse to a majority of Likert-type items, to improve the individual response rate and reduce the number of missing answers, was useful.

Table 50: Generalized trust in people– Descriptive statistics

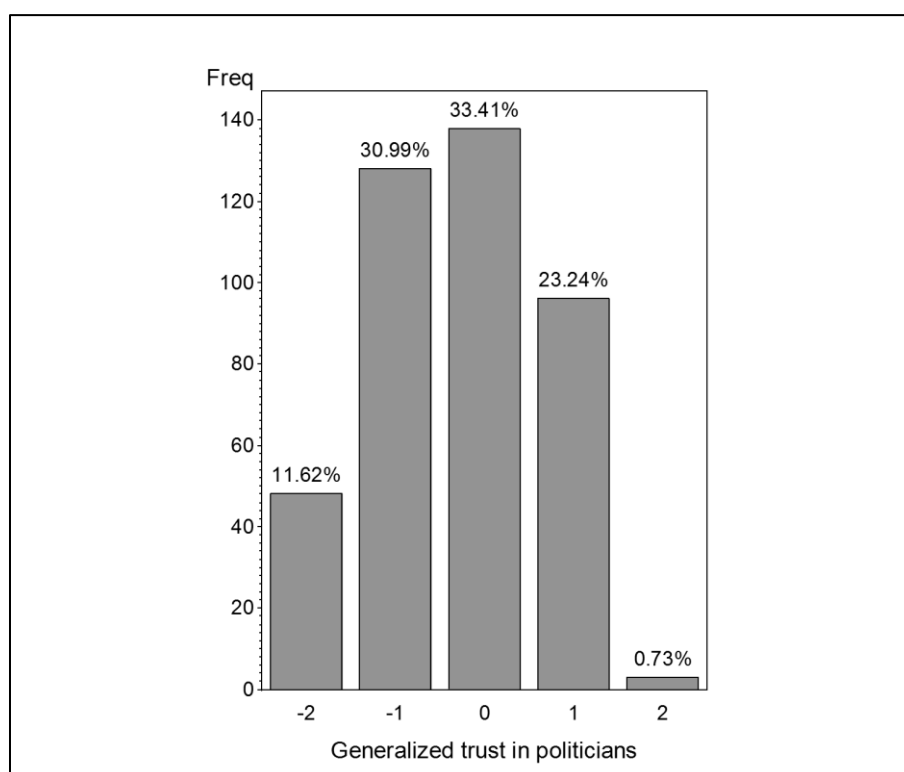
Generalized trust in people	Frequency	Cumulative frequency	Percent	Cumulative percent
Disstrust [- 0.5]	75	75	22.12 %	22.12 %
Trust [0.5]	264	339	77.88 %	100.00 %
<i>Frequency missing = 74</i>				

Some descriptive statistics of **Generalized trust in politicians** appear in Table 51. Up to 42.62 % of respondents distrust politicians. The other 56.65 % report a moderate to high trust in politicians. Only 0.73 % (3) respondents report a very high degree of trust in politicians, in general. The frequency distribution of the variable appears in Figure 46. It is worthwhile to note that all respondents gave an answer to the Likert-type item on which this variable is based (no missing value). The distribution of the variable is very similar in the railways and the electricity sector.

Table 51: Generalized trust in politicians – Descriptive statistics

Interpersonal trust in subsystem members	Frequency	Cumulative frequency	Percent	Cumulative percent
Very low [- 2]	48	48	11.62 %	11.62 %
Low [- 1]	128	176	30.99 %	42.62 %
Moderate [0]	138	314	33.41 %	76.03 %
High [1]	96	410	32.24 %	99.27 %
Very high [2]	3	413	0.73 %	100.00 %
<i>Frequency missing = 0</i>				

Figure 46: Generalized trust in politicians – Histogram of the frequency distribution



5.4.2. Multilevel regression analysis

In this section, multilevel regression models connecting the dependent variable of the research to the three explanatory variables related to trust are examined. The models connecting Preferences change direction to the variables related to trust appear in Table 52, while the models connecting Preferences change intensity to the variables related to trust appear in Table 53.

Table 52: Multilevel regression analysis of trust – Preferences change direction

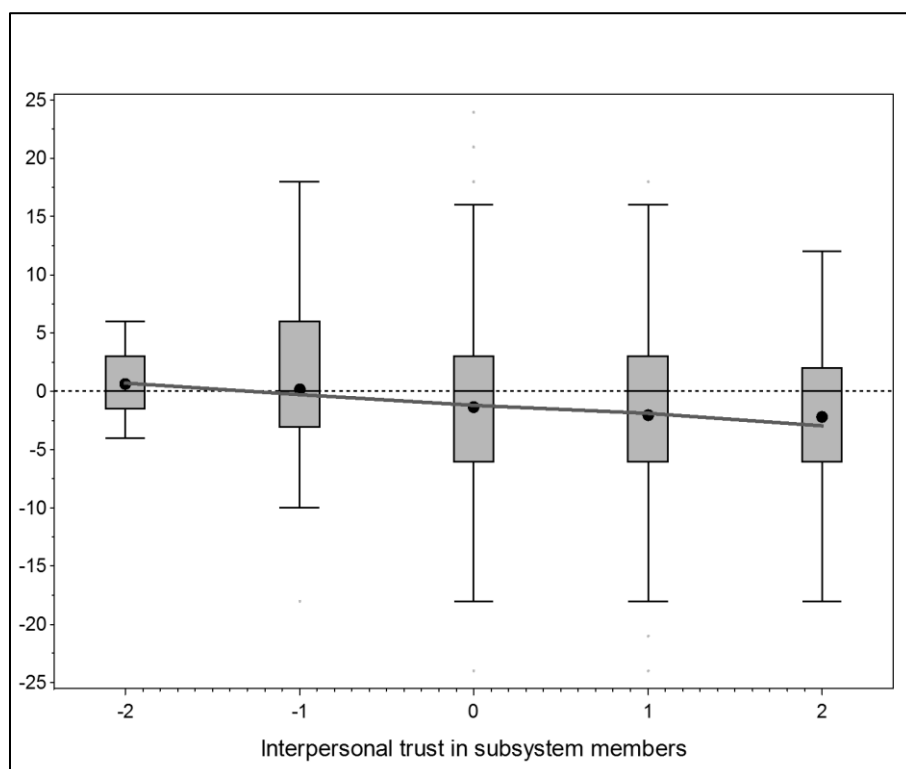
Dependent variable: PREFERENCES CHANGE DIRECTION	Model 33 against Model 13	Model 34 against Model 13	Model 35 against Model 13	Model 36 against Model 13
	b (std error)	b (std error)	b (std error)	b (std error)
Fixed effects:				
Interpersonal trust	- 0.08 (0.05)			- 0.09 (0.15)
Generalized trust in people		0.04 (0.06)		0.05 (0.06)
Generalized trust in politicians			0.11** (0.05)	0.13** (0.06)
Intercept	0.08 (0.14)	0.06 (0.13)	0.09 (0.14)	0.06 (0.15)
Random part:				
Sector-Organization level: σ^2_{u0}	0.15* (0.11)	0.13 (0.11)	0.18* (0.12)	0.17 (0.14)
Individual level (residuals): σ^2_e	0.91*** (0.07)	1.00*** (0.08)	0.89*** (0.06)	1.00*** (0.08)
Fit statistics:				
Pseudo R ² at the individual level	0.0386 (+ 0.0012)	0.0430 (+ 0.0056)	0.0352 (- 0.0022)	0.0422 (+ 0.0048)
-2 full log likelihood	1049.9 (- 2.17)	932.8 (- 0.59)	1101.1 (- 3.85)	883.1 (6.23)
P-value of the likelihood ratio test	0.14	0.44	0.05	0.10
% studentized residuals outside [-2;+2]	6.08 %	5.52 %	5.51 %	6.15 %
Number of cases	378	326	399	309
Standard coefficients (b) are computed with a restricted maximum likelihood estimation method (standard errors are within brackets). * p < 0.10 ** p < 0.05, *** p < 0.01. The pseudo R ² is individual-level only and based on the Snijders & Bosker (1999) algorithm. Fit statistics are computed and compared with a full maximum likelihood estimation method and on models including a same number of observations (fit changes are within brackets). Control variables include socio-demographic characteristics (Gender, Age, and Education level) and political predispositions to policy learning (Political interest and Satisfaction with democracy).				

Table 53: Multilevel regression analysis of trust – Preferences change intensity

Dependent variable: PREFERENCES CHANGE INTENSITY	Model 37 against Model 14		Model 38 against Model 14		Model 39 against Model 14		Model 40 against Model 14	
	b (std error)	Tobit b (std error)	b (std error)	Tobit b (std error)	b (std error)	Tobit b (std error)	b (std error)	Tobit b (std error)
Fixed effects:								
Interpersonal trust	- 0.02 (0.05)	- 0.06 (0.08)					- 0.01 (0.06)	- 0.07 (0.09)
Generalized trust in people			0.01 (0.06)	0.02 (0.09)			0.02 (0.06)	0.06 (0.10)
Generalized trust in politicians					- 0.01 (0.05)	- 0.02 (0.09)	-0.03 (0.06)	- 0.04 (0.10)
Intercept	- 0.03 (0.08)	- 0.44** (0.16)	0.02 (0.09)	- 0.34** (0.14)	- 0.03 (0.08)	- 0.41** (0.15)	0.03 (0.09)	- 0.36** (0.15)
Random part:								
Sector-Organization level: σ^2_{u0}	0.03 (0.04)	0.11 (0.11)	0.04 (0.04)	0.07 (0.09)	0.04 (0.04)	0.10 (0.10)	0.04 (0.05)	0.07 (0.10)
Individual level (residuals): σ^2_e	0.97*** (0.07)	1.37*** (0.09)	0.97*** (0.08)	1.35*** (0.09)	0.94*** (0.07)	1.33 (0.08)	1.01*** (0.08)	1.39*** (0.10)
Fit statistics:								
Pseudo R ² at the individual level	0.0447 (- 0.0035)		0.0578 (+ 0.0096)		0.0482 (+ 0.0000)		0.0608 (+ 0.0126)	
-2 full log likelihood	1062.1 (-0.19)		915.0 (- 0.04)		1110.2 (- 0.01)		877.2 (- 0.43)	
P-value of the likelihood ratio test	0.66		0.84		0.90		0.93	
% studentized residuals outside [-2;+2]	3.71 %		4.29 %		4.01 %		4.53 %	
Number of cases	378		326		399		309	
Standard coefficients (b) are computed with a restricted maximum likelihood estimation method (standard errors are within brackets). * p < 0.10 ** p < 0.05, *** p < 0.01. The pseudo R ² is individual-level only and based on the Snijders & Bosker (1999) algorithm. Fit statistics are computed and compared with a full maximum likelihood estimation method and on models including a same number of observations (fit changes are within brackets). Control variables include socio-demographic characteristics (Gender, Age, and Education level) and political predispositions to policy learning (Political interest and Satisfaction with democracy).								

The effect of the explanatory variables related to trust on Preferences change direction is considered in Table 52. The effect of Interpersonal trust in subsystem members on Preferences change direction is tested in Model 33. The model shows that the effect of this explanatory variable is insignificant. The fit statistics of the model (quasi-null pseudo- R^2 and insignificant LRT) confirm this diagnosis. In addition, the percentage of studentized residuals outside $[-2; +2]$ is not very good (6.08 %). As a result, it may be concluded that the evolution of policymakers' preferences with respect to the liberalization policy was not significantly different among the respondents who reported a higher degree of trust among other subsystem members than among the respondents who reported a lower degree of trust. This result, based on the analysis of the parameters of the multilevel regression model, may be a little surprising when considered in parallel with the graphical representation of this model, in Figure 47. Indeed, the regression line, in this Figure, clearly decreases. However, this pattern is coherent with the negative value of the (insignificant) coefficient associated with the explanatory variable in the model. The insignificance of the coefficient is probably related to the similar distribution (see the boxplots) of the dependent variable, where the explanatory variable takes the values 0 and 1 and most of the observations (78.82 %) of the sample are situated.

Figure 47: Prediction of Preferences change direction with Interpersonal trust in subsystem members (Model 33)

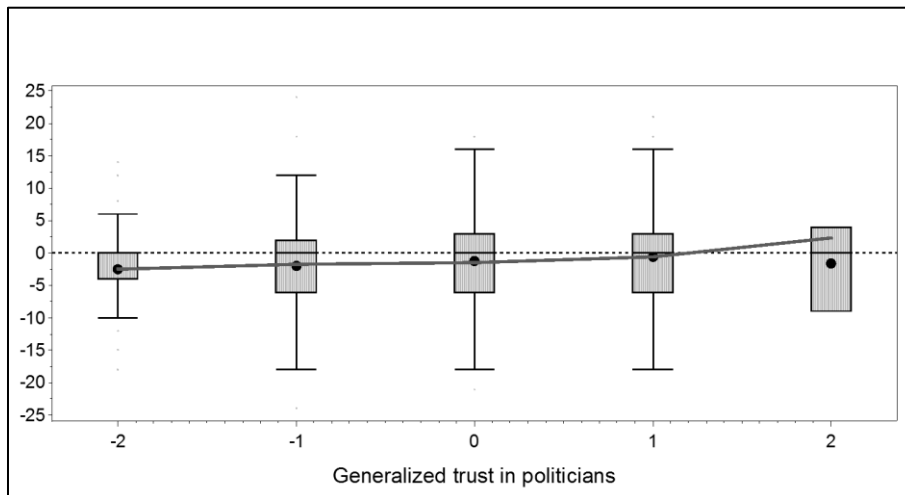


The effect of Generalized trust in people on Preferences change direction is tested in Model 34. The model shows that the effect of this explanatory variable is also insignificant. The fit statistics of the model (quasi-null pseudo- R^2 and insignificant LRT) confirm this diagnosis. As a result, it may

be concluded that the evolution of policymakers' preferences with respect to the liberalization policy was not significantly different among the respondents who reported a higher degree of trust in people than among the respondents who reported a lower degree of trust.

The effect of Generalized trust in politicians on Preferences change direction is tested in Model 35 and represented in Figure 48. This model shows that the positive coefficient (0.11, small effect size in Cohen's terms) of the explanatory variable is significant (p -value < 0.05). The LRT is significant (p -value = 0.05) but the individual-level pseudo- R^2 is nearly equal to 0. Hence, the introduction of the explanatory variable in the model does not reduce the individual-level variance of the dependent variable very much, with respect to the intercept-only model¹¹⁰. As a result, the conclusion that policymakers' preferences with respect to the liberalization policy evolved more positively among the respondents who reported more trust in politicians should be considered carefully.

Figure 48: Prediction of Preferences change direction with Generalized trust in politicians (Model 35)



The combined effect of Interpersonal trust in subsystem members, Generalized trust in people, and Generalized trust in politicians is tested in Model 36. In this model, the size of the effect of the explanatory variables does not change at all, nor does its significance. While the LRT of Model 35 was significant, the LRT of Model 36 is insignificant (p -value = 0.10). This is most probably related to the lower number of observations used in the second model. The individual-level pseudo- R^2 is approximately equal to the sum of the pseudo- R^2 of the two simpler models. Hence, most of the estimated reduction of variance of the dependent variable provided by the explanatory variables should be attributed to the effect of the Generalized trust in politicians (even if, as mentioned above, this result must be carefully considered, given the weakness of the pseudo- R^2).

The effect of the explanatory variables related to trust on Preferences change intensity is considered in Table 53, with Model 37, Model 38, Model 39, and Model 40. These models do not

¹¹⁰ The estimation of the pseudo- R^2 at the group level is no better.

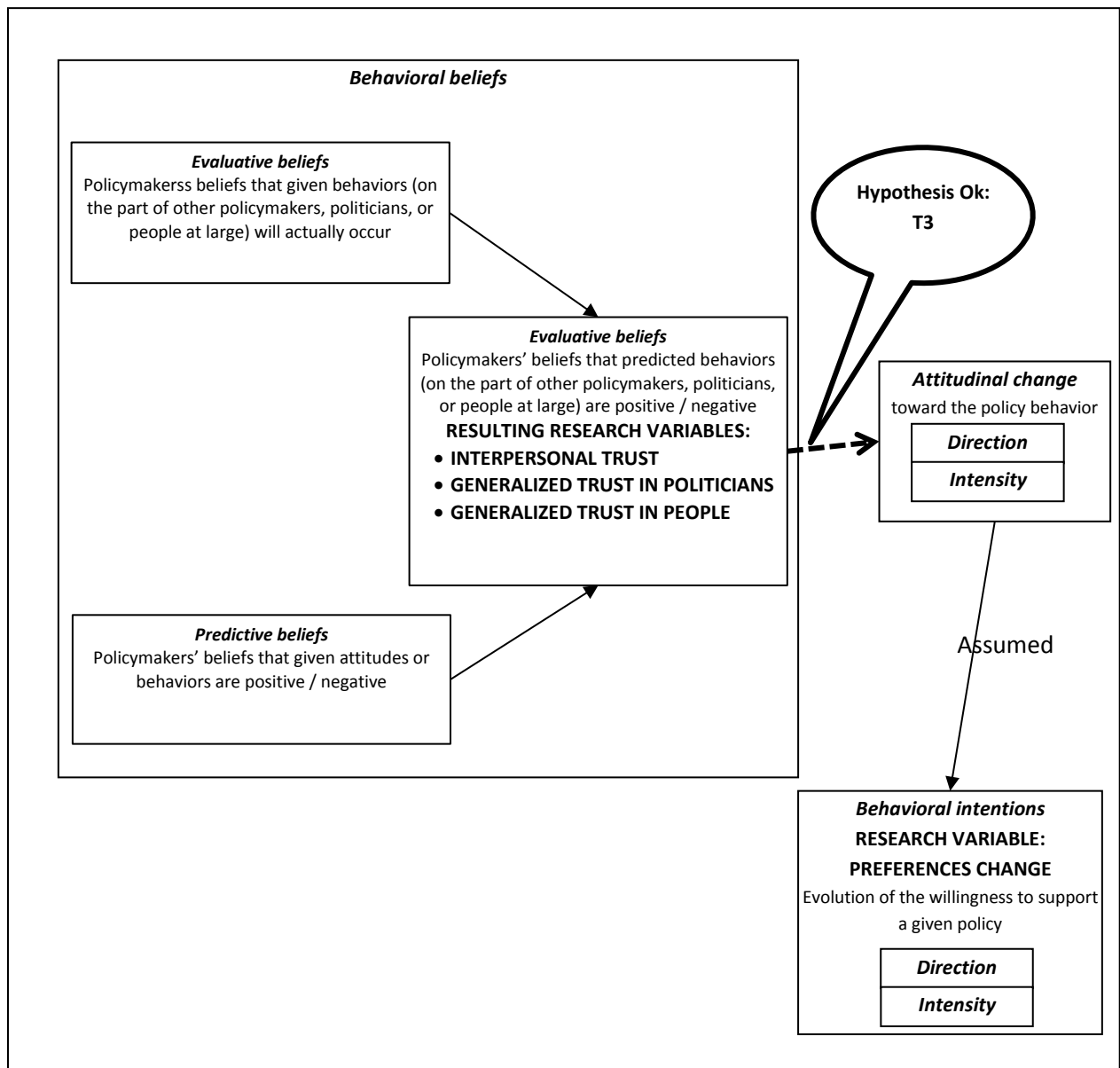
include any significant coefficient. This result is confirmed by the fit statistics of all these models. Nearly all the individual-level pseudo- R^2 are nearly equal to 0, while none of the LRT is significant; these models do not improve our understanding of the dependent variable. The only surprising result is the individual-level pseudo- R^2 of Model 40, which is substantially more important than the sum of pseudo- R^2 of the simpler models. As a global result, however, it may be concluded that the explanatory variables related to trust are not significantly connected to Preferences change intensity.

5.4.3. Test of the hypotheses

Three operational hypotheses were formulated, in the theoretical part of this dissertation, with regard to the idea that Preferences change direction could be positively related with trust. In each case, the general argument was that, being less suspicious with respect to new information and experience, the preferences of confident policymakers should evolve more favourably with respect to the liberalization policy than the preferences of distrustful policymakers. The connection between Preferences change direction and Interpersonal trust in subsystem members, suggested by **hypothesis T1**, was tested in Model 33. The connection between Preferences change direction and Generalized trust in people, suggested by **hypothesis T2**, was tested in Model 34. The connection between Preferences change direction and Generalized trust in politicians, suggested by hypothesis T1, was tested in Model 35. Hypotheses T1 and T2 were not confirmed. Model 35 suggests that **hypothesis T3** could be valid, the preferences of the policymakers with a higher degree of trust in politicians having evolved more positively with respect to the liberalization policy, over time, than the preferences of the other policymakers. But, for reasons described above, even this conclusion must be considered very carefully.

Three operational hypotheses were also formulated, in the theoretical part of the dissertation, with regard to the idea that Preferences change intensity could be positively related with trust. In each case, the general argument was that Confident policymakers should be more willing to search for and handle new information and experience, in situations of uncertainty. As a result, Preferences change intensity should be higher among confident policymakers. The connection between Preferences change intensity and Interpersonal trust in subsystem members, as suggested by **hypothesis T4**, was tested in Model 37. The connection between Preferences change intensity and Generalized trust in people, as suggested by **hypothesis T5**, was tested in Model 38. The connection between Preferences change intensity and Generalized trust in politicians, suggested by **hypothesis T6**, was tested in Model 39. None of these hypotheses were confirmed by the results.

Figure 49: Results related to trust



5.4.4. Discussion of the results

Overall, the results of the research related to trust are quite disappointing. Confident policymakers do not seem more inclined to changing their mind (Preferences change intensity) as a result of their supposed openness to new information and experience. Similarly, confident policymakers do not seem to consider new information and experiences related to the implementation of the liberalization policy more positively (Preferences change direction). From a theoretical point of view, it is tempting to consider that trust could be related to policy learning. Montpetit (2007, p. 10) first suggested this connection and found a slight indication ($p\text{-value} < 0.15$)

of the positive relation between trust and Preferences change direction and no indication of the relation between trust and Preferences change intensity. Based on additional arguments and equipped with a new measure of policy learning, this research made a new attempt to connect trust to policy learning. This attempt failed. Policy learning is maybe not related to the confidence policymakers have in their partners (or adversaries). Policy learning, which is the search and treatment of new information and experiences related to policies, may also not be seen as a “risky” process by the policymakers, a process in which they would engage resources or involving situation on which they lose a degree of control.

Finally, a contextualized measure of Interpersonal trust in other subsystem members and a generalized measure of Generalized trust in people and politicians were distinguished in this research. The expectation was to find a stronger connection between interpersonal trust and policy learning, both measures being contextualized, than between generalized trust and policy learning. This expectation was not met, neither interpersonal trust nor generalized trust being related to policy learning.

5.5. Interests and trust combined

In this final section of the results, interests and trust are combined. The theoretical motivation behind this combination is the following: trust is often looked at as an important factor, softening the strength of the assumption of rational choice studies that human beings are rationally interested (Ostrom, 1998). As mentioned in the theoretical part of the dissertation, however, the softening is most often only behavioral and the assumption is not dropped. Most research on game theory, for example, tries to look at the expected behavior of a rationally interested individual when he can capitalize on trust and trustworthiness in long-term and repeated interactions with other individuals (Cox, 2004). With trust, individuals do not only make short-term interested calculations, but long-term ones as well. Leach and Sabatier (2005) had another look at this issue and confronted explanations of interpersonal trust based on rational choice theory and social psychology. They concluded that both theoretical streams are relevant but that social psychology is more effective than rational choice theory.

The present research’s point of view is different again. The measurement of trust as well as interests is based on social psychology, i.e. on policymakers’ subjective self-reported perceptions. The results appear in Table 54. The variables involved in these models have all been described in previous sections.

Table 54: Multilevel regression analysis with all explanatory variables related to interests and trust

Dependent variable: PREFERENCES CHANGE DIRECTION and INTENSITY	Model 41 against Model 13	Model 42 against Model 14
	DIRECTION	INTENSITY
	b (std error)	b (std error)
Fixed effects:		
Personal vested interests in liberal.	0.05 (0.07)	0.03 (0.07)
Valence of personal interests	-0.10* (0.06)	0.03 (0.06)
Organizational vested interests in liberal.	0.22*** (0.07)	-0.05 (0.07)
Valence of organizational interests	0.04 (0.06)	0.12* (0.07)
Interpersonal trust	-0.12** (0.06)	-0.02 (0.06)
Generalized trust in people	0.04 (0.06)	0.02 (0.06)
Generalized trust in politicians	0.12* (0.06)	0.02 (0.06)
Intercept	-0.01 (0.12)	0.04 (0.07)
Random part:		
Sector-Organization level: σ^2_{u0}	0.09 (0.09)	0.01 (0.02)
Individual level (residuals): σ^2_e	0.97*** (0.08)	0.98*** (0.08)
Fit statistics:		
Pseudo R ² at the individual level	0.1308 (+0.0934)	0.0821 (+ 0.0339)
-2 full log likelihood	862.1 (-242.9)	868.4 (-241.8)
P-value of the likelihood ratio test	< 0.01	< 0.01
% studentized residuals outside [-2;+2]	3.63 %	2.66 %
Number of cases	309	309
Standard coefficients (b) are computed with a restricted maximum likelihood estimation method (standard errors are within brackets). * p < 0.10 ** p < 0.05, *** p < 0.01. The pseudo R ² is individual-level only and based on the Snijders & Bosker (1999) algorithm. Fit statistics are computed and compared with a full maximum likelihood estimation method and on models including a same number of observations (fit changes are within brackets). Control variables include socio-demographic characteristics (Gender, Age, and Education level) and political predispositions to policy learning (Political interest and Satisfaction with democracy).		

Model 41 is undoubtedly significant (p-value of the LRT < 0.01) and adds much to the explanation of Preferences changes direction at the individual level as it increases the pseudo-R² of 0.09 units, which is quite good. This model confirms that Organizational vested interests are really more effective than Personal vested interests for predicting Preferences change direction. The preferences of the policymakers giving much importance (valence) to their personal interests are still more inclined to evolve negatively than the preferences of the other policymakers. The justifications of these effects were detailed in Section 5.3.5.

The most important lessons that may be drawn from Model 41 are connected to trust. On the one hand, the effect of Generalized trust in politicians remains similar but should still be carefully considered (see Section 5.4.2). On the other hand, when the influence of interests is controlled, a small but substantial (in Cohen's terms) effect of interpersonal trust on Preferences change direction becomes significant. This effect, however, is opposed to hypothesis T3, which suggested that interpersonal trust should be positively related with Preferences change direction. In fact, this new model distinguishes several categories of policymakers, i.e. those giving more importance to their interests versus those giving less importance to their interests (valence), as well as those perceiving more impacts from the liberalization policy on their interests versus those perceiving less impacts. According to those categories, the effect of trust with regard to other subsystem members is more or less important but, consistently, the policy preferences of those policymakers who are more confident evolved more negatively than the preferences of the other policymakers. Several lessons may be drawn from this.

First, the results offer another look at the role of trust in attitude formation than do existing studies. In those studies, trust actually softens the effect of interests on attitude formation. In rational choice studies, trust is viewed as the result of long-term calculations that some losses in the short-term can result in relatively more gains in the long term. In social psychology, trust is more viewed as the cause and/or consequences of a general atmosphere among actors, which dissuades them from giving more priority to their own interests than others'. In this research, the role of trust seems to actually be revealed by interests: policymakers' trust in other subsystem members seems to negatively influence the evolution of their policy preferences but at a different degree in each category of policymakers (those giving more or less importance to their interests and/or those perceiving more positive or negative impacts of the liberalization policy on their interests). This calls for more research on certain categories of policymakers, for example based on adjusted predictions and marginal effects (e.g., Williams, 2012).

Second, these results suggest that Interpersonal trust in other policymakers, which is subsystem-related, is a stronger predictor of Preferences change than Generalized trust, which is subsystem-independent. They confirm the expectation that context-dependent predictors are more effective than context-independent ones.

Third, the negative connection between Interpersonal trust and Preferences change direction does not fit the theoretical hypotheses of the research; a positive connection was actually expected. A possible interpretation of this result is that policymakers who trust their colleagues feel freer to acknowledge that their policy preferences evolved disfavouredly with respect to liberalization in a context in which many people are involved in this policy process. Does this mean that interpersonal trust is actually related to Preferences change direction? If trust really alters the way policymakers adapt their beliefs and attitudes with respect to policies, the answer is yes. If trust only allows policymakers to report what they really think in the questionnaire (whereas distrust would incline them to conceal their actual thoughts), this connection is due to a measurement bias. The data do not allow to decide between these two possible explanations.

In Model 42, the effect of the Valence of organizational interests on Preferences change intensity remains significant, even when combined with trust-related variables. This model, with an individual-level pseudo- R^2 of 0.03, confirms that the explanatory attempts of this research to explain

Preferences change intensity were not as fruitful as expected. This is not to say that the issue is unimportant, on the contrary: much research still needs to be done to explain this attitudinal change.

Conclusion

Public problems are those problems which are common to many people and can be more effectively addressed by public authorities than by a sum of private initiatives. Public policies are a major tool used by public authorities to defining and solving public problems. Policies, however, change over time. For example, in Belgium, as in many other European countries, the construction, management, and use of network industries were for a long time considered a natural monopoly of public authorities. The European liberalization policy process implemented since the 1990s has been a major policy change, in this respect: it confines the monopoly of public authorities to the construction and management of the network, whereas the production and delivery of goods and services through the network has progressively been opened to competition among private and public companies.

The course of policy decisions depends on the contest among policy frames advocated by the various actors involved in the policymaking process. Policymakers are actors holding key positions in public and private institutions, organizations, agencies, companies, interests groups or networks in a given functional and geographical policy sector, for example the Belgian rail or electricity sectors. The set of policymakers who, given their position and action, exert a substantial influence on the course of policy decisions in a policy sector is called a policy subsystem. For example, the successive policy decisions associated with the European liberalization process flow from a continuous policy contest among national and European politicians and civil servants, members of regulatory agencies and lobbies, as well as managers of public and private companies involved in public utilities. Policies change because the political contest evolves over time. It results from changing power relations and allocations of resources. It also results from the evolution of policymakers' beliefs and preferences with respect to policies. Indeed, technological, environmental and human conditions are constantly challenging policymakers. Policymakers may also actively search for new information and experiences to revise their beliefs or resist to change. This process of policymakers' attitudinal change is crucial in the policy process. It is called policy learning.

Policy learning is a multilevel notion. Basically, policy learning is an individual-level, psychological process of beliefs and preferences change. At the same time, policy learning has a collective dimension: given the influence policymakers have on each other during the policy-making process, policy learning may not be reduced to a sum of individual processes, at the aggregate level. Policy learning is a multilevel process, and its conditions as well. For example, some individual personality traits typically lead individuals to having stable beliefs and preferences, whereas other individuals will be more prone to revising their opinions. At the same time, policymakers live and work in a given context. For example, a policy may produce more or less desirable effects on a policymaker's organization, which also alters his beliefs. While policymakers' attitudes are influenced by the institutions, organizations, and networks which they belong to, this research focused on the individual determinants of policy learning, because far less research has been conducted about them; this research has focused on what institutions, organizations or networks cannot tell us about policy learning.

Do individual policymakers promote change or do they resist to change ? What are the individual conditions which explain differences among policymakers, in this respect? Those were the

questions at the core of this research on the individual conditions of policy learning. They were investigated among Belgian policymakers from the rail and electricity sectors. Those policymakers were surveyed about the European liberalization policy process, a major policy change in the network industry they are involved in. The implementation of the European liberalization process is compulsory within each EU Member State, including Belgium. National policymakers are obliged to implement this policy elaborated by a hierarchically superior unit of government. However, they have to adapt it to national constraints. Hence, the right implementation of the liberalization process within each EU Member State largely depends on (the evolution of) policymakers' perceptions about this process. Overall, the policymakers' preferences with respect to the liberalization process has not evolved very much. They did evolve somewhat, however. This evolution was, on average, slightly negative in the electricity sector and null in the railways, with notable differences between organizations and even more among individual policymakers. In addition to the diagnosis, the research aimed at explaining these individual-level differences.

Several results may be retrieved from the research. Key factors to explaining the evolution of policymakers' preferences over time are their perceptions about the impacts of the policy on their personal interests and the interests of their organization: the policymakers strongly adapted their policy preferences according to these perceptions. Policymakers giving much importance to their organizational interests were particularly responsive, in this respect: they revised their beliefs and preferences even more than the other policymakers. Policymakers' interests are significant determinants of policy learning but they are not alone: in addition to political beliefs and ideology, which were not examined in this research, socio-psychological factors play a role as well. In particular, the climate of trust that policymakers perceive in the policy subsystem in which they are involved probably prompted them to acknowledging more easily the negative effects policy changes have on them. This consequently inclined them to report a more negative evolution of their policy preferences over time. When policymakers are less confident toward their colleagues, they are less inclined to recognizing the negative evolution of their preferences with respect to the liberalization process, which is a mandatory policy transfer. The results also suggest that policymakers use heuristic-based modes of reasoning to adapt their preferences about policies. For example, when they give much importance to their personal interests, they seem to expect more negative impacts from policy changes. In other words, those policymakers probably weigh expected losses more than expected gains, in comparison with other policymakers. Beyond the theories on policy learning and change, the hypotheses of this research were based on existing findings from rational choice studies, from the literature on the role of interests and trust in social and political attitudes, as well as from social psychology. The research has not contradicted those existing findings but has added some nuances. It has addressed some questions with different approaches and methods. It has explicitly linked those questions and findings to policy learning theories and has adapted them to the context of the policy process.

The research was based on a coherent analytical framework. The Advocacy Coalition Framework, a well-known approach of the policy process, was used to conceptualize the policy process at the aggregate level. The Theory of Reasoned of Action framework was used to detail the individual-level aspects of the Advocacy Coalition Framework. Actors' attitudes and preferences regarding policies were viewed as the result of a network of beliefs related by coherent links. It is worth noting that actors were not assumed to be primarily motivated by the rational maximization of their interests. First, it was considered that policymakers' motivations may be multiple. Second,

coherence – rather rationality – was assumed. It means that actors hold beliefs which seem to be logically linked to them. This coherence was not assumed to be perfect, however, because of policymakers' limited calculation abilities and, as a result, their recourse to heuristics. The connection between the Theory of Reasoned Action framework and the Advocacy Coalition Framework proved to be useful for understanding the individual aspects of learning mechanisms in the context of the policy process.

An innovative measurement method of policy learning was put forward. It captured the variation of policymakers' preferences with respect to the liberalization policy between two moments: the beginning of the implementation process of the liberalization policy within each sector, in the early 1990s, and the moment of the survey, in 2012. As policy learning refers to an *enduring* alteration of policy preferences, those policymakers who were not sure enough of their past and current preferences were excluded from the sample; policymakers' preferences had to be stabilized to be considered in this research on policy learning. Most importantly, a distinction was made between two indicators of the dependent variable, in the research: Preferences change direction and Preferences changes intensity. Preferences change direction indicated to which extent policymakers' preferences evolved favourably or disfavourably over time, with respect to the liberalization policy. By contrast, Preferences change intensity measures the total amount of policymakers' preferences change (independently on the direction). Preferences change direction and Preferences change intensity were used in this research as two operational measures of policy learning.

Two categories of individual-level conditions of policy learning were investigated: those related to policymakers' interests and those related to the degree of trust they have in other subsystem members as well as in politicians and people at large. The actual influence of these determinants on political attitudes is at the centre of much scientific debate. Many rational choice studies are based on the assumption that the rational maximization of interests is the actors' basic attitudinal and behavioral motivation. Other rational choice studies, however, call this assumption into question. Trust is often used in rational choice studies to explain why rational interests often do not directly influence attitudes because individuals capitalize on trustworthiness to adopt attitudes and behaviors which can harm their interests, in the short term, but serve them relatively more, in the long term. Social psychology studies also show that trust can create contexts in which individuals give less importance to their interests, independently of any rational calculation. The present research aimed to add a useful block to this debate by looking at the influence of interests and trust on attitudinal change. In particular, those concerns were rarely explicitly connected with the literature on policy learning. Most importantly, a new approach to view and measure policymakers' interests was put forward. Rather than deduced by the researcher, they were measured with policymakers' self-reported perceptions. This approach was applied to trust as well. In addition, the research distinguished different types of interests – personal or organizational – and trust – with regard to the other subsystem members, to politicians, or to people at large. The practical implications resulting from the influence of each type of interests and trust on policy learning are different. The gender, age, and education of level of respondents were used as covariates in all the analyses of the research. Satisfaction with democracy and political interest were also controlled, because some literature suggests a relation between these two last covariates and Policy preferences change.

Two general hypotheses were formulated in relation with policymakers' interests. First, it was hypothesized that policymakers' preferences should change if they perceive that their interests vested in the policy are influenced by the policy process. If these impacts are positive, Preferences change direction should be positive and the other way round. Second, it was expected that this relation should be stronger among policymakers giving more importance (valence) to their interests than among the other policymakers (the interaction effect between vested interests and the valence of interests). No hypothesis was formulated on the relation between interests and Preferences change intensity but it was examined in the results. These two general hypotheses were detailed in four operational hypotheses, according to the type of interests, personal or organizational. Personal interests concern the material well-being of the policymaker. Organizational interests refer to the power, finances and success of the organization the policymaker belongs to. Vested interests and the valence of interests were self-reported by the respondents in the survey.

Two general hypotheses were also formulated in relation with policymakers' trust. The first hypothesis related trust to Preferences change intensity. It was hypothesized that confident policymakers would be more prone to revising their preferences, be it negatively or positively, following new information and experience. Hence, it was hypothesized that Preferences change intensity should be higher among confident policymakers. The second hypothesis related trust to Preferences change direction. Confronted with a new policy, confident policymakers should see fewer risks for themselves and for the collectivity resulting from their support of this new policy, than distrustful policymakers should. As a result, it was hypothesized that the preferences of confident policymakers with respect to the liberalization policy should evolve more positively than the preferences of distrustful policymakers. These two general hypotheses were detailed in six operational hypotheses according to the type of trust concerned: trust with regard to other subsystem members, to politicians or to people in general.

The empirical context in which the research was conducted was particularly appropriate in several respects. The European liberalization process is a major policy change which required much adaptation and elicited learning on the part of national policymakers. The research was interested in individual-level effects: to neutralize as many cultural and institutional effects as possible, the empirical investigations were conducted in one single country – Belgium. In addition, they concerned policy sectors in which political competences are federal, that is, central. This is particularly true in the railways, though a little bit less so in the electricity sector. In this last sector, nevertheless, the number of subsystem members sampled in Flanders and Wallonia was well balanced. The remaining respondents were members of federal-level organizations. Finally, the liberalization process involves many different types of policymakers coming from public and private organizations in two different policy subsystems, which bestows a good power of generalizability on the research.

The test of the hypotheses of the research was carried out on a sample of 413 policymakers. Those policymakers are top-level managers from six types of organizations working in the Belgian rail and electricity sectors: public administration, regulators, infrastructure managers, incumbents, new entrants in the market and interest groups. Because of their positions, top managers are involved in the major policy changes occurring in their sector, including the European liberalization process. Hence, it is empirically relevant and of practical importance to examine the extent and the reasons for the evolution of their policy preferences. The penetration rate of the survey, that is, the ratio between the number of policymakers surveyed and the number of policymakers actually involved in

the liberalization policy process, was optimized with two combined methods. First, a documentary analysis preceding the survey allowed determining the institutional and organizational perimeter of the population in each policy subsystem. Second, top managers referred to each other during a snowball sampling process which was stopped when new interviewees did not refer to new individual policymakers who were not in the sample yet. The organizational participation rate, that is, the ratio between the number of organizations solicited for the survey and the number of organizations having actually participated, was good in the railways (81 %), while it was more disappointing in the electricity sector (54 %). Within the participating organizations, 1256 top managers were surveyed. 497 of them submitted the questionnaire but, after several steps of data validation, only 413 of them were introduced in the final sample, which provided a final individual response rate of 33 %.

The data were analysed with multilevel regression models. This method offered two key advantages with respect to the objectives of this research. First, it allowed scrutinizing the variation in the evolution of policymakers' preferences over time and separating this variation in two portions: a portion due to differences among individual policymakers and one due to the type of organization they belong to. Second, the research focused on the individual aspects and determinants of policy learning. Multilevel analysis provided a reliable estimation of the contribution of these determinants to the explanations of individual-level differences among policymakers with respect to policy learning (rather than the contribution to the explanation of differences among policymakers due to the types of organization they belong to). The significance of the models as well as the significance and size of the coefficients' effects were examined to test the hypotheses of the research. The power of the research design was also considered. It was at least equal to 0.71 for the analyses conducted on Preferences change direction and 0.72 in the case of the analyses conducted on Preferences change intensity, which is satisfactory regarding the literature. Finally, multilevel Tobit models complemented multilevel regression analyses conducted on Preferences change intensity, because this variable is censored on the left. It means that most of the respondents reported that their policy preferences did not change very much during the period considered in the research. As a result, many observations were situated on the left extreme of this variable's continuum; their value was not very different and a lot of them were equal to 0 (when the respondent did not report any change in his policy preferences). Multilevel Tobit models are better adapted and deal more prudently with such situations. The results provided by Tobit models were most often not different from the results provided by multilevel regression models, except for some covariates (see below).

In the remainder of this conclusion, the theoretical and practical results of the research will be presented. Its limitations and some propositions for future research will be discussed in a second and final section.

At the theoretical level, the research has shown the added value of the proposed, subjective approach for the conceptualization and measurement of policymakers' interests and trust. This approach is based on actors' self-reported perceptions. In the case of organizational interests, for example, the data obtained indicate the impacts of the liberalization process on the organization of each policymaker, as those impacts are perceived by the policymaker himself. By contrast, in the objective approach of organizational interests, the measurement of interests is based on the researcher's deductions about the impacts of the liberalization process on policymakers according to the type of organization they belong to. For example, it was expected that the members of infrastructure managers would consider that the liberalization process had positive impacts on their organization. Indeed, a documentary analysis showed that this type of organization was more favoured than other types of organizations by the liberalization process, in terms of power and finances. The results obtained with each approach were compared. They showed that the deduction of organizational interests based on the position of policymakers (objective organizational interests) did not match the actual perceptions of respondents (subjective organizational interests) in more than the half of the cases. This clearly shows the added value of interests viewed and measured as the result of subjective beliefs, in comparison to an objective measurement of interests based on the researcher's deductions. Policymakers' perceptions, which motivate their political preferences, attitudes, and behaviours to a great extent, are complex and thus difficult to deduce.

The effect of covariates is weak on both indicators of the dependent variable, though a little bit stronger on Preferences change intensity than on Preferences change direction. In particular, women's preferences evolved less negatively than men's preferences, which does not meet the expectations. No significant relation was found between Preferences change direction and the other covariates. The links significantly connecting some covariates with Preferences change intensity met the expectations: Preferences change was more intense among younger policymakers, among more educated people, and among people less interested in politics. The Tobit models, however, invite us to be prudent about the significance of those effects in the case of the Education level and the degree of political interest.

Preferences change direction strongly depends on policymakers' perceptions about the impact of policies on their interests. It means that policymakers' preferences actually change if they perceive that their interests vested in the policy are influenced during the policy process. If these impacts are positive, Preferences change direction is more positive, and the other way round. This validates the first general hypothesis related to policymakers' interests. This holds for Organizational interests as well as Personal interests, even if Organizational interests are (1,5 time) more influential than Personal interests in this respect. In accordance with rational choice theory, this confirms that one motivation of actors' attitudes is the maximization of their interests. Rather than on an assumption, however, this confirmation is based here on empirical data resulting from actors' self-reported perceptions. This research also adds a block to the literature on social and political attitudes, by demonstrating, with a different approach and an innovative measurement method, that interests actually play a role in Preferences change direction, which is actually an attitudinal change. The analyses, nevertheless, also demonstrate that personal and organizational interests only account

for about 10 % of the variation of Preferences change direction, at the individual level. It means that much room remains for other explanations of this attitudinal change. This result shows that actors' motivations are multiple, in accordance with the framework of this research.

According to the second general hypothesis of the research related to interests, it was expected that the relation between Vested interests and Preferences change direction (the first general hypothesis) should be stronger among policymakers giving more importance to their interests. This hypothesis was not validated by the results. This result shows the relevance of another assumption made in the framework of this research: actors are guided by (imperfect) coherence among beliefs rather than by perfect rationality. In fact, general hypothesis 2 seemed to assume too much rationality among policymakers' beliefs.

No hypothesis was formulated on the simple effect of the Valence of interests on Preferences change. The results showed, however, that the policy preferences of the policymakers giving more importance to their personal interests evolve more negatively than the preferences of other policymakers. This was attributed to a heuristic-based mode of reasoning evidenced by prospect theory. All things being equal, those policymakers probably associate more risks to (policy) changes than other policymakers do, because they know the impacts of current policies on their interests, whereas the impacts of new policies could be more negative in the long term. This interpretation is only a suggestion. It is, however, coherent with other parts of the Advocacy Coalition Framework also based on prospect theory. For example, policymakers' tendency to consider their political enemies more powerful than they actually are, is also justified with the heuristic-based mode of reasoning weighing possible losses more than possible gains.

The results also showed that the policy preferences of the policymakers who give more importance to their organizational interests tend to evolve more intensively, be it negatively or positively. As organizational interests are probably less emotional than personal interests, they probably incline policymakers to use heuristic-based modes of reasoning less than personal interests do. Hence, it is not surprising that there is no negative influence of the Valence of organizational interests on Preferences change direction as is in the case with the Valence of personal interests. On the other hand, when policymakers are attentive to the interests of their organization, they are probably more responsive to the (perceived) impacts, negative or positive, of the policy on their organization: according to these impacts, they are more prone to revising their preferences.

Two findings related to the effects of trust on policy learning deserve attention. First, the preferences of policymakers who trust politicians more are less likely to evolve negatively. According to the fit statistics of the model evidencing this relation, it should be carefully considered and requires confirmation.

Second, Preferences change direction actually depends on policymakers' trust in other subsystem members: This result, however, only appears in a model combining the effects of trust and the effects of interests, that is, in a model examining the effects of trust when the effects of interests are controlled. While a positive connection was expected between interpersonal trust and Preferences change direction, the policy preferences of a policymaker actually evolve more negatively when he trusts the other members of his subsystem more. Does this mean that interpersonal trust is actually related to Policy preferences change? A possible interpretation of this result is that policymakers who trust their colleagues feel freer to adapt their policy preferences

negatively with respect to the liberalization process in a context in which many people are involved in this compulsory policy transfer. In this case, trust really alters the way policymakers adapt their beliefs and attitudes with respect to policies. If trust only allows policymakers to report what they really think in the questionnaire (whereas distrust would prompt them to concealing their actual thoughts), this connection is due to a measurement bias. The data do not allow deciding between these two possible explanations.

The results of this research are also relevant to policy practitioners. First of all, in accordance with the Advocacy Coalition Framework and other theories of the policy process, this research confirms that policymakers' preferences do not evolve very much. For sure, this does not mean that most policymakers are opposed to the policy processes they are involved in. It only means that when policymakers have an opinion about a policy, be it positive, neutral or negative, it is not likely to evolve much over time. An implication of this result is that the initial framing of a policy, as well as its resulting perception by the policymakers supposed to implement it, are essential.

Policymakers' preferences actually evolve, however, and the research provides several indications on the type of policymakers who seem easier to persuade to revise their opinions. The policy preferences of female policymakers evolved more positively with respect to the liberalization policy. Policymakers' preferences also evolved in accordance with the perceived impacts of the liberalization process on their interests. By contrast, the preferences of the policymakers with a higher degree of trust in other subsystem members evolved more negatively. Of course, these results probably depend on the nature of the policy at stake.

More interestingly, the research also provides information about the types of policymakers who are more likely to revising their policy preferences over time, be it in a positive direction or negative direction. Those policymakers are female, less educated and with a lower degree of political interest. Policy practitioners' arguments probably have more opportunities to convince those policymakers to change their opinions about a policy. These policymakers, however, do not commonly occupy the key positions in an organization; those positions are most often held by men with a higher-level education.

Organizational interests are more effective levers than Personal interests with regard to the evolution of policymakers' preferences. As mentioned above, the effect of Organizational interests on Preferences change direction is stronger than the effect of Personal interests: policymakers' preferences are more likely to adapt their preferences according to the impacts of a policy that they perceive on the interests of their organization than according to impacts perceived on their personal interests. One could counter-argue that policies have probably, by nature, more impacts on organizations than on the personal well-being of policymakers, which could explain this difference. As all variables of the research were standardized before their introduction into statistical models, however, this counter-argument does not hold; organizational interests are really more influential than personal interests. Similarly, the research showed that policymakers who give more importance to their organizational interests are more susceptible to adapting their policy preferences, be it positively or negatively. Those results are worthwhile for practitioners. It means that, to convince policymakers to implement a policy, working on the organizational impacts of this policy is more effective than to argue that it will have positive impacts on policymakers' personal interests.

From a normative perspective, this result also suggests that policymakers are more sensible to the collective repercussions of policies than to the consequences they have on their personal interests. Based on this research, this conclusion holds for the organizational dimension, in comparison with self-interest. A tentative corollary of this conclusion is that policymakers should be more sensible to the public interest than to their organizational interests and, certainly, to their personal interests, when assessing the impacts of a new policy. This corollary, however, may not be confirmed by the results of the research. The Advocacy Coalition Framework has claimed that values and ideology are more effective predictors of policy preferences and policy learning than personal interests. In a certain sense, this research centred on interests does not tell us a different story. Interests, including personal interests, actually play a role that may not be ignored in the formation of policy preferences over time. On average, however, collective (organizational) aspects seem more important to policymakers than personal interests. In addition, as previously mentioned, the models show that much scope remains for other explanations of policy learning, for example political beliefs or socio-psychological aspects. These aspects include trust.

The research has shown that the degree of trust policymakers have in other subsystem members is likely to influence the evolution of their policy preferences. The Preferences of confident policymakers evolved more negatively with respect to the liberalization process. Depending on the interpretation of this result, the lessons for practitioners are different. It may be the case that trust allowed policymakers to report what they really think in the questionnaire of the survey (whereas distrust inclined them to conceal the actual evolution of their preferences). If this interpretation is correct, it means that establishing a climate of trust in the policy subsystem is crucial for practitioners to know what policymakers really think of new policies and how they should behave with respect to those policies. If trust really negatively alters the way policymakers adapt their preferences with respect to policies over time, this lesson does not hold.

The practical conclusions of the research were presented from the perspective of policy practitioners willing to effectively steer a policy process. Opposite lessons are valuable as well for policy practitioners willing to impede policy decisions or the implementation of a given policy.

Limitations and future research

When considering the project that was presented to the competent academic authorities at the beginning of this PhD research, I judge that the objectives that were associated to it have been achieved. These objectives notably included the individual-level conceptualization and measurement of policy learning in the context of the policy process and the analysis of some of its individual-level conditions with adequate theories and methods. Several limitations of the research deserve attention, however. They can be the starting points for future studies on policy learning.

As mentioned above, the empirical context in which the research was conducted has been appropriate in many respects, with a good generalizability power. The analytical characteristics of this context, however, are particular. As the research focused on the policy preferences of national

policymakers, the liberalization process should be viewed as an external event or more specifically a mandatory policy transfer from a hierarchically superior unit of government (the European Union). In the dissertation, it was argued that policy learning remained crucial in this process and that this view may be nuanced when considering that several national policymakers, in particular civil servants, participated in the European policymaking process as well. Questions remain, however, on the type of descriptive statistics and statistical connections that would be found in a context where a larger number of policymakers took part in the policymaking process on a voluntary basis, typically in bottom-up policy processes. Would their policy preferences change more? Or less? Would they not give a lower priority to their interests? Would interpersonal trust still play a role in the alteration of policy preferences over time? Etc.

The geographical and functional context of the research is also particular. For example, this context is highly technological (though political as well). Belgium is also a Western European country characterized by a “consensus” democracy (Lijphart, 1999). Do policymakers’ preferences evolve differently and for different reasons, over time, in less technological policy areas or in other parts of the world? This kind of question should be taken into account when discussing similar issues in other functional and geographical areas. On several comparable respects, however, the results of the present research seem to be convergent with the results of existing studies. For example, in accordance with those studies, policymakers’ preferences do not evolve very much over time. This suggests that the empirical context of the present research is perhaps particular, but not too specific.

The research introduced a new way of looking at policy learning by measuring, in addition to the direction that took the evolution of policy preferences over time, the intensity of this change independently of its direction. In my opinion, however, the research has not introduced enough satisfactory explanatory variables to explain Preferences change intensity at the individual level. In the most complete model, the covariates and the explanatory variables account for only 8,2 % of the individual-level variation of Preferences change intensity. In addition, in this percentage, the explanatory variables do not play a role significant enough (cf. Table 54). This result is less surprising when considering that the role played by interests in attitude formation and change is most often examined to explain the direction, rather than the strength, of attitudes and attitudinal changes in the existing literature. Trust, however, which was expected to be more strongly connected with Preferences change intensity, did not provide satisfactory results. This does not mean, however, that investigations on Preferences change intensity should not be continued, on the contrary: this aspect of policy learning is important to identify those policymakers who are the most susceptible to revising their beliefs and opinions with respect to a policy. As the results of this research are not completely satisfactory to explain this important aspect of policy learning adequately with factors related to interests and trust, more research is required. Results like the negative connection between the valence of personal interests and the negative evolution of policy preferences suggest that individual policymakers have recourse to heuristic-based modes of reasoning to revise their policy preferences. Based on this kind of results, in my opinion, future efforts should be steered toward the analysis of the role played by socio-psychology, even more than they have been in the present research. The survey which was conducted contains many other items that could be used for this purpose.

Multilevel regression models were used to focus on the variations of policy learning due to individual-level differences, rather than differences due to the group unit each policymaker belongs

to. To isolate individual-level variations, multilevel models took account of the subsystem and the type of organization of each policymaker. Based on the preliminary documentary analysis and the interviews, these two aggregate levels of analysis were considered to be responsible for much aggregate-level variation of policy learning. These predictions have been correct in the case of Preferences change direction – the intercept-only models showed that the subsystem level and the organization level account for about 14 % of the total variation of the dependent variable – but less accurate in the case of Preferences change intensity – the two aggregate levels only account for about 5 % of the total variation of the variable. In addition, these results do not mean that the remaining variation of the two indicators of the dependent variable is only individual-level. The subsystem and the type of organization were chosen because these aggregate levels probably have a stronger impact on the evolution of policymakers' preferences. However, other types of group units can have an impact on policy learning, for example the involvement of policymakers in networks more or less influenced by the liberalization policy. A consequence of this is that the assessment of the individual-level variation, as well as the part it explained by independent variables, may be not exactly accurate, in particular if a group unit with a strong impact on policymakers' preferences was not taken into account. In my opinion, however, based on the preliminary documentary analysis and the interviews, it is not the case.

Another possible limitation concerns the measurement of organizational interests. The descriptive statistics of the research suggest that policymakers attach a lot of importance (valence) to their organizational interests. The results also showed a strong statistical connection between organizational interests vested in the liberalization policy and Preferences change direction. With regard to these results, the practical conditions of the survey should be remembered. In each participating organization, the survey was conducted after the authorization of the higher management, relayed on professional email addresses and, most often, filled in by the respondents at work on their professional computers. As discussed in the dissertation, in such conditions, it is reasonable to think that at least a small bias may have altered the answers of the respondents. For example, they could feel uncomfortable to answer that they do not give any importance to the interests of their organization. I remain convinced that the protocol followed to conduct and issue the survey was the best possible. But it is worth noting that the same questions asked in another context – for example, on a purely voluntary basis and in a private environment – could provide different results. Based on the preliminary interviews conducted to prepare the survey, however, I judge that the basic trends characterizing the descriptive statistics and the statistical results of this research would remain similar.

The investigation of the data was mainly based on the estimation of multilevel regression and Tobit models, in addition to the analysis of their fit statistics. These models have multiple advantages presented in the dissertation and have allowed evidencing several interesting connections between the explanatory variables and the two indicators of the dependent variable. As most of these variables are continuous or ordinal, however, these analyses have not allowed to draw conclusions on some particular categories of policymakers. For example, the analyses have shown that the preferences of older policymakers changed less over time. They have not indicated, however, the key age categories. For example, do policymakers who are less than 40 years old significantly differ from older ones or do policymakers who are more than 60 years old significantly differ from younger ones? This kind of information could be useful, in particular for policy practitioners. An exception to this problem concerns the gender variable, which is naturally composed of two categories only:

women's preferences evolved less negatively than men's preferences with respect to the liberalization policy. Further research is required on specific categories of policymakers. Appropriate methods exist to address this kind of problem. They include the categorization of ordinal and continuous variables or the analysis of marginal effects.

In conclusion, I would like to situate this dissertation in the context of a larger research program. First of all, the present dissertation is based on correlational data. While this kind of data allows evidencing interesting effects in real-life contexts, they have a major drawback: policy learning is longitudinal by nature. Even if the survey was conducted cautiously, respondents were obliged to look to the past to report on the evolution of their policy preferences and to assess the impacts of the liberalization process over time. This exercise can create measurement biases that a panel study would allow avoiding.

In the longer term, the running of experiments would be desirable. Sometimes research efforts can be concentrated on certain types of respondents who are not numerous in real life, for example wealthy people. When the researcher is interested in unspecified populations of individuals, the power of the analyses may be improved by increasing the size of the sample and, consequently, the number of wealthy people included in it. This problem, however, is often combined with a research interest for a specific population, for example the population of policymakers. In this case, increasing the size of the sample and the number of wealthy people becomes more difficult. Correlational surveys do not allow for manipulation. Experiments do. In experimental settings, for example, it is possible to manipulate the wealth of participants (or at least their perception of it in the context of the experiment). Experiments, however, are most often not conducted in real-life conditions. This can sometimes decrease their relevance. Hence, survey data remain very useful.

In my opinion, one important next step of the research program should consist in the systematic connection between the findings on the individual aspects of policy learning and the aggregate levels of the policy process. As mentioned above, policy learning is by nature a multilevel notion. For this reason, it should not be reduced to a sum of psychological mechanisms, at the aggregate level. In addition, the determinants of policy learning at the individual level and the aggregate level may be similar but also slightly different. In other words, group preferences with respect to policies change over time according to individual learning processes and conditions. Hence, the research efforts on the individual conditions of policy learning are crucial. At the same time, some processes and conditions may be specific to the group. Multilevel methods, in particular, can help us address this kind of problem. Some efforts have already been undertaken in this direction (Moyson, 2013, November). The connection between the individual aspects of policy learning and the collective aspects of the policy process will also allow deepening the dialogue between the findings of this research and the existing literature on policy learning and change, focused on aggregate levels of analysis, like the networks, organizations or subsystems.

Existing knowledge was incomplete about the individual aspects of policy learning. This research, I think, has made an interesting contribution to the political science on this respect. Political scientists and policy practitioners, however, are also interested in policy learning in view of its social and political implications. Accurate knowledge of the individual aspects of policy learning is required to determine these implications. Some of them have already been deduced from the results of this dissertation. In the next months, my intention is to improve and extend these results on the

basis of the arguments presented in this conclusion. I also intend to connect these results with the collective aspects of the policy process, which should highlight additional important effects of policy learning.

References

- Adams, G. (1981). *The iron triangle: The politics of defense contracting*. New York: Council on Economic Priorities.
- Addison, P., & Chou, T. (2003). A theory of reasoned action model of accounting students' learning processes and learning strategies. *Asian Review of Accounting*, 11, 53-72.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Ajzen, I. (2012). The theory of planned behavior. In P. A. M. Van Lange, A. W. Kruglanski & E. T. Higgins (Eds.), *The handbook of theories of social psychology* (Vol. 1, pp. 438-459). London: Sage.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.
- Akaike, H. (1987). Factor analysis and the AIC. *Psychometrika*, 52, 317-332.
- Albaum, G. (1997). The Likert scale revisited. *Journal of the Market Research Society*, 39, 331-348.
- Allison, H., & Hobbs, R. (2006). *Science and policy in natural resource management*: Cambridge University Press.
- Allison, P. (2002). *Missing data. Quantitative applications in the Social Sciences*. Thousand Oaks, CA: Sage.
- Alpaydin, E. (2004). *Introduction to machine learning*. Cambridge, MA: MIT Press.
- Altheit, P. (1994). The 'biographical question' as a challenge to adult education. *International Review of Education*, 40, 283-293.
- Argote, L. (Ed.). (2013). *Organizational learning: Creating, retaining and transferring knowledge* (2nd ed.). New York: Springer.
- Argyris, C. (1985). *Strategy, change, and defensive routines*. London: Pitman.
- Argyris, C., & Schön, D. (1978). *Organizational learning: A theory of action perspective*. San Francisco: Jossey-Bass Publishers.
- Argyris, C., & Schön, D. (1996). *Organizational learning II*. Reading, MA: Addison-Wesley Publishing.
- Arias, C. (1996). *Estimation of models with multiple censored variables using numerical methods: An application to the U.S. dairy sector*. University of Wisconsin, Madison, WI.
- Artینگstall, R. (1978). Some random thoughts on non sampling error. *European Research*, 6.
- Atkinson, R., & Flint, J. (2001). Accessing hidden and hard-to-reach populations: Snowball research strategies. Department of Sociology, University of Surrey, Guildford, UK: Social Research Update, n°33.
- ATS Statistical Consulting Group (Producer). (2013). Introduction to multilevel modeling using HLM 6. Retrieved from http://www.ats.ucla.edu/stat/hlm/seminars/hlm6/outline_hlm_seminar.pdf
- Aubin, D., & Lohest, F. (2011). La régulation de l'aviation civile en Belgique: Analyse des régimes institutionnels depuis 1899 (Regulation of civil aviation in Belgium: Analysis of institutional regimes since 1899). *Courrier Hebdomadaire du CRISP*, n°2120-2121.
- Bache, I., & Taylor, A. (2003). The politics of policy resistance: Reconstructing higher education in Kosovo. *Journal of Public Policy*, 25, 279-300.

- Bagozzi, R., Wong, N., Abe, S., & Bergami, M. (2000). Cultural and situational contingencies and the theory of reasoned action: Application to fast food restaurant consumption. *Journal of Consumer Psychology, 9*, 97-106.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*, 191-215.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Feeman.
- Bassili, J. (1996). Meta-judgemental versus operative indexes of psychological attributes: The case of measures of attitude strength. *Journal of Personality and Social Psychology, 71*, 637-653.
- Battaglio, R. P. (2009). Privatization and citizen preferences: A cross-national analysis of demand for private versus public provision of services in three industries. *Administration & Society, 41*, 38-66.
- Battaglio, R., & Legge, J. (2009). Self-interest, ideological/symbolic politics, and citizen characteristics: A cross-national analysis of support for privatization. [10.1111/j.1540-6210.2009.02018.x]. *Public Administration Review, 69*, 697-709.
- Baumgartner, F., & Jones, B. (1993). *Agendas and instability in American politics*. Chicago: University of Chicago Press.
- Bell, B., Schoeneberger, J., Morgan, G., Ferron, J., & Kromrey, J. (2010a). MIXED_DX: A SAS macro for two-level linear model diagnostics. Columbia, SC: University of South Carolina.
- Bell, B., Schoeneberger, J., Morgan, G., Ferron, J., & Kromrey, J. (2010b). *MIXED_DX: A SAS macro for two-level linear model diagnostics*. Paper presented at the SAS Global Forum 2010, San Francisco, CA.
- Bennett, C. (1991). Review article: What is policy convergence and what causes it? *British Journal of Political Science, 21*, 215-233.
- Bennett, C., & Howlett, M. (1992). The lessons of learning: Reconciling theories of policy learning and policy change. *Policy Sciences, 25*, 275-294.
- Benson, D., & Jordan, A. (2011). What have we learned from policy transfer research? Dolowitz and Marsh revisited. *Political Studies Review, 9*, 366-378.
- Berman, S. (2013). Ideational theorizing in the social sciences since 'Policy paradigms, social learning, and the State'. *Governance, 26*, 217-237.
- Berry, F., & Berry, W. (1990). State lottery adoptions as policy innovations: An event history analysis. *American Political Science Review, 84*, 395-415.
- Betsill, M., & Bulkeley, H. (2004). Transnational networks and global environment governance. *International Studies Quarterly, 48*, 279-300.
- Biernacki, P., & Waldorf, D. (1981). Snowball sampling. Problems and techniques of chain referral sampling. *Sociological Methods & Research, 10*, 141-163.
- Birkland, T. (1997). *After disaster: Agenda setting, public policy, and focusing events*. Washington, DC: Georgetown University Press.
- Birkland, T. (1998). Focusing events, mobilization, and agenda settings. *Journal of Public Policy, 18*, 53-74.
- Birkland, T. (2004). Learning and policy improvement after disaster: The case of aviation security. *American Behavioral Scientist, 48*, 341-364.
- Birkland, T. (2006). *Lessons of disaster: Policy change after catastrophic events*. Washington, DC: Georgetown University Press.

- Blalock, H. (1968). The measurement problem. In H. M. Blalock & A. Blalock (Eds.), *Methodology in social research* (pp. 5-27). New York: McGraw-Hill.
- Blindenbacher, R., & Nashat, B. (2010). *The black box of governmental learning*. Washington, DC: The International Bank for Reconstruction and Development / The World Bank.
- Bortolotti, B., Fantini, M., & Siniscalco, D. (2003). Privatization around the world: Evidence from panel data. *Journal of Public Economics*, 88, 305-332.
- Bortolotti, B., & Siniscalco, D. (2004). *The challenges of privatization: An international analysis*. New York: Oxford University Press.
- Bosker, R., & Snijders, T. (2003). *User's manual PINT*. University of Groningen. Groningen, The Netherlands. from <http://www.stats.ox.ac.uk/~snijders/multilevel.htm> or <http://www.gamma.rug.nl>
- Bosker, R., Snijders, T., & Guldemon, H. (2007). PINT: Power analysis IN Two-level designs (Version 2.11). Groningen, The Netherlands: University of Groningen. Retrieved from <http://www.stats.ox.ac.uk/~snijders/multilevel.htm> or <http://www.gamma.rug.nl>
- Brace, I. (2008). *Questionnaire design* (2nd ed.). London, UK & Philadelphia, PA: Kogan Page.
- Braithwaite, V. (1998). Communal and exchange trust norms: their value base and relevance to institutional trust. In V. Braithwaite & M. Levi (Eds.), *Trust and governance* (pp. 46-74). New York: Russell Sage.
- Brown, M., & Kenney, M. (2006). Organizational learning: Theoretical and methodological considerations. In M. L. Brown, M. Kenney & M. Zarkin (Eds.), *Organizational learning in the global context*. Burlington, VT: Ashgate Publishing Company.
- Brunsting, S., & Postmes, T. (2002). Social movement participation in the digital age: Predicting offline and online collective action. *Small Group Research*, 33, 525-554.
- Bryk, A., & Raudenbush, S. (1992). *Hierarchical linear models*. Newbury Park, CA: Sage.
- Bulmer, S., Dolowitz, D., Humphreys, P., & Padgett, S. (2007). *Policy transfer in the European Union*. London: Routledge.
- Bulmer, S., & Padgett, S. (2004). Policy transfer in the European Union: An institutionalist perspective. *British Journal of Political Science*, 35, 103-126.
- Burke, J., & Springer, E. (2003). Relationship valence and attitudes as predictors of interactive intentions. *Communication Research Reports*, 20, 134-142.
- Burns, B. (2004). Heuristics as beliefs and as behaviors. *Cognitive Psychology*, 48, 295-331.
- Busenberg, G. (2000). Innovation, learning, and policy innovation in hazardous systems. *American Behavioral Scientist*, 44, 679-691.
- Cape, P., Lorch, J., & Pierkarski, L. (2007). *A tale of two questionnaires*. Paper presented at the ESOMAR Panel Research Conference, Orlando, FL.
- Carmine, E., & Zeller, R. (1979). *Reliability and validity assessment*. Beverly Hills, CA / London, UK: Sage.
- Casey, B., & Gold, M. (2005). Peer review of labour market programmes in the European Union: What can countries really learn from one another? *Journal of European Public Policy*, 12, 23-43.
- Ceci, S., & Bruck, M. (1993). Suggestibility of the child witness: A historical review and synthesis. *Psychological Bulletin*, 113, 403-439.

- Checkel, J. (2001). Why comply? Social learning and European identity change. *International Organization*, 61, 443-463.
- Chwieroth, J. (2007). Neoliberal economists and capital account liberalization in emerging markets. *International Organization*, 61, 443-463.
- Cialdini, R., Trost, M., & Newsom, J. (1995). Preference for consistency: The development of a valid measure and discovery of surprising behavioral implications. *Journal of Personality and Social Psychology*, 69, 318-328.
- Clore, G., & Schnall, S. (2005). The influence of affect on attitude. In D. Albarracín, B. T. Johnson & M. P. Zanna (Eds.), *The handbook of attitudes* (pp. 437-489). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. New York: Wiley.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112, 155-159.
- Cohen, J. (1997). Deliberation and democratic legitimacy. In J. Bohaman & W. Rehg (Eds.), *Deliberative democracy: Essays on reason and politics*. Cambridge: MIT Press.
- Cohen, M. (1998). Determining sample sizes for surveys with data analyzed by hierarchical linear models. *Journal of Official Statistics*, 14, 267-275.
- Cohen, N., & Arieli, T. (2011). Field research in conflict environments: Methodological challenges and snowball sampling. *Journal of Peace Research*, 48, 423-435.
- Coleman, J. (1988). Social capital in the creation of human capital. *The American Journal of Sociology*, 94(supplement), s95-s120.
- Common, R. (2004). Organisational learning in a political environment. *Policy Studies*, 25, 35 - 49.
- Converse, P. (1964). The nature of belief systems in mass publics. In D. E. Apter (Ed.), *Ideology and discontent* (pp. 206-261). New York: Free Press of Glence.
- Cooper, H. (1979). Statistically combining different studies: Meta-analysis of sex differences in conformity research. *Journal of Personality and Social Psychology*, 37, 131-146.
- Coopey, J. (1998). Learning to trust and trusting to learn: A Role for radical theatre. *Management Learning*, 29, 365-382.
- Corsini, R. (1999). *The Dictionary of Psychology*. Ann Arbor: Braun-Brumfield.
- Cox, J. (2004). How to identify trust and reciprocity. *Games and Economic Behavior*, 46, 260-281.
- Cox, R., & Béland, D. (2013). Valence, policy ideas, and the rise of sustainability. *Governance*, 26, 307-328.
- Crano, W. (1995). Attitude strength and vested interest. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strenght: antecedents and consequences* (pp. 131-157). Mahwah, NJ: Erlbaum.
- Crano, W. (1997a). Vested interest and symbolic politics - observations and recommendations: Reply to Sears (1997). *Journal of Personality and Social Psychology*, 72, 497-500.
- Crano, W. (1997b). Vested interest, symbolic politics, and attitude-behavior consistency. *Journal of Personality and Social Psychology*, 72, 485-491.
- Cronbach, L. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16, 297-334.
- Cyert, R., & March, J. (1963). *A behavioral theory of the firm*. Englewoods Cliffs, NJ: Prentice-Hall.
- Daft, R., & Weick, K. (1984). Towar a model of organizations as interpretation systems. *Academy of Management Review*, 9, 284-295.

- Darke, P., & Chaiken, S. (2005). The pursuit of self-interest: Self-interest bias in attitude judgment and persuasion. *Journal of Personality and Social Psychology*, 89, 864-883.
- De Jong, M. (2009). Rose's "10 steps": Why process, messiness, history and culture are not vague and banal. *Policy and Politics*, 37, 145-150.
- Dehousse, F., & Gadisseur, F. (2002). La libéralisation du secteur ferroviaire et ses conséquences en Belgique. *Courrier Hebdomadaire du CRISP*, 1771-1772, 56 p.
- DeSteno, D., Petty, R., Wegener, D., & Rucker, D. (2000). Beyond valence in the perception of likelihood: The role of emotion specificity. *Journal of Personality and Social Psychology*, 78(3), 397-416.
- Deutsch, K. (1963). *The nerves of government: Models of political communication and control*. New York, NY: Free Press.
- Deutsch, K. (1986). Deutsch K W The nerves of government: Models of political communication and control *This Week's citation classic* (Vol. 19, pp. 18). New Haven, CT: Department of political science, Yale University.
- Dodgson, M. (1993). Learning, trust, and technological collaboration. *Human Relations*, 46, 77-95.
- Dolowitz, D., & Marsh, D. (1996). Who learns what from whom: A review of the policy transfer literature. *Political Studies*, 44, 343-357.
- Dolowitz, D., & Marsh, D. (2000). Learning from abroad: The role of policy transfer in contemporary policy-making. *Governance*, 13, 5-23.
- Douglas, M. (1982). Cultural bias. In M. Douglas (Ed.), *The active voice*. London: Routledge & Kegan Paul.
- Dunlop, C. (2009). Policy transfer as learning: Capturing variation in what decision-makers learn from epistemic communities. *Policy Studies*, 30, 289-311.
- Dunlop, C. (2013). Epistemic communities. In M. Howlett, S. Fritzen, W. Xun & E. Araral (Eds.), *Routledge Handbook of public policy* (pp. 229-243). New York: Routledge.
- Dunlop, C., & James, O. (2007). Principal-agent modelling and learning: The European Commission, experts, and agricultural hormone growth promoters. *Public Policy and Administration*, 22, 403-422.
- Dunn, E. (1971). *Economic and social development: A process of social learning*. Baltimore, MD: Johns Hopkins University Press.
- Dussauge-Laguna, M. (2012). On the past and future of policy transfer research: Benson and Jordan revisited. *Political Studies Review*, 10, 313-324.
- Eagly, A., & Wood, W. (1991). Explaining sex differences in social behavior: A meta-analytic perspective. *Personality and Social Psychology Bulletin*, 17, 306-315.
- Easterby-Smith, M., Crossan, M., & Nicolini, D. (2000). Organizational Learning: Debates Past, Present And Future. *Journal of Management Studies*, 37, 783-796.
- Easterby-Smith, M., & Lyles, M. (Eds.). (2011). *Handbook of organizational learning* (2nd ed.). New York: Wiley.
- Edmondson, A., & Moingeon, B. (1999). Learning trust and organizational change. In M. Easterby-Smith, J. Burgoyne & L. Araujo (Eds.), *Organizational learning and the Learning Organisation* (pp. 157-175). London: Sage.
- Elkins, Z., & Simmons, B. (2005). On waves, clusters and diffusions: A conceptual framework. *The Annals of the American Academy of Political and Social Science*, 598, 33-51.

- Ene, M., Smiley, W., & Bell, B. (2013a). MIXED_FIT: A SAS macro to assess model fit and adequacy for two-level linear models. Columbia, SC: University of South Carolina.
- Ene, M., Smiley, W., & Bell, B. (2013b). *MIXED_FIT: A SAS macro to assess model fit and adequacy for two-level linear models*. Paper presented at the SAS Global Forum 2013, San Francisco, CA.
- Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research*. Helsinki: Orienta-Konsultit.
- Epple, D., Argote, L., & Devadas, R. (1991). Organizational learning curves: A method for investigating inter-plant transfer of knowledge acquired through learning by doing. *Organization Science*, 2, 58-70.
- Etheredge, L. (1981). Government learning: An overview. In S. L. Long (Ed.), *The handbook of political behavior*. New York: Pergamon.
- Etheredge, L. (1985). *Can government learn?* New York: Pergamon Press.
- Etheredge, L., & Short, J. (1983). Thinking about government learning. *Journal of Management Studies*, 20, 41-58.
- European Commission. (1999). Liberalisation of network industries. Economic implications and main policy issues *Reports and Studies* (Vol. 4). Brussels: European Commission / Directorate-General for Economic and Financial Affairs.
- Evans, M. (2009). Policy transfer in a critical perspective. *Policy Studies*, 3, 243-268.
- Faure, A., Pollet, G., & Warin, P. (1995). *La construction du sens dans les politiques publiques*. Paris: L'Harmattan.
- Fazio, R., Eiser, J. H., & Shook, N. (2004). Attitude formation through exploration: Valence asymmetries. *Journal of Personality and Social Psychology*, 87, 293-311.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford, CA: Stanford University Press.
- Festinger, L., Riecken, H. W., & Schachter, S. (1956). *When prophecy fails*. Minneapolis: University of Minnesota Press.
- Fiol, C., & Lyles, M. (1985). Organizational learning. *The Academy of Management Review*, 10, 803-813.
- Fishbein, M. (1967). Attitude and the prediction of behaviour. In M. Fishbein (Ed.), *Readings in attitude theory and measurement*. New York: Wiley.
- Fishbein, M. (1968). An investigation of relationships between beliefs about an object and the attitude towards that object. *Human Relationships*, 16, 233-240.
- Fishbein, M., & Ajzen, I. (1972). *Beliefs, attitudes, intentions and behaviour: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior. The reasoned action approach*. New York: Taylor & Francis.
- Fox, J. (2008). *Applied regression analysis and generalized linear models* (2nd ed.). Thousand Oaks, CA: Sage.
- Freeman, R. (2006). Learning in public policy. In M. Moran, M. Rein & R. E. Goodin (Eds.), *The Oxford handbook of public policy* (pp. 367-388). New York: Oxford University Press.
- Friedmann, J. (1973). *Retracking America*. Emmaus, PA: Rodale Press.

- Friedmann, J. (1978). Innovation, flexible response, and social learning: A problem in the theory of meta-planning. In R. W. Burchell & G. Sternlieb (Eds.), *Planning theory in the 1980s: A search for future directions*. New Brunswick, NJ: Transaction Books.
- Friedmann, J. (1984). Planning as social learning. In D. C. Korten & R. Klaus (Eds.), *People centered development: Contributions toward theory and planning frameworks*. West Hartford, CO: Kumarsina Press.
- Garmines, E., & Zeller, R. (1979). *Reliability and validity assessment*. Thousand Oaks, California / London / New Delhi, India: Sage Publications.
- Genoud, C. (2004). Libéralisation et régulation des industries de réseau: Diversité dans la concurrence? *Revue internationale de politique comparée*, 11, 187-204.
- George, D., & Mallery, P. (2003). *SPSS for Windows step by step: a simple guide and reference*. 11.0 update (4th ed.). Boston: Allyn & Bacon.
- Geradin, D. (2000). *The liberalization of State monopolies in the European Union and beyond*. The Hague, The Netherlands: Kluwer Law International.
- Geradin, D. (2006). *The liberalization of network industries in the European Union: Where do we come from and where do we go?* Helsinki.
- Gilardi, F. (2010). Who learns what in policy diffusion processes? *American Journal of Political Science*, 54, 650-666.
- Gilardi, F., Füglistner, K., & Luyet, S. (2009). Learning from others: The diffusion of hospital financing reforms in OECD countries. *Comparative Political Studies*, 42, 549-573.
- Gilovich, T., Griffin, D., & Kahneman, D. (Eds.). (2003). *Heuristics and biases: The psychology of intuitive judgment*. New York: Cambridge University Press.
- Gilson, C., Dunleavy, P., & Tinkler, J. (2009). Organizational learning in government sector Organizations: Literature review. London: London School of Economics Public Policy Group.
- Gliem, J., & Gliem, R. (2003). *Calculating, Interpreting, and Reporting Cronbach's Alpha Reliability Coefficient for Likert-Type Scales*. Paper presented at the 2003 Midwest Research to Practice Conference in Adult, Continuing, and Community Education.
- Godet, F. (2009). Le paquet ferroviaire 2 bis. *Revue Générale des Chemins de Fer*, 181, 35-53.
- Goertz, G. (2006). *Social science concepts. A user's guide*. Princeton, NJ: Princeton University Press.
- Goertz, G., & Mahoney, J. (2012). *A tale of two cultures. Qualitative and quantitative research in the social sciences*. Princeton, NJ: Princeton University Press.
- Goldberger, A. (1964). *Econometric theory*. New York: Wiley.
- Goldstein, J., & Keohane, R. (1993). Ideas and foreign policy: An analytical framework. In J. Goldstein & R. O. Keohane (Eds.), *Ideas and foreign policy. Beliefs, Institutions and policy change* (pp. 3-30). Ithaca and London: Cornell University.
- Green, D. (1988). *Self-interest, public opinion, and mass political behavior*. doctoral dissertation, University of California, Berkeley.
- Griffin, R., Neurwirth, K., & Dunwoody, S. (1995). Using the theory of reasoned action to examine the impact of health risk messages. *Communication Yearbook*, 18, 201-228.
- Grin, J., & Loeber, A. (2007). Theories of policy learning: Agency, structure, and change. In F. Fischer, G. Miller & M. S. Sidney (Eds.), *Handbook of public policy analysis: Theory, Politics, and Methods* (pp. 201-219). London: CRC Press.

- Guiso, L. (2012). Trust and risk aversion in the aftermath of the Great Recession. *European Business Organization Law Review (EBOR)*, 13, 195-209.
- Guler, I., Guillén, M. F., & Macpherson, J. M. (2002). Global competition, institutions, and the diffusion of organizational practices: The international spread of ISO 9000 quality certificates. *Administrative Science Quarterly*, 47, 207-232.
- Gulliksen, H. (1950). *Theory of mental tests*. New York: Wiley.
- Haas, E. (1990). *When knowledge is power: Three models of change in International Organizations*. Berkeley, CA: University of California Press.
- Haas, E. (1991). Collective learning: Some theoretical speculations. In G. Breslauer & P. Tetlock (Eds.), *Learning in U.S. and Soviet foreign policy* (pp. 72-76). Boulder: Westview Press.
- Haas, E., & Haas, P. (1995). Learning to learn: Improving international governance. *Global Governance*, 1, 255-285.
- Haas, P. (1992a). Introduction: Epistemic communities and international policy coordination. *International Organization*, 46, 1-35.
- Haas, P. (Ed.). (1992b). *Knowledge, power and international policy coordination*. Cambridge, MA: MIT Press.
- Hale, J., Householder, B., & Green, K. (2003). The theory of reasoned action. In J. P. Dillard & M. Pfau (Eds.), *The persuasion handbook: Developments in theory and practice*. Thousand Oaks, CA: Sage.
- Hall, P. (1989). *The political power of economic ideas*. Princeton, NJ: Princeton University Press.
- Hall, P. (1993a). Ideas and the social sciences. In J. Goldstein & R. Keohane (Eds.), *Ideas and foreign policy*. Princeton, NJ: Princeton University Press.
- Hall, P. (1993b). Policy paradigms, social learning and the state: The case of economic policymaking in Britain. *Comparative Politics*, 25, 275-296.
- Hall, P., & Taylor, A. C. R. (1996). Political Science and the three new institutionalisms. *Political Studies*, 44, 936-957.
- Hall, P., & Taylor, R. (1998). The potential of historical institutionalism: A response to Hay and Wincott. *Political Studies*, 46, 958-962.
- Hamilton, L. (2013). *Statistics with Stata: version 12* (8th ed.). Stamford, CT: Cengage.
- Hartley, J., & Allison, M. (2002). Good, better, best? Inter-organizational learning in a network of local authorities. *Public Management Review*, 4, 101-118.
- Hay, C. (2004). Theory, stylized heuristic or self-fulfilling prophecy? The status of rational choice theory in public administration. *Public Administration*, 82, 39-62.
- Hay, C., & Wincott, D. (1996). Structure, agency and historical institutionalism. *Political Studies*, 46, 951-957.
- Heclo, H. (1974). *Modern social politics in Britain and Sweden: From relief to income maintenance*. New Haven, CT / London: Yale University Press.
- Heclo, H. (1978). Issue network and the executive establishment. In A. King (Ed.), *The new American political system* (pp. 87-124). Washington, D.C.: American Enterprise Inst.
- Hedberg, B. (1981). How organizations learn and unlearn? In P. C. Nystrom & W. H. Starbuck (Eds.), *Handbook of organizational design* (pp. 3-27). New York: Oxford University Press.
- Heider, F. (1958). *The psychology of interpersonal relations*. New York: Wiley.

- Hoberg, G. (1996). Putting ideas in their place: a response to "learning and change in the British Columbia forest policy sector". *Canadian Journal of Political Science*, 26(1), 135-144.
- Hogg, M., & Smith, J. (2007). Attitudes in social context: A social identity perspective. *European Review of Social Psychology*, 18, 89-131.
- Holland, R., Verplanken, B., & van Knippenberg, A. (2003). From repetition to conviction: Attitude accessibility as a determinant of attitude certainty. *Journal of Experimental Social Psychology*, 39(6), 594-601.
- Hopf, T. (2010). The Logic of Habit in International Relations. *European Journal of International Relations*, 16, 539-561.
- Hovland, C., & Janis, I. (1959). *Personality and persuability*. New Haven, CT: Yale University Press.
- Hox, J. (2002). *Multilevel analysis: Techniques and applications*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Hrivnak, M., & Krizanova, A. (2006). Restructuring of network industries. *Vadyba/Management*, Nr. 3-4, 32-35.
- Huber, G. (1991). Organizational learning: The contributing processes and the literature. *Organization Science*, 2, 88-115.
- Illeris, K. (2009). *Contemporary theories of learning*. New York: Routledge.
- Insko, C. (2012). Balance-logic theory. In P. A. M. Van Lange, A. W. Kruglanski & E. T. Higgins (Eds.), *The handbook of theories of social psychology* (pp. 178-200). London: Sage.
- Jacobs, K., & Barnett, P. (2000). Policy transfer and policy learning: A study of the 1991 New Zealand health services taskforce. *Governance*, 13, 185-213.
- Jacquemin, A., Tulkens, H., & Mercier, P. (2001). *Fondements d'économie politique*. Bruxelles: De Boeck Université.
- Janssen, R. (2008). *Educational measurement*. Course taught in the Master of Educational Studies at the Katholieke Universiteit Leuven.
- Jeffres, L., Dobos, J., & Sweeney, M. (1987). Communication and commitment to community. *Communication Research*, 14, 619-643.
- Jenkins-Smith, H., & Sabatier, P. (1993a). The dynamics of policy-oriented learning. In P. A. Sabatier & H. C. Jenkins-Smith (Eds.), *Policy change and learning. An advocacy coalition approach* (pp. 41-56). Boulder, CO: Westview Press.
- Jenkins-Smith, H., & Sabatier, P. (1993b). The study of public policy processes. In P. A. Sabatier & H. C. Jenkins-Smith (Eds.), *Policy change and learning. An advocacy coalition approach* (pp. 1-10). Boulder, CO: Westview Press.
- Jenkins-Smith, H., & Sabatier, P. (1994). Evaluating the advocacy coalition framework. *Journal of Public Policy*, 14, 175-203.
- Jobert, B., & Muller, P. (1987). *L'Etat en action*. Paris: PUF.
- Jones, E., & Davis, K. (1965). From acts to dispositions: the attribution proces in social psychology. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 2, pp. 219-266). New York: Academic Press.
- Jones, T., & Newburn, T. (2006). *Policy transfer and criminal justice*. Milton Keynes: Open University Press.
- Jordan, A., & Liefferink, D. (Eds.). (2004). *Environmental policy in Europea*. London: Routledge.

- Jordan, A., van Hasselt, H., Berkhout, H., Huitema, D., & Rayner, T. (2012). Climate change policy in the European Union: Understanding the paradoxes of multi-level governing. *Global Environment Politics*, 12, 43-66.
- Jöreskog, K. (2002). *Censored variables and censored regression*. Technical documents about LISREL. Scientific Software International Inc. Skokie, IL. from <http://www.ssicentral.com/lisrel/techdocs/censor.pdf>
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47, 263-291.
- Kalton, G., & Schuman, H. (1982). The effect of the question on survey responses: a review. *Journal of the Royal Statistical Society (Series A)*, 145, 42-73.
- Kaplowitz, M., Haddock, G., & Levine, R. (2004). A comparison of web and mail survey response rates. *Public Opinion Quarterly*, 68, 94-101.
- Katzenstein, P. (1978). Introduction: Domestic and international forces and strategies of foreign economic policy. In P. J. Katzenstein (Ed.), *Between power and plenty: Foreign economic policies of advanced industrial states* (pp. 3-22). Madison: The University of Wisconsin Press.
- Kelley, H. (1967). Attribution theory in social psychology. In D. Levine (Ed.), *Nebraska Symposium on Motivation* (Vol. 15). Lincoln: University of Nebraska Press.
- Kelley, K., & Preacher, K. (2012). On effect size. *Psychological Methods*, 17, 137-152.
- King, G., Keohane, R., & Verba, S. (1994). *Designing social inquiry*: Princeton University Press.
- Kingdon, J. (1984). *Agendas, alternatives, and public policies*. Boston: Little Brown.
- Kingdon, J. (1995). *Agendas, alternatives, and public policies* (2nd ed. ed.). New York: Addison, Wesley, Longman.
- Knill, C. (2005). Introduction: Cross-national policy convergence: Concepts, approaches and explanatory factors. *Journal of European Public Policy*, 12, 764-774.
- Krosnick, J., & Petty, R. (1995). Attitude strength: An overview. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 1-24). Hillsdale, NJ Erlbaum.
- Lakatos, I. (1971). History of science and its rational reconstruction. *Boston Studies in the Philosophy of Science*, 8, 42-134.
- Laperrouza, M. (2011). Reforming railways. In M. Finger & R. W. Künneke (Eds.), *International handbook of network industries. The liberalization of infrastructure* (pp. 215-233). Northampton, MA: Edward Elgar.
- Lau, R., & Heldman, C. (2009). Self-interest, symbolic attitudes, and support for public policy: A multilevel analysis. *Political Psychology*, 30, 513-537.
- Leach, W., & Sabatier, P. (2005). To trust an adversary integrating rational and psychological models of collaborative policymaking. *American Political Science Review*, 99, 491-503.
- Learning Center. (2011). Converting risk aversion: Trust, competitive advantage Retrieved May 19th, 2013, from <http://www.learningcenter.net/library/aversion.shtml>
- Lee, V. (2002). Unlearning: A critical element in the learning process *Essays on Teaching Excellence* (Vol. 14). Nederland, CO: The Professional & Organizational Development Network in Higher Education.
- Lehman, B., & Crano, W. (2002). The pervasive effects of vested interests on attitude-criterion consistency in political judgement. *Journal of Experimental Social Psychology*, 38, 101-112.

- Lemieux, V., & Ouimet, M. (2000). *Les réseaux de politique publique: Un bilan critique et une voie de formalisation*. Québec: Université de Laval.
- Lerner, J., & Keltner, D. (2000). Beyond valence: Toward a model of emotion-specific influences on judgement and choice. *Cognition and Emotion*, 14, 473-493.
- LeRoy, S., & Werner, J. (2000). *Principle of financial economics*. New York: Cambridge University Press.
- Lertzman, K., Rayner, J., & Wilson, J. (1996). On the place of ideas: A reply to George Hoberg. *Canadian Journal of Political Science*, 29, 145-148.
- Lewis, G. (2011). *Origins and structure of social and political attitudes: Insights from personality system theory and behavioral genetics*. A thesis submitted in fulfilment of requirements for the degree of Doctor of Philosophy, The University of Edinburgh.
- Lidskog, R., & Sundqvist, G. (2002). The role of science in environmental regimes: The case of LRTAP'. *European Journal of International Relations*, 8, 77-101.
- Lijphart, A. (1999). *Patterns of democracy. Government forms and performance in thirty six countries*. New Haven, CT: Yale University Press.
- Likert, R. (1932). A technique for the measurement of attitudes *Archives of Psychology*, 140, 5-55.
- LimeSurvey Project Team / Carsten Schmitz. (2012). LimeSurvey: An open source survey tool. Hamburg, Germany: LimeSurvey Project. Retrieved from <http://www.limesurvey.org>
- Lin, N., Cook, K., & Burt, R. (2001). *Social capital: Theory and research*. New York: Aldine De Gruyter.
- Littell, R., Milliken, G., Stroup, W., Wolfinger, R., & Schabenberger, O. (2006). *SAS for mixed models* (2nd ed.). Cary, NC: SAS Institute Inc.
- Lodge, M., & Taber, C. (2013). *The rationalizing voter*: Cambridge University Press.
- Long, J. (1997). *Regression models for categorical and limited dependent variables*. Thousand Oaks, CA: Sage.
- Longford, N. (1993). *Random coefficient models*. Oxford, UK: Clarendon Press.
- Lord, F., & Novick, M. (1968). *Statistical theories of mental test scores*. Reading, MA: Addison-Wesley.
- Lorenz, E. (1993). Flexible production systems and the social construction of trust. *Politics and Society*, 21, 307-324.
- Lubell, M. (2000). Cognitive conflict and consensus building in the National Estuary Program. *American Behavioral Scientist*, 44, 628-647.
- Lubell, M. (2001). *Trust and cooperation in watershed management. Full research proposal for the Russel Sage Foundation: Initiative on the study of trust*. Department of Political Science. Florida State University.
- Lundvall, B. (2007). National innovation systems—Analytical concept and development tool. *Industry and Innovation*, 14, 95-119.
- Mahoney, J., & Goertz, G. (2006). A tale of two cultures: Contrasting quantitative and qualitative research. *Political Analysis*, 14, 227-249.
- Mansbridge, J. (1990). *Beyond self-interest*. Chicago: University of Chicago Press.
- March, J. (1991). Exploration and exploitation in organizational learning. *Organization Science*, 2(1), 71-87.
- Margalit, Y. (2013). Explaining social policy preferences: Evidence from the great recession. *American Political Science Review*, 107, 80-103

- Marin, B., & Mayntz, R. (Eds.). (1991). *Policy Networks: Empirical evidence and theoretical considerations*. Frankfurt, Germany: Campus Verlag.
- Marsh, D., & Sharman, J. (2009). Policy diffusion and policy transfer. *Policy Studies*, 30, 269-288.
- Martinussen, P. (2008). Self-interest or ideology? The attitude of Norwegian medical specialists towards private welfare services. *Scandinavian Political Studies*, 31, 149-172.
- Mayer, R., Davis, J., & Schoorman, F. (1995). An integrative model of organisational trust. *Academy of Management Review*, 20, 709-734.
- McDonald, J., & Moffitt, R. (1980). The uses of tobit analysis. *The Review of Economics and Statistics*, 62, 318-321.
- McGuire, W. (1969). The nature of attitudes and attitude change. In G. Lindzey & E. Aronson (Eds.), *Handbook of social psychology* (pp. 136-314). Reading, MA: Addison-Wesley.
- McKnight, D., & Chervany, L. (1996). *The meaning of trust*. Working Paper: Carlson School of Management. University of Minnesota.
- McLeod, S. (2010). Attribution theory - Simply psychology, from <http://www.simplypsychology.org/attribution-theory.html>
- McMillan, J., & Foley, J. (2011). Reporting and discussing effect size: Still the road less traveled? *Practical Assessment, Research and Evaluation*, 16(. Retrieved from <http://pareonline.net/getvn.asp?v=16&n=14>
- Mertens, D. (2005). *Research and evaluation in education and psychology. Integrating diversity with quantitative, qualitative, and mixed methods* (2nd ed.). Thousand Oaks, CA: Sage.
- Meseguer, C. (2004). What role for learning? The diffusion of privatisation in OECD and Latin American countries. *Journal of Public Policy*, 24, 299-325.
- Metcalfe, L. (1993). Public management: From imitation to innovation. In J. Kooiman (Ed.), *Modern governance: New government-society interactions*. London: Sage.
- Metcalfe, L., & Richards, S. (1987). *Improving public management*. London: Sage.
- Metcalfe, L., & Richards, S. (1992). *Improving public management*. London: Sage.
- Mezirow, J. (1991). *Transformative dimensions of adult learning*. San Francisco: Jossey-Bass.
- Miller, D. (2005). The norm of self-interest. [Meeting Abstract]. *Australian Journal of Psychology*, 57(Supplement), 95-95.
- Milton, C., & Wise, D. (2005). *Democracy under pressure: An introduction to the American political system* (10th ed.). Belmont, CA: Thompson- Wadsworth.
- Mitchell, M. (2010). *Data management using Stata: A practical handbook*. College Station, TX: Stata Corp.
- Mitra, S., & Datta, S. (2008). *Introduction to machine learning and bioinformatics*. Boca Raton, FL: CRC Press: CRC Press.
- Moehring, K., & Schmidt, A. (2012). *Multilevel tools*. Paper presented at the German Stata Users Group meeting, Berlin, Germany.
- Moehring, K., & Schmidt, A. (2013). MLT: Stata module to provide multilevel tools. Statistical Software Components S457577: Boston College Department of Economics.
- Moerbeek, M., van Breukelen, G., & Berger, M. (2000). Design issues for experiments in multilevel populations. *Journal of Educational and Behavioral Statistics*, 25, 271-284.

- Montpetit, E. (2007). *Policy learning in the midst of controversy: A comparative survey of biotechnology policy actors*. Paper presented at the Annual meeting of the American Political Science Association, Hyatt Regency Chicago and the Sheraton Chicago Hotel and Towers, Chicago, IL.
- Mossberger, K., & Wolman, H. (2003). Policy transfer as a form of prospective policy evaluation: Challenges and recommendations'. *Public Administration Review*, 63, 428-440.
- Moynehan, D., & Landuyt, N. (2009). How do public organizations learn? Bridging structural and cultural divides. *Public Administration Review*, 69, 1097-1105.
- Moyson, S. (2010). L'impact des réseaux d'acteurs sur le transfert des recommandations de l'enquête PISA en Communauté française et en Communauté flamande de Belgique. *Administration publique*, 34, 445-466.
- Moyson, S. (2013, November). *Filling the gap between individual and collective aspects of the policy process: Multilevel analysis of policy learning*. Paper presented at the Celebratory Comparative Policy Analysis Conference: "Validating methods for comparing public policy: Academia and government in dialogue", Leuven, Belgium.
- Moyson, S., & Aubin, D. (2011). La régulation du rail en Belgique. Analyse des régimes institutionnels depuis 1832 (The regulation of railways in Belgium. Analysis of the institutional regimes since 1832). *Courrier Hebdomadaire du CRISP*, n°2114-2115.
- Muller, P. (2000). L'analyse cognitive des politiques publiques: Vers une sociologie politique de l'action publique. *Revue Française de Science Politique*, 50, 189-208.
- Muller, P. (2005). Esquisse d'une théorie du changement dans l'action publique. Structures, acteurs et cadres cognitifs. *Revue Française de Science Politique*, 55, 155-187.
- Muller, P., & Surel, Y. (1998). *L'analyse des politiques publiques*. Paris: Montchrestien.
- Newberry, D. M. (2000). *Privatization, restructuring, and regulation of network utilities*. Cambridge, MA and London: MIT Press.
- NMBS/SNCB Holding. (2013). *Un actif belge sur dix se tourne vers les chemins de fer pour trouver un job*. Press release of the NMBS/SNCB Holding.
- Nohrstedt, D. (2005). External shocks and policy change: Three Mile Island and Swedish nuclear energy policy. *Journal of European Public Policy*, 12, 1041-1059.
- Novick, M., & Lewis, G. (1967). Coefficient alpha and the reliability of composite measurements. *Psychometrika*, 32, 1-13.
- Noy, C. (2008). Sampling knowledge: The hermeneutics of snowball sampling in qualitative research. *International Journal of Social Research Methodology*, 11, 327-344.
- Nunnally, J. (1978). *Psychometric theory*. New York: McGraw-Hill.
- Olson, M. (1965). *The logic of collective action*. Cambridge, MA: Harvard University Press.
- Onwuegbuzie, A. J. (2003). Effect sizes in qualitative research: A prolegomenon. *Quality & Quantity*, 37, 393-409.
- Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. Cambridge, UK: Cambridge University Press.
- Ostrom, E. (1998). A Behavioral Approach to the Rational Choice Theory of Collective Action. *American Political Science Review*, 92, 1-22.
- Ostrom, E. (2000). Collective action and the evolution of social norms. *The Journal of Economic Perspectives*, 14(3), 137-158.

- Ostrom, E. (2003). Toward a behavioral theory linking trust, reciprocity, and reputation. In E. Ostrom & J. Walker (Eds.), *Trust and reciprocity: Interdisciplinary lessons from experimental research* (pp. 19-79). New York, NY: Russel Sage Foundation.
- Otto, P. (2004). *Interorganizational learning: A dynamic view of knoweldge development in strategic alliances*. Paper presented at the 22nd International Conference of the System Dynamics Society, Oxford, UK.
- Page, E. (2000). *Future governance and the literature on policy transfer and lesson drawing*. Paper presented at the ESRC Future Governance Programme, Britannia House, London.
- Parsons, W. (1995). *Public policy: An introduction to the theory and practice of policy analysis*. Aldershot: Edward Elgar.
- Paternotte, C. (2011). Rational Choice Theory. In I. C. Jarvie & J. Z. Zamora-Bonilla (Eds.), *The Sage handbook of the philosophy of sciences* (pp. 307-321). Thousand Oaks, CA: Sage.
- Pearce, J. (2008). *Animal learning & cognition: an introduction*. New York: Psychology Press.
- Pemberton, H. (2000). Policy networks and policy learning: UK economic policy in the 1960s and 1970s. *Public Administration*, 78, 771-792.
- Pemberton, H. (2003). Learning, governance and economic policy. *British Journal of Politics and International Relations*, 5(4), 500-524.
- Perry, J. (1996). Measuring public service motivation. An assessment of construct reliability and validity. *Journal of Public Administration Research and Theory*, 6, 5-22.
- Petty, R., & Wegener, D. T. (1998). Attitude change: Multiple roles for persuasion variables. In D. Gilbert, S. Fiske & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., Vol. 1, pp. 323-390). New York: McGraw-Hill.
- Piaget, J. (1970). Piaget's theory. In P. H. Mussen (Ed.), *Carmichael's manual of child psychology* (3rd ed., Vol. 1). New York: Wiley.
- Piaget, J. (1977). *The development of thought: equilibrium of cognitive structures*. New York: Viking.
- Pietri, E., Fazio, R., & Shook, N. (2013). Weighting positive versus negative: The fundamental nature of valence asymmetry. *Journal of Personality*, 81, 196-208.
- Popper, M., & Lipshitz, R. (2004). Organizational learning: Mechanisms, culture, and feasibility. In C. Grey & E. Antonacopoulou (Eds.), *Essential readings in management learning* (pp. 37-52). London: Sage.
- Poynter, R. (2010). *The handbook of online and social media research*. Sussex, UK: Wiley.
- Preston, J., & Feinstein, L. (2004). Adult education and attitude change *Wider benefits of learning research report* (Vol. 11). London: Center for Research on the Wider Benefits of Learning.
- Pryor, B. (1990). Predicting and explaining intentions to participate in continuing education: An application of the theory of reasoned action. *Adult Education Quarterly*, 40, 146-157.
- Punch, K. (2005). *Introduction to social research: Quantitative and qualitative approaches* (2nd ed.). Thousand Oaks, CA: Sage.
- Pustjens, H., Van Den Noortgate, W., Onghena, P., & Van Damme, J. (2004). *Multiniveau-analyse in de praktijk. 1: Een eerste kennismaking*. Leuven, Belgium: ACCO.
- Putnam, R. (1993). *Making democracy work: Civic traditions in modern Italy*. Princeton, NJ.
- Radaelli, C. (1999). Harmful tax competition in the EU: Policy narratives and advocacy coalitions. *Journal of Common Market Studies*, 37, 661-682.

- Radaelli, C. (2005). Diffusion without convergence: how political context shapes the adoption of regulatory impact assessment. *Journal of European Public Policy*, 12, 924-943.
- Radaelli, C. (2009). Measuring policy learning: Regulatory impact assessment in Europe. *Journal of European Public Policy*, 16, 1145-1164.
- Radloff, T. (2007). Measuring the Impact of Higher Education on Racial Prejudice and Opposition to Race-Based Policy *New York Sociologist*, 2. Retrieved from <http://newyorksociologist.org/vol2-table.html>
- Raudenbush, S. (1997). Statistical analysis and optimal design for cluster randomized trials. *Psychological Methods*, 2, 173-185.
- Raudenbush, S., & Liu, X. (2000). Statistical power and optimal design for multisite randomized trials. *Psychological Methods*, 5, 199-213.
- Recchia, A. (2010). R-Squared measures for two-level hierarchical linear models using SAS. *Journal of Statistical Software*, 32, 1-9.
- Rein, M., & Schön, D. (1991). Frame-reflective policy discourse. In P. Wagner, C. Weiss, B. Wittrock & H. Wollmann (Eds.), *Social sciences and modern states* (pp. 262-289). Cambridge, United Kingdom: Cambridge University Press.
- Ricker, W. (1962). *The theory of political coalitions*. New Heaven, CT: Yale University Press.
- Rise, J., & Wilhelmsen, B. (1998). Prediction of adolescents' intention not to drink alcohol. *American Journal of Health Behavior*, 22, 206-217.
- Risse, T. (2000). Let's argue!: Communicative action in world politics. *International Organization*, 54, 1-39.
- Robinson, J. P., Shaver, P. R., & Wrightsman, L. S. (1999). *Measures of Social Psychological Attitudes*. Academic Press: Waltham, MA.
- Roe, E. (1994). *Narrative policy analysis*. Durham, NC: Duke University Press.
- Rogers, C. R. (1969). *Freedom to learn: A view of what education might become*. Columbus, OH: Charles E. Merrill.
- Rogers, E. (1995). *Diffusion of innovations*. New York: Free Press.
- Rogers, E. (2003). *The diffusion of innovations* (5th ed.). New York: Free Press.
- Rose, R. (1991). What is lesson drawing? *Journal of Public Policy*, 11, 3-30.
- Rose, R. (1993). *Lesson-drawing in public policy*. Chatham, NJ: Chatham House.
- Ross, S. (1981). Some stronger measures of risk aversion in the small and the large with applications. *Econometrica*, 49, 621-638.
- Sabatier, P. (1986). Top-down and bottom-up approaches to implementation research: A critical analysis and suggested synthesis. *Journal of Public Policy*, 6, 21-48.
- Sabatier, P. (1987). Knowledge, policy-oriented learning, and policy change. *Knowledge: Creation, Diffusion, Utilization*, 8, 649-692.
- Sabatier, P. (1988). An advocacy coalition framework of policy change and the role of policy-oriented learning therein. *Policy Sciences*, 21, 129-168.
- Sabatier, P. (1993). Policy change over a decade or more. In P. A. Sabatier & H. C. Jenkins-Smith (Eds.), *Policy change and learning. An advocacy coalition approach* (pp. 13-39). Boulder, CO: Westview Press.

- Sabatier, P. (1998). The advocacy coalition framework: Revisions and relevance for Europe. *Journal of European Public Policy*, 5, 98-130.
- Sabatier, P., & Jenkins-Smith, H. (1993a). The Advocacy Coalition Framework: Assessment, Revisions, and Implications for Scholars and Practitioners. In P. A. Sabatier & H. C. Jenkins-Smith (Eds.), *Policy change and learning. An advocacy coalition approach* (pp. 211-236). Boulder, CO: Westview Press.
- Sabatier, P., & Jenkins-Smith, H. (1999). The advocacy coalition framework: An assessment. In P. A. Sabatier (Ed.), *Theories of the policy process* (pp. 117-165). Boulder, CO/Oxford, United Kingdom: Westview Press.
- Sabatier, P., & Jenkins-Smith, H. (Eds.). (1993b). *Policy change and learning: An advocacy coalition approach*. Boulder, CO: Westview Press.
- Sabatier, P., & Schlager, E. (2000). Les approches cognitives des politiques publiques: Perspectives américaines. *Revue Française de Science Politique*, 50, 209-234.
- Sabatier, P., & Weible, C. (2007). The advocacy coalition framework: Innovations and clarifications. In P. A. Sabatier (Ed.), *Theories of the policy process* (pp. 189-222). Boulder, CO: Westview Press.
- Sadler, G., Lee, H., Lim, R., & Fullerton, J. (2010). Recruitment of hard-to-reach population subgroups via adaptations of the snowball sampling strategy. [10.1111/j.1442-2018.2010.00541.x]. *Nursing & Health Sciences*, 12, 369-374.
- SAS Institute Inc. (2009a). *SAS programming 1: Essentials course notes*. Cary, NC: SAS Institute Inc.
- SAS Institute Inc. (2009b). *SAS programming 2: Data manipulation techniques course notes*. Cary, NC: SAS Institute Inc.
- SAS Institute Inc. (2011). *SAS/STAT 9.3 User's Guide*. Cary, NC: SAS Institute Inc.
- SAS Institute Inc. (2012). *SAS 9.3*. Cary, NC: SAS Institute Inc.
- Schacter, D., Gilbert, D., & Wegner, D. (2010). *Psychology*. New York: Worth Publishers.
- Scharpf, F. (1997). *Games real actors play: Actor-centered institutionalism in policy research*. Boulder, CA: Westview Press.
- Schechter, L. (2007). Traditional trust measurement and the risk confound: An experiment in rural Paraguay. *Journal of Economic Behavior & Organization*, 62, 272-292.
- Scherbaum, C. A., & Ferreter, J. M. (2009). Estimating statistical power and required sample sizes for organizational research using multilevel modeling. *Organizational Research Methods*, 12, 347-367.
- Schmitt, C. (2011). What drives the diffusion of privatization policy? Evidence from the telecommunications sector. *Journal of Public Policy*, 31, 95-117.
- Schneider, A., & Ingram, H. (1993). Social construction of target populations: Implications for politics and policy. *American Political Science Review*, 87, 334-347.
- Schneider, A., & Ingram, H. (1997). *Policy design for democracy*. Lawrence: University of Kansas Press.
- Scholtz, J. (1998). Trust, taxes, and compliance. In V. Braithwaite & M. Levi (Eds.), *Trust and Governance* (pp. 135-166). New York: Russel Sage.
- Scholtz, J., & Stiftel, B. (2005). *Adaptive governance and water conflict. New institutions for collaborative planning*. Washington, DC: Resources for the Future.
- Schön, D., & Rein, M. (1994). *Frame reflection: Toward the resolution of intractable policy controversy*. New York: Basic Books.

- Schön, D., & Rein, M. (1995). *Frame reflection: Toward the resolution of intractable policy controversies*. New York: BasicBooks.
- Schulze, R., & Witmann, W. (2003). A meta-analysis of the theory of reasoned action and the theory of planned behavior: The principle of compatibility and multidimensionality of beliefs as moderators. In R. Schulze, H. Holling & D. Böhning (Eds.), *Meta-analysis: New developments and applications in medical and social sciences* (pp. 219-250). Cambridge, MA: Hogrefe & Huber Publishers.
- Schumpeter, J. (1908). *Das Wesen und der Hauptinhalt der Theoretischen Nationalökonomie*. München and Leipzig: Duncker and Humblot.
- Schumpeter, J. (1909). On the Concept of Social Value. *Quarterly Journal of Economics*, 23, 213-232.
- Schwarz, N., & Clore, G. (1996). Feeling and phenomenal experiences. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (Vol. 2, pp. 527-561). New York: Guilford Press.
- Searle, S., Casella, G., & McCulloch, C. (1992). *Variance components*. New York: Wiley.
- Sears, D. (1997). The impact of self-interest on attitudes - a symbolic politics perspective on differences between survey and experimental findings: Comment on Crano (1997). *Journal of Personality and Social Psychology*, 72, 492-496.
- Sears, D., & Funk, C. (1991). The role of self-interest in social and political attitudes. In P. Z. Mark (Ed.), *Advances in Experimental Social Psychology* (Vol. 24, pp. 1-91): Academic Press.
- Sears, D., Lau, R., Tyler, T., & Allen, H. (1980). Self-interest vs. symbolic politics in policy attitudes and presidential voting. *American Political Science Review*, 74, 670-684.
- Senge, P. (1990). *The fifth discipline: The art and practice of the learning organization*. New York: Doubleday Currency.
- Shapiro, M. (1992). The European Court of Justice. In A. M. Sbragia (Ed.), *Euro-politics*. Washington, DC: Brookings Institution.
- Sheppard, B., Hartwick, J., & Warshaw, P. (1988). The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *Journal of Consumer Research*, 15, 325-343.
- Shepsle, K. (1986). Institutional equilibrium and equilibrium institutions. In H. F. Weisberg (Ed.), *Political science: The science of politics*. New York: Agathon.
- Shepsle, K. (2005). *Rational choice institutionalism*: Harvard University Press.
- Shipan, C., & Volden, C. (2008). The mechanisms of policy diffusion. *American Journal of Political Science*, 52(4), 840-857.
- Shipan, C., & Volden, C. (2012). Policy diffusion: Seven lessons for scholars and practitioners. *Public Administration Review*, 72, 788-796.
- Simon, H. (1972). Theories of bounded rationality. In C. B. McGuire, R. Radner & K. J. Arrow (Eds.), *Decision and organization* (pp. 161-176). Amsterdam, The Netherlands: North-Holland Publishing Company.
- Simon, H. (1985). Human nature in politics: The dialogue of psychology with political science. *The American Political Science Review*, 79, 293-304.
- Simon, H. (1991). Bounded rationality and organizational learning. *Organization Science*, 2, 125-134.
- Singer, J. (1998). Using SAS PROC MIXED to fit multilevel models, hierarchical models, and individual growth models. *Journal of Educational and Behavioral Statistics*, 24, 323-355.

- Snijders, T., & Bosker, R. (1993). Standard errors and sample sizes for two-level research. *Journal of Educational Statistics*, 18(237-259).
- Snijders, T., & Bosker, R. (1994). Modeled Variance in Two-Level Models. *Sociological Methods & Research*, 22, 342-363.
- Snijders, T., & Bosker, R. (2012). *Multilevel analysis. An introduction to basic and advanced multilevel modeling* (2nd ed.). Thousand Oaks, CA: Sage.
- Spearman, C. (1904). Proof and measurement of association between two things. *American Journal of Psychology*, 15, 72-101.
- Stanley, J. (1971). Reliability. In R. L. Thorndike (Ed.), *Educational measurement*. Washington, DC: American Council on Education.
- Starbuck, W. (1996). Unlearning ineffective or obsolete technologies. *International Journal of Technology Management*, 11, 725-737.
- StataCorp. (2011a). *Stata release 12. Base reference manual* (Vol. 1-4). College Station, TX: StataCorp.
- StataCorp. (2011b). *Stata statistical software: Release 12*. College Station, TX: StataCorp LP.
- Stevens, S. (1951). Mathematics, measurement and psychophysics. In S. S. Stevens (Ed.), *Handbook of experimental psychology* (pp. 1-49). New York: Wiley.
- Stewart, R., & Roach, K. (1998). Argumentativeness and the theory of reasoned action. *Communication Quarterly*, 46, 177-193.
- Stone, D. (1999). Learning lessons and transferring policy across time, space and disciplines. *Politics*, 19, 51-59.
- Stone, D. (2000). Non-governmental policy transfer: The strategies of independent policy institutes. *Governance*, 13(1), 45-70.
- Stone, D. (2004). Transfer agents and global networks in the "transnationalization" of policy. *Journal of European Public Policy*, 11, 545-566.
- Stone, D. (2010). Private philanthropy or policy transfer? The transnational norms of the Open Society Institute. *Policy and Politics*, 38, 269-287.
- Sudit, M. (1988). Ideology or self-interest? Medical students' attitudes toward national health insurance. *Journal of Health and Social Behavior*, 29, 376-384.
- Sue, V., & Ritter, L. (2007). *Conducting online surveys*. Thousand Oaks, CA: Sage.
- Tarrow, S. (2010). The strategy of paired comparison: Toward a theory of practice. *Comparative Political Studies*, 43, 230-259.
- Thompson, M., & Ellis, R. (1997). Introduction. In A. Wildavsky, R. Ellis & M. Thompson (Eds.), *Culture matters: Essays in honor of Aaron Wildavsky* (pp. 1-18). Boulder, CO: Westview Press.
- Tobin, J. (1958). Estimation of relationships for limited dependent variables. *Econometrica*, 26, 24-36.
- Tonkiss, F., & Passey, A. (1999). Trust, confidence and voluntary organizations: between values and institutions. *Sociology*, 33, 453-458.
- True, J., Jones, B., & Baumgartner, F. (2007). Punctuated-equilibrium theory: Explaining stability and change in American policymaking. In P. A. Sabatier (Ed.), *Theories of the policy process* (pp. 97-116). Boulder, CO: Westview Press.
- Trumbo, C., & O'Keefe, G. (2004). Reasoned action in environmental communication research: Demonstration of an augmented model. In S. L. Senecah (Ed.), *The environmental communication yearbook* (Vol. 201-218). Mahwah, NJ: Lawrence Erlbaum Associates.

- Tsang, E., & Zahra, S. (2008). Organizational unlearning. *Human Relations*, 61), 1435-1462.
- Tversky, A., & Kahneman, D. (2000). Judgment under uncertainty: Heuristics and biases. In T. Connolly, H. R. Arkes & K. R. Hammond (Eds.), *Judgment and decision making. An interdisciplinary reader* (2nd ed., pp. 35-52). Cambridge, United Kingdom /New York, NY /Port Melbourne, Australia / Madrid / Cape Town, South Africa: Cambridge University Press.
- UCLA: Statistical Consulting Group. (2013). Random effect tobit model in nlmixed. *SAS code fragments* Retrieved January 15th, 2013, from http://www.ats.ucla.edu/stat/sas/code/random_effect_tobit.htm
- Van Den Noortgate, W., Pustjens, H., & Onghena, P. (2004a). *Multiniveau-analyse in de praktijk. 2: Verdere uitwerking*. Leuven, Belgium: ACCO.
- Van Den Noortgate, W., Pustjens, H., & Onghena, P. (2004b). *Multiniveau-analyse in de praktijk. 3: Toepassing en uitbreidingen*. Leuven, Belgium: ACCO.
- Van Keilegom, I. (2011). *Non parametric statistics (LSTAT2140): Course notes*. Université catholique de Louvain. Louvain-la-Neuve, Belgium.
- VandenBos, G. (2007). *APA Dictionary of Psychology*. Washington, DC: American Psychological Association.
- Volden, C. (2006). States as policy laboratories: Emulating success in the children's health insurance program. *American Journal of Political Science*, 50, 294-312.
- Wackerly, D., Mendenhall III, W., & Scheaffer, R. (2008). *Mathematical statistics with applications* (7th ed.). Belmont, CA: Thomson Higher Education.
- Wald, K. (2011). *Higher Education and Political Attitude Change: Is Israel the Exception that Proves the Rule?* Paper presented at the 2011 Annual meeting of the American Political Science Association, Seattle, WA.
- Walker, J. (1969). The diffusion of innovations among the American states. *The American Political Science Review*, 63, 880-899.
- Walker, J. (1974). *The diffusion of knowledge and policy change: Toward a theory of agenda-setting*. Paper presented at the Annual meeting of the American Political Science Association.
- Weber, M. (1968). *Economy and society*. Berkeley, CA: University of California Press.
- Weible, C., Sabatier, P., & Flowers, J. (2007). The advocacy coalition framework. In J. Rabin & T. A. Wachhaus (Eds.), *Encyclopedia of public administration and public policy* (2nd ed.): Taylor and Francis.
- Weible, C., Sabatier, P., & Flowers, J. (2008). The advocacy coalition framework. *Encyclopedia of public administration and public policy* (2nd ed., Vol. 1): Taylor & Francis.
- Weible, C., Sabatier, P., & McQueen, K. (2009). Themes and variations: Taking stock of the advocacy coalition framework. *Policy Studies Journal*, 37, 121-140.
- Weyland, K. (2007). *Bounded rationality and policy diffusion*: Princeton University Press.
- Wiener, N. (1948). *Cybernetics or control and communication in the animal and the machine*. New York: John Wiley & Sons, Inc.
- Wiener, N. (1950). *The human use of human beings: Cybernetics and society*. Boston: Houghton Mifflin.
- Williams, R. (2012). Using the margins command to estimate and interpret adjusted predictions and marginal effects. *The Stata Journal*, 12, 308-331.
- Wilson, J. (1973). *Political organizations*. New York: Basic Books.

- Wolman, H., & Page, E. (2002). 'Policy transfer among local Governments: An information-theory approach. *Governance*, 15, 477-501.
- Wolpert, R., & Gimpel, J. (1998). Self-interest, symbolic politics, and public attitudes toward gun control. *Political Behavior*, 20, 241-262.
- Zafonte, M., & Sabatier, P. (1998). Shared beliefs and imposed interdependencies as determinants of ally networks in overlapping subsystems. *Journal of Theoretical Politics*, 10, 473-505.
- Zajonc, R. (1998). Emotions. In D. Gilbert, S. Fiske & G. Lindzey (Eds.), *The handbook of social psychology* (Vol. 1, pp. 591-632). New York: Oxford University Press.
- Zito, A, & Schout, A. (2009). Learning theory reconsidered: EU integration theories and learning. *Journal of European Public Policy*, 16, 1103-1123.
- Zucchini, W. (2003). *Applied smoothing techniques. Lecture notes and problems*. Georg-August-Universität Göttingen

List of Tables

Table 1:	Comparison of policy learning approaches with respect to the content of learning	51
Table 2:	Typology of coalition opportunity structures (Sabatier & Weible, 2007, p. 201)	60
Table 3:	the belief system of a policymaker in the ACF (from Sabatier & Jenkins-Smith, 1999, p. 133).....	65
Table 4:	Dependent variables of the research – Definitions.....	71
Table 5:	Operational hypotheses related to interests	82
Table 6:	Operational hypotheses related to trust.....	88
Table 7:	Four major principles of the European liberalization policy process in network industries	97
Table 8:	Internal consistency of composite constructs – rule of thumb (from George & Mallery, 2003, p. 231)	108
Table 9:	Possible topics of policy core aspects in the ACF (Sabatier & Weible, 2007)	109
Table 10:	Indicators of the core aspects of the liberalization policy	110
Table 11:	Dependent variables of the research – Measurement scales.....	114
Table 12:	Measurement of the dependent variables of the research in the survey questionnaire – An example.....	114
Table 13:	Measurement of socio-demographic characteristics in the survey questionnaire.....	118
Table 14:	Measurement of political predispositions to policy learning (from Battaglio & Legge, 2009; Battaglio, 2009).....	120
Table 15:	Measurement of personal vested interests and the valence of personal interests	123
Table 16:	Measurement of organizational vested interests and the valence of organizational interests	124
Table 17:	Measurement of generalized trust and interpersonal trust	126
Table 18:	Organizational participation rate to the survey	135
Table 19:	Individual response rate to the survey.....	138
Table 20:	Sample in the railway sector	142
Table 21:	Sample in the electricity sector	144
Table 22:	Seniority of respondents in their sector.....	146
Table 23:	Formal assumptions of classical regression models versus multilevel regression models (ATS Statistical Consulting Group, 2013)	151
Table 24:	Statistical testing – Decisions and types of error (Van Keilegom, 2011).....	157
Table 25:	Power of statistical tests on the two dependent variables of the research	160
Table 26:	Past and current preferences – Descriptive statistics	168
Table 27:	Preferences change direction – Descriptive statistics.....	170
Table 28:	Preferences change intensity – Descriptive statistics	172
Table 29:	Intercept-only models of the dependent variables.....	175
Table 30:	Gender – Descriptive statistics	176
Table 31:	Age – Descriptive statistics.....	177

Table 32: Education level – Descriptive statistics	178
Table 33: Political interest – Descriptive statistics.....	179
Table 34: Satisfaction with democracy – Descriptive statistics	181
Table 35: Multilevel regression analysis of covariates – Preferences change direction.....	183
Table 36: Multilevel regression analysis of covariates – Preferences change intensity	184
Table 37: Multilevel regression analysis of covariates – Complete models	194
Table 38: Personal vested interests in the liberalization policy – Descriptive statistics.....	195
Table 39: Generalized valence of personal interests – Descriptive statistics	197
Table 40: Organizational vested interests in the liberalization policy – Descriptive statistics	198
Table 41: Generalized valence of organizational interests – Descriptive statistics	199
Table 42: Correlation matrix of the independent variables related to interests.....	200
Table 43: Comparison of objective and subjective organizational interests	203
Table 44: Multilevel regression analysis of personal interests – Preferences change direction	206
Table 45: Multilevel regression analysis of personal interests – Preferences change intensity	207
Table 46: Multilevel regression analysis of organizational interests – Preferences change direction.....	208
Table 47: Multilevel regression analysis of organizational interests – Preferences change intensity	209
Table 48: Multilevel regression analysis of explanatory variables related to interests – Complete models.....	223
Table 49: Interpersonal trust in subsystem members – Descriptive statistics	224
Table 50: Generalized trust in people– Descriptive statistics.....	226
Table 51: Generalized trust in politicians – Descriptive statistics.....	226
Table 52: Multilevel regression analysis of trust – Preferences change direction	228
Table 53: Multilevel regression analysis of trust – Preferences change intensity	229
Table 54: Multilevel regression analysis with all explanatory variables related to interests and trust	235
Table 55: Internal consistency of Preferences in the railways at time 0	277
Table 56: Internal consistency of Preferences in the railways at time 1	277
Table 57: Internal consistency of Preferences in the electricity sector at time 0.....	278
Table 58: Internal consistency of Preferences in the electricity sector at time 1.....	278
Table 59: Internal consistency of Preferences change direction in the railways.....	279
Table 60: Internal consistency of Preferences change direction in the electricity sector	279
Table 61: Internal consistency of Preferences change intensity in the railways	280
Table 62: Internal consistency of Preferences change intensity in the electricity sector	280
Table 63: Internal consistency of Personal vested interests.....	280
Table 64: Internal consistency of the Generalized valence of personal interests	281
Table 65: Internal consistency of Organizational vested interests	281
Table 66: Internal consistency of the Generalized valence of organizational interests	281

List of Figures

Figure 1: Analytical framework of the Theory of Reasoned Action (from Fishbein & Ajzen, 2010, p. 22)	30
Figure 2: Areas of learning in the Theory of Reasoned Action (from Fishbein & Ajzen, 2010, p. 22)	34
Figure 3: Comparison of policy learning approaches with respect to the agency of learning.....	50
Figure 4: ACF flow diagram (2007 version: Sabatier & Weible, 2007, p. 202)	57
Figure 5: Analytical framework of the research – Connection between TRA and ACF	69
Figure 6: Connection between the operational variables and hypotheses related to interests and the analytical framework of the research	81
Figure 7: Connection between the operational variables and hypotheses related to trust and the analytical framework of the research.....	87
Figure 8: Validity and reliability of indicators (from Janssen, 2008)	103
Figure 9: Structure of the NMBS/SNCB since 2005	140
Figure 10: Distribution of respondents among types of organizations in the overall sample	145
Figure 11: subsystem level and organization level into one only level.....	153
Figure 12: Latent and censored variable on the left (Jöreskog, 2002)	155
Figure 13: Prediction of Preferences change direction with Age.....	165
Figure 14: Different histograms of a same variable distribution (from Zucchini, 2003)	167
Figure 15: From a histogram to a kernel estimation of the frequency distribution of a variable - Illustration	167
Figure 16: Past and current preferences in the railways – Kernel estimation of the frequency distribution	169
Figure 17: Past and current preferences in the electricity sector – Kernel estimation of the frequency distribution	169
Figure 18: Past and current preferences in the overall sample – Kernel estimation of the frequency distribution	170
Figure 19: Preferences change direction – Kernel estimation of the frequency distribution.....	171
Figure 20: Preferences change intensity – Kernel estimation of the frequency distribution	173
Figure 21: Age – Histogram of the frequency distribution.....	178
Figure 22: Education level – Histogram of the frequency distribution	179
Figure 23: Political interest – Histogram of the frequency distribution.....	180
Figure 24: Satisfaction with democracy – Histogram of the frequency distribution	181
Figure 25: Prediction of Preferences change direction with Gender (Model 3)	186
Figure 26: Prediction of Preferences change intensity with Gender (Model 8).....	187
Figure 27: Prediction of Preferences change direction with Age (Model 4)	188
Figure 28: Prediction of Preferences change intensity with Age (Model 9)	188
Figure 29: Prediction of Preferences change direction with Education level (Model 5)	189
Figure 30: Prediction of Preferences change intensity with Education level (Model 10)	190

Figure 31: Prediction of Preferences change direction with Political interest (Model 6)	191
Figure 32: Prediction of Preferences change intensity with Political interest (Model 11)	191
Figure 33: Prediction of Preferences change direction with Satisfaction with democracy (Model 7)	192
Figure 34: Prediction of Preferences change intensity with Satisfaction with democracy (Model 12)	193
Figure 35: Personal vested interests in the liberalization policy – Histogram of the frequency distribution	196
Figure 36: Generalized valence of personal interests – Histogram of the frequency distribution	197
Figure 37: Organizational vested interests in the liberalization policy – Histogram of the frequency distribution	198
Figure 38: Generalized valence of organizational interests – Histogram of the frequency distribution	200
Figure 39: Prediction of Preferences change direction with Personal vested interests in the liberalization policy (Model 15)	210
Figure 40: Prediction of Preferences change direction with the Generalized valence of personal interests (Model 16)	211
Figure 41: Prediction of Preferences change direction with Organizational vested interests in the liberalization policy (Model 23)	212
Figure 42: Prediction of Preferences change intensity with the Generalized valence of organizational interests (Model 28)	214
Figure 43: Results related to personal interests	217
Figure 44: Results related to organizational interests	218
Figure 45: Interpersonal trust – Histogram of the frequency distribution	225
Figure 46: Generalized trust in politicians – Histogram of the frequency distribution	227
Figure 47: Prediction of Preferences change direction with Interpersonal trust in subsystem members (Model 33)	230
Figure 48: Prediction of Preferences change direction with Generalized trust in politicians (Model 35)	231
Figure 49: Results related to trust	233

Invitation sent by email to the subsystem members to participate to the survey

The following message was sent – in French and in Dutch, in the same email – to the subsystem members identified with the snowball sampling method in the Belgian rail and electricity sectors. The codes in upper cases were used by Limesurvey to personalize the message.

Dear Mrs/Mr LASTNAME,

My name is Stéphane Moyson and I am PhD student of the F.R.S.-FNRS at the Université catholique de Louvain. In the framework of my PhD research in political psychology, I conduct a survey to better understand the attitude of individuals with regard to issues and changes in two Belgian network industries: the railways and the electricity sector. This survey is personally addressed to several hundreds of specific persons working or involved in one of these two sectors. It is conducted in total independence and the results are intended to fundamental research.

You are involved in the following organization: ORGANIZATION. I described the content and terms of my research to Mrs/Mr HEAD and the diffusion of the survey in your organization was approved. The participation to this survey of 20 minutes is voluntary and totally anonymous. You can click on the link below if you agree to participate to the survey.

Link to the survey: SURVEYURL

In advance, thank you very much for your participation to this survey. It is very useful because it allows me to progress in the realization of my PhD project and because it ensures the representativeness of the various actors in the two sectors concerned by the research. You can contact me by email: stephane.moyson@uclouvain.be

Yours truthfully,

Stéphane Moyson, Research fellow of the F.R.S.-FNRS

Université catholique de Louvain
Place Montesquieu, 1 bte L2.08.07
1348 Louvain-la-Neuve
Belgium

Web: <http://www.uclouvain.be/en-330261.html>

Internal consistency of the construct variables of the research

Table 55: Internal consistency of Preferences in the railways at time 0

Item: Degree of favorableness to...	Mean	Std Dev	Correlation with Total	Alpha without this variable
The introduction of competition in the railway transport of freight	3.32	1.07	0.68	0.78
The introduction of competition in the international railway transport of passengers	3.17	1.15	0.66	0.79
The maintaining of the NMBS/SNCB monopole on the national railway transport of passengers (inversed scale)	2.42	1.14	0.63	0.79
The maintaining of the 100% control of the State on the capital of the NMBS/SNCB Group (inversed scale)	2.38	1.11	0.55	0.81
The unbundling of operations on, and management of, railway infrastructure	2.84	1.29	0.59	0.80
The application of regulation by independent regulatory bodies in the railways	3.34	1.20	0.46	0.83
<i>Total Cronbach coefficient alpha: 0.83</i>				

Table 56: Internal consistency of Preferences in the railways at time 1

Item: Degree of favorableness to...	Mean	Std Dev	Correlation with Total	Alpha without this variable
The introduction of competition in the railway transport of freight	3.32	1.29	0.66	0.75
The introduction of competition in the international railway transport of passengers	3.25	1.33	0.67	0.75
The maintaining of the NMBS/SNCB monopole on the national railway transport of passengers (inversed scale)	2.47	1.26	0.57	0.78
The maintaining of the 100% control of the State on the capital of the NMBS/SNCB Group (inversed scale)	2.41	1.19	0.54	0.78
The unbundling of operations on, and management of, railway infrastructure	2.79	1.48	0.52	0.79
The application of regulation by independent regulatory bodies in the railways	3.39	1.32	0.43	0.81
<i>Total Cronbach coefficient alpha: 0.81</i>				

Table 57: Internal consistency of Preferences in the electricity sector at time 0

Item: Degree of favorableness to...	Mean	Std Dev	Correlation with Total	Alpha without this variable
The introduction of competition in the generation and supply of high-voltage electricity (professional clients)	3.53	1.06	0.52	0.64
The introduction of competition in the generation and supply of low-voltage electricity (households)	3.15	1.24	0.54	0.63
The unbundling of generation/supply and transport/distribution of electricity	3.10	1.25	0.58	0.61
The application of regulation by independent regulatory bodies in the electricity sector	3.55	1.07	0.38	0.73
Total Cronbach Coefficient Alpha: 0.72				

Table 58: Internal consistency of Preferences in the electricity sector at time 1

Item: Degree of favorableness to...	Mean	Std Dev	Correlation with Total	Alpha without this variable
The introduction of competition in the generation and supply of high-voltage electricity (professional clients)	3.42	1.27	0.51	0.62
The introduction of competition in the generation and supply of low-voltage electricity (households)	2.76	1.43	0.52	0.61
The unbundling of generation/supply and transport/distribution of electricity	2.92	1.43	0.61	0.56
The application of regulation by independent regulatory bodies in the electricity sector	3.13	1.36	0.32	0.74
Total Cronbach Coefficient Alpha: 0.70				

Table 59: Internal consistency of Preferences change direction in the railways

Item: Direction of change between time 0 and time 1 in the degree of favorableness to...	Mean	Std Dev	Correlation with Total	Alpha without this variable
The introduction of competition in the railway transport of freight	0.01	0.95	0.48	0.50
The introduction of competition in the international railway transport of passengers	0.09	0.96	0.57	0.46
The maintaining of the NMBS/SNCB monopole on the national railway transport of passengers (inversed scale)	0.05	0.79	0.23	0.60
The maintaining of the 100% control of the State on the capital of the NMBS/SNCB Group (inversed scale)	0.03	0.73	0.27	0.59
The unbundling of operations on, and management of, railway infrastructure	-0.04	0.96	0.20	0.61
The application of regulation by independent regulatory bodies in the railways	0.04	0.90	0.31	0.57
Total Cronbach coefficient alpha: 0.61				

Table 60: Internal consistency of Preferences change direction in the electricity sector

Item: Direction of change between time 0 and time 1 in the degree of favorableness to...	Mean	Std Dev	Correlation with Total	Alpha without this variable
The introduction of competition in the generation and supply of high-voltage electricity (professional clients)	-0.11	1.02	0.59	0.62
The introduction of competition in the generation and supply of low-voltage electricity (households)	-0.39	1.13	0.61	0.61
The unbundling of generation/supply and transport/distribution of electricity	-0.18	1.03	0.50	0.67
The application of regulation by independent regulatory bodies in the electricity sector	-0.42	0.98	0.37	0.75
Total Cronbach Coefficient Alpha: 0.72				

Table 61: Internal consistency of Preferences change intensity in the railways

Item: Amount of change between time 0 and time 1 in the degree of favorableness to...	Mean	Std Dev	Correlation with Total	Alpha without this variable
The introduction of competition in the railway transport of freight	0.61	0.72	0.31	0.45
The introduction of competition in the international railway transport of passengers	0.56	0.78	0.43	0.39
The maintaining of the NMBS/SNCB monopole on the national railway transport of passengers	0.42	0.67	0.21	0.50
The maintaining of the 100% control of the State on the capital of the NMBS/SNCB Group	0.38	0.62	0.24	0.48
The unbundling of operations on, and management of, railway infrastructure	0.56	0.77	0.19	0.51
The application of regulation by independent regulatory bodies in the railways	0.49	0.76	0.23	0.49
Total Cronbach Coefficient Alpha: 0.52				

Table 62: Internal consistency of Preferences change intensity in the electricity sector

Item: Amount of change between time 0 and time 1 in the degree of favorableness to...	Mean	Std Dev	Correlation with Total	Alpha without this variable
The introduction of competition in the generation and supply of high-voltage electricity (professional clients)	0.58	0.84	0.50	0.60
The introduction of competition in the generation and supply of low-voltage electricity (households)	0.74	0.94	0.62	0.52
The unbundling of generation/supply and transport/distribution of electricity	0.67	0.80	0.47	0.61
The application of regulation by independent regulatory bodies in the electricity sector	0.65	0.85	0.30	0.72
Total Cronbach Coefficient Alpha: 0.68				

Table 63: Internal consistency of Personal vested interests

Item: Perceived influence of the liberalization process on...	Mean	Std Dev	Correlation with Total	Alpha without this variable
The material working environment	2.71	0.98	0.60	0.68
The professional opportunities	2.94	1.19	0.59	0.68
The salary	2.44	1.06	0.59	0.68
Total Cronbach Coefficient Alpha: 0.76				

Table 64: Internal consistency of the Generalized valence of personal interests

Item: Perceived importance of...	Mean	Std Dev	Correlation with Total	Alpha without this variable
The material working environment	3.91	0.81	0.46	0.66
The professional opportunities	3.57	0.85	0.45	0.67
The salary	3.91	0.69	0.62	0.44
Total Cronbach Coefficient Alpha: 0.69				

Table 65: Internal consistency of Organizational vested interests

Item: Perceived influence of the liberalization process on...	Mean	Std Dev	Correlation with Total	Alpha without this variable
The success of the organization	2.90	1.17	0.63	
The finances of the organization	2.55	1.07	0.63	
Total Cronbach Coefficient Alpha: 0.77				

Table 66: Internal consistency of the Generalized valence of organizational interests

Item: Perceived importance of...	Mean	Std Dev	Correlation with Total	Alpha without this variable
The success of the organization	4.46	0.62	0.58	
The finances of the organization	4.39	0.63	0.58	
Total Cronbach Coefficient Alpha: 0.73				

ABSTRACT

Policy learning is an important factor of policy change and designates the relatively enduring alterations of policymakers' beliefs, attitudes and behavioral intentions with respect to policies. While there is a considerable amount of knowledge about the influence of institutions, organizations, and networks on policy learning, little research has been conducted about the individual conditions of this mechanism. Based on an analytical framework combining the Advocacy Coalition Framework's concepts (at the collective level) and the Theory of Reasoned Action's concepts (at the individual level), this research focuses on the individual conditions of policy learning, in particular policymakers' interests and trust.

The test of the research hypotheses is mainly based on the analysis of the data from a web survey conducted among 1256 policymakers from the Belgian rail and electricity sectors. The use of multilevel regression models to analyse the data of the survey allows to control the influence of aggregate-level effects and to focus on the individual-level conditions of policy learning. The research focuses on the evolution of policymakers' preferences with respect to a policy (here, the European liberalization policy process) as an operational measure of policy learning.

The research shows that policymakers' preferences do not evolve very much over time. They do evolve, however. To explain this, key factors are policymakers' perceptions about the impacts of the policy on their personal interests and the interests of their organization: policymakers will adapt their policy preferences according to these perceptions. Nevertheless, much room remains for other determinants of policy learning. This includes socio-psychological factors, like the climate of trust that policymakers perceive in the policy subsystem in which they are involved. This climate can prompt them to recognize more easily the negative effects that policy changes have on them and consequently inclines their policy preferences to evolve more negatively. The results also suggest that policymakers use heuristic-based modes of reasoning for adapting their preferences about policies. For example, when they give much importance to their interests, they seem to expect more negative impacts from policy changes and their policy preferences also evolve more negatively. In other words, those policymakers weigh expected losses more and expected gains less than other comparable policymakers.

The research contributes to the Advocacy Coalition Framework in two respects. First, it advances a refined conceptual apparatus to account for the individual-level aspects of the policy process (based on the triptych: beliefs, attitudes, and behavioral intentions). Second, it considers individual determinants of policy learning. In particular, it focuses on policymakers' interests of which the role in policy learning has been less seriously considered by existing research.