

Bank failures and regulation: A critical review

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Abstract

Regulatory arbitrage has been one of the major factors contributing to the severity of the crisis. Given the ever more complex set of future regulatory constraints, it may keep generating costly negative spillover effects on the whole economy. Moreover, rules-based regulation, however carefully constructed, will unfortunately never prevent bank failures. Neither should it attempt to do so. An effective overall regulatory regime must be sufficiently comprehensive and well-balanced. It must not put too much emphasis on lowering the probability of individual bank failure. The key components of an effective regulatory regime must be: Basel-type rules robust to off-balance-sheet arbitrage; little forbearance in monitoring and supervision by regulatory agencies, with a focus on systemic risk control; automatic and quick intervention as well as resolution mechanisms. While all components are necessary, none are sufficient; and without strong international coordination, none will be effective.

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1. Introduction

There is common agreement among both academics and responsible practitioners that the upcoming regulatory environment must force financial institutions to internalize the negative externalities that they generate from time to time on the whole economy. Regulatory reform must in particular address the socially unacceptable mechanism that lets banks privatize their profits when the sky is blue and socialize their risks when the hurricane is unstoppable.¹

Regrettably, the massive support extended by governments and central banks to the financial sector during the crisis has created the biggest moral hazard in history and reinforces the perversity of such a mechanism. As pointed out by Acharya (2011), the irony of the situation is that “letting Lehman fail in an attempt to draw a line in the sand and limit moral hazard was also a miserable failure. In retrospect, it had precisely the opposite effect. Unless and until a robust, time-tested resolution mechanism to deal with multiple, large financial firm failures is put in place, it is now clearer than ever that no government will accept to be on the brink of collapse again by letting any other large complex financial institution fail. Given the current regulatory environment, moral hazard has therefore been strengthened, not weakened”.

Regulatory arbitrage is also likely to keep generating costly negative spillover effects on the whole economy because of the ever more complex set of future regulatory constraints. On the one hand, a regulation-free banking system is certainly not an option. On the other hand, whilst preventive measures such as the micro-prudential rules aimed at lowering the probability of bank failure are probably unavoidable as part of an overall regulatory regime, they face strong limitations as a large part of banks’ business is devoted to exploiting arbitrage opportunities and loopholes created by regulatory innovations. In this respect, over-regulation does not necessarily slow down financial innovation. It may even accelerate it because financial innovation is then aimed at circumventing regulation and not so much at creating new added-value products or markets. Excessive risk taking by banks is endogenous to the regulatory process. The very regulation designed to reduce it is often unsuccessful or even counterproductive. By circumventing existing rules, financial institutions take more risk and increase the probability of bank failure.

To respond to this endogeneity issue, the *top priority* in the regulator’ agenda in the years ahead *must* be to minimize the social costs of bank failures by focusing on remedial measures. In the revised Basel Accord, too much emphasis is still given on preventing bank failures by lowering the probability of individual bank failure. As such, the economy-wide costs of bank failures are still likely to be huge when they occur. Not only regulators must force financial firms to deal explicitly with systemic risk but they must also hit the long and winding road towards better bank crisis management.

¹ For example, the UK government bought £45bn of RBS’ shares and £21bn of Lloyds’ stocks following the financial crisis. On July 18 2011, Lloyds shares were 44 per cent lower than the average price paid by the British government, while RBS shares were about a third below the government’s purchase price. In Belgium, the 11% participation value of the Belgian state in BNP Paribas was €4bn lower on August 12 2011. The Belgian state also bought Dexia shares at €9.9 for a total investment of €2.2bn in 2008. The stock was around €1.5 in August 2011.

The paper is structured as follows. In Section 2, we show how preventive measures such as the Basel I and II micro-prudential rules have been made ineffective by regulatory arbitrage. In Section 3, we review the key (proposed) changes under Basel III. In Section 4, we discuss the ‘ring-fencing’ regulation that is argued to help better prevent bank failures. In Sections 5 and 6, we argue that more weight needs to be given in the Basel Accord to intervention and resolution arrangements, as well as to the control of systemic risk. In Section 7, we show that coordination and implementation at the international level are strictly required. In Section 8, we conclude briefly.

2. Basel I and II micro-prudential measures

The price of risk is most of the time poorly set when regulators rely too much on a rules-based, Basel II-type, micro-prudential approach. Regulatory attempts to prevent bank failures by defining the amount of capital required for covering risk are regrettably but constantly arbitrated by financial institutions. In this respect, the current strategy of increasing the discretionary price of risk through higher capital requirements (irrespective of the level of systemic risk) is theoretically desirable but falls into many practical pitfalls.

In theory, the price of risk for some well-defined assets can be exogenously increased, thereby requiring financial intermediaries to set more capital aside or simply reducing the willingness of some of them to take the risk. In reality, market circumstances change so frequently that such an exogenous price setting will often lead to a situation where the price of risk in some markets will be understated or overstated. Such a risk mispricing will typically come from the mismatch between the capital required from market participants (through capital adequacy ratios) and the actual risk taken by them. For example, the de Larosière Group (2009) states that current regulation “underestimates some important risks and overestimates banks’ ability to handle them”.

Given the enormity of the crisis, there clearly were serious fault lines in regulatory and supervisory arrangements. The rules enshrined in thousands of pages behind the Basel II Accord did not prevent the crisis, to say the least. The reason is that regulatory arbitrage always finds routes around particular regulatory rules.

Detailed and prescriptive rules are certainly insufficient, although this leaves open the question about whether they are redundant. It could even be that such ‘behavioral’ regulation is part of the problem rather than the solution since financial innovation always finds roads around behavioral regulatory constraints (such as capital requirements). These roads lead to ‘terrae incognitae’ where the rules of the game and the risk-return tradeoff are fundamentally unknown. In such an environment, risk taking becomes compulsory (with low-probability-high-impact risks dominating), incentive structures become dysfunctional, moral hazard issues emerge, and herd behavior predominates. Hedge fund and bank managers, shareholders, rating agencies are all looking forward to benefiting from the conquest of these new territories.

It was largely the Basel Capital Accord that induced banks to explore these ‘terrae incognitae’ through securitization and the development of credit-risk shifting instruments (CDOs, CDSs, etc.). Not surprisingly, there were serious fault lines in many of the recent models used by banks to price these new instruments. For example, the normality assumption had the effect of under-estimating the probability of fat tail risks and the correlation of risks within supposedly diversified portfolios (such Mortgage-Backed Securities – MBS - or Collateralized Mortgage Obligations - CMO) was underestimated. As it is the case for any new product and market, no historical data is available to test the models and the ‘garbage in, garbage out’ principle applies.

Let us remember that the Basel I accord asked for financial institutions to hold capital of 8 percent of the *loans* on their balance sheets. This ‘capital charge’ was much reduced for the other contractual credit lines and there was *none* for non-contractual credit lines (the so-called ‘reputational credit lines’), i.e. the liquidity backstops that banks implicitly provide to special purpose entities (SPEs), also called structured investment vehicles (SIVs). Such off-balance-sheet vehicle takes charge of the securitization of the loans of the sponsoring bank. An easy way to reduce the amount of capital a bank needed to hold to conform with Basel I regulations was to move the pool of loans in an SPE and then grant it a ‘capital-free’ credit line to ensure a AAA-rating. The Basel II accord was adopted on January 2007 in Europe and had little impact because capital charges were still based on asset ratings. To understand this, let us think about a financial institution that holds two BBB-rated assets. If the assets are held directly on its books, the bank would face a high capital charge. If the bank bundles them in an SPE, it will lower capital charges as long as the rating of the new asset (such as a Mortgage-Backed Security or a Collateralized Mortgage Obligation) is above BBB. If the reduction in idiosyncratic risk through diversification is high (because of a low correlation between the two BBB-assets’ returns), the SPE will be able to issue a risk-free AAA-rated asset (certainly so, if it is granted a cheap liquidity backstop by the sponsoring bank). Thus, the incentive for banks to securitize loans and other assets was extremely strong given the potential to lower capital charges by pooling assets in (potentially) ‘well-diversified’, highly-rated, ‘capital-free’ portfolios.

At the same time, rating agencies had strong interest in the lucrative securitization market as well. Indeed, rating agencies collected higher fees for structured products (such as MBSs or CDOs) than for other traditional debt instruments. Banks paid advisory fees to rating agencies and worked closely with them to ensure that the AAA rating was reached. The incentive to grant favorable ratings was thus strong.

Fund managers and investors looking for yield were also willing to buy these products which seemed to offer high expected returns with a small probability of loss. Some portfolio managers may have preferred the comparatively illiquid ones because they traded so rarely and were consequently difficult to value. Investors relied too much on past performance. They forgot that past performance is no good indication of future results. For example, the United States did not go through a countrywide decline in housing prices after World War II. Thus,

downturns in the US housing market were considered as primarily regional phenomena. Low correlation of house prices across regions was taken for granted and the resulting supposed diversification benefit promoted the valuation of these AAA-rated products.

As we have seen, the shadow banking industry was undeniably boosted by micro-prudential regulation, for better and worse. Of course, the process of regulatory arbitrage does not imply that capital requirements must be scrapped or lowered. It just means that ruled-based regulation is always “shooting at a moving target which moves partly because it is being targeted” as Llewellyn (2010) sums it up. Needless to say, it misses the target very often.

3. Basel III multidimensional ratios

Higher equity and capital ratios under Basel III will require banks to maintain a minimum ratio of ‘equity-to-assets’ (CET1/RWA) equal to 4.5% (up from 2% in Basel II). That is, common equity (or core) Tier one capital (CET1) will have to represent at least 4.5% of the risk-weighted assets (RWA) held by the banks (to be fully implemented in 2015). A mandatory capital conservation buffer of 2.5% of common equity will also be fully implemented in 2019.² Below 7%, restrictions (on dividends, remunerations and bonuses, for example) will apply. National regulators may also require up to another 2.5% of capital during periods of high credit growth (as a discretionary countercyclical buffer).³ Banks will also be required to maintain a minimum ratio of Tier one capital-to-assets (T1/RWA) of 8.5% (up from 4% in Basel II), including the mandatory capital buffer.⁴ Finally, total capital (Tier one plus Tier two) must be at least 10.5 % of risk-weighted-assets at all times, including the mandatory capital buffer as well.

In theory, a rise in equity ratios lowers the probability of bank failures and reduces the costs of those failures that do occur. In itself, there is a strong case for higher equity capital ratios. Hanson, Kashyap, and Stein (2010) even argue that the new Basel III capital charges are too low. As of 2010 Q1; they found that the four largest U.S. banks had an average ratio of Tier one capital-to-assets (T1/RWA) of 10.7%, and an equity-to-assets ratio (CET1/RWA) of 8.2%, already well above the 2019 regulatory standards of 8.5% and 7% respectively. They argue that the regulatory minimum in good times must substantially exceed this market-imposed standard for equity-to-assets in bad times of around 8 %. In order to achieve meaningful time-variation in capital ratios and absorb cumulative credit losses of around 7%, as experienced on average by US banks from 2007 to 2010, they therefore argue for a good-times regulatory minimum ratio of equity-to-assets (CET1/RWA) of 15%.

² In tangible common equity, banks have to subtract intangible assets such as goodwill, some tax credits (from net-operating-loss carry-forwards) and minority investments from equity and retained earnings.

³ Albeit desirable, counter-cyclical buffers only play at the macroeconomic level and do not modify the relative exogenous mispricing of risk between instrument markets (inevitable in rules-based regulation such as Basel III), leaving the business of regulatory arbitrage unaffected.

⁴ Under Basel II, non-core Tier 1 capital included hybrid instruments, securities that will not be permissible under Basel III.

The issue of whether such a rise in equity capital relative to debt would raise the overall funding costs of banks is important but of second importance, as argued by Hanson *et al.* (2010). Considering the social (rather than private) costs and benefits, there is an overwhelming case for significantly higher equity capital ratios to be applied to banks.⁵ Even if the cost of funding were to rise significantly (and be reflected in the price of banking services), this would simply be the cost that society pays for two social benefits: a more stable banking system, and the avoidance of taxpayer liabilities in the event that taxpayers are forced to play the role of insurer-of-last-resort without extracting insurance premiums yet (see Section 6.1). In this case, the private costs paid by banks and their customers do not amount to social costs. There is also a strong case for raising the equity ratio in order to remove the distortion implicit in the tax advantage in favor of debt rather than equity financing. While a reduction in the tax benefit may be a private cost to banks, this is not a social cost.

A report published by the Macroeconomic Assessment Group at the Bank for International Settlements concludes that a 1 percentage point increase in the target CET1/RWA ratio is estimated to lead to “a [median] decline in the level of gross domestic product by a maximum of about 0.19 per cent from the baseline path after four-and-a-half years” (BIS, 2010a). As expected, representatives of the industry produce estimates that are roughly eight times greater.

3.1. An Extra capital charge for G-SIBs

The Basel Committee on Banking Supervision (BCBS) has recently proposed to slap an extra loss absorbency requirement on the so-called ‘global systemically important banks’ (G-SIBs) by 2019 (BIS, 2011).⁶ The extra capital charge is to come from additional CET1 requirement between 1% and 2.5%, depending on the systemic importance of the financial institution. If the institution becomes even bigger, an additional 1% surcharge would also be imposed, pushing the total to 3.5%. The capital surcharge will come on top of the 7% minimum CET1/RWA ratio that all banks across the world will have to hold under new Basel III rules described above.⁷

The BCBS has opted for a smaller surcharge than foreseen. Indeed, many of the world's biggest banks already hold CET1/RWA ratios of 10% or more and therefore easily meet or

⁵ According to Admati *et al.* (2011), it is untrue to claim that equity is expensive, once we allow for the fact that more equity reduces the risk to creditors and to taxpayers. In addition, even though the strict conditions of the Modigliani-Miller theorem do not hold in practice (most especially because there need be no risk premium demanded on insured deposits), the theorem also suggests that the reduction in risk through higher equity ratios would also lower the cost of both equity and debt, leaving the cost of capital more or less unchanged. The weighted cost of capital would also increase, because of the reduced tax benefit of debt financing (which may be socially desirable).

⁶ The BCBS should have used the ‘SIFI’ (systemically important financial institutions) acronym, instead of ‘SIB’. Given the interconnectedness of the modern financial sector, and for the purposes of systemic regulation, one should include not just the commercial bank taking deposits and making loans, but also the investment banks, money-market funds, insurance firms, and potentially even hedge funds and private equity funds.

⁷ In its final report published in September 2011, the Independent Commission on Banking (ICB) in the UK proposed a CET1/RWA ratio of at least 10%, plus loss-absorbing debt (e.g. contingent convertible bonds, see Section 5.1.3) equal to a further 7 to 10 per cent of risk-weighted assets.

exceed the top end of the surcharge band. However, the surcharge would have to be in the form of top quality capital (that is, retained earnings or common equity).⁸ Therefore, hybrid debt (such as contingent capital, see Section 5.1.3) may not be included in the surcharge band.

There are two major uncertainties in this plan. First, it is still highly uncertain that regulators will be able to identify the emergence and evolution of systemic risks sufficiently quickly to impose the appropriate higher capital charges (see Section 6.1). Second, under existing U.S. regulations, banks were already required to issue new shares, or otherwise raise new regulatory capital, when they did not meet stipulated capital-adequacy standards. In practice, however, most banks that failed were not forced to raise new capital under these regulations, as Duffie (2010) points out. Without a well-designed and automatic capital raising trigger, regulators are still likely to use excessive forbearance. In addition, there is no evidence that a well-designed and automatic trigger based on overall balance-sheet solvency will be sufficient to avoid a liquidity crisis. Even with a mandatory rights offering, the new shares must be sold before cash is needed. As a consequence, automatic triggers based on cash liquidity may be used instead (See Sections 3.2 and 0). Otherwise, we just have to hope that a 10.5% minimum CET1/RWA ratio will be high enough to ‘motivate’ threatening financial institutions to raise new capital before it is too late.

3.2. Liquidity ratios

The BCBS has also proposed to set minimum funding liquidity requirements (BIS, 2010b). During the Subprime crisis, many financial institutions had to be bailed out by governmental authorities because they lost access to short-term financing and not because they were insolvent. Even in perfect markets, insolvency matters less than liquidity. The ability of a financial institution to continue operating does not depend so much on whether the market value of its debts exceeds the market value of its assets. If the debts must not be repaid too quickly, a financial institution can still have a reasonable chance of producing the cash required to satisfy its transaction commitments on a given day and keep the business running.

If a financial institution is not able to find short-term funding, meeting capital requirements will not prevent it from going bust. In particular, meeting short term liquidity requirements is a necessary condition to buy time and organize an orderly liquidation of the balance sheet, should the business not regain structural access to long-term funding.

Emphasis on short-term funding liquidity is even more justified given the difficulty to find it in the middle of a financial crisis. Two main factors can explain this conundrum. First, the sale of (illiquid) assets in order to generate cash is typically plagued by adverse selection in stressful market conditions. Knowing less than the seller about the future cash flows of the asset, the buyer will offer such a low price that information asymmetry is not a problem anymore. Therefore, it limits the bank’s ability (and willingness) to raise debt or equity, especially when the potential bidders are themselves likely to be in cash-constrained

⁸ The Basel proposal will be phased in between January 1 2016 and end of 2018.

positions. Second, instead of the outright sales of assets, a financial institution may also use its assets as collateral in repo transactions to get short-term, secured financing. In a liquidity crisis, cash lenders will first require high-quality collateral, such as treasuries. However, the stock of such unpledged assets held by the financial institution is limited and can quickly disappear. The room for maneuvering then diminishes severely as the financial institution can be exposed to punishable conditions for haircuts and collateral pricing on its other unpledged assets. Eventually, the repo market can even cease to provide any funding. The recent failure of the Belgian bank, Dexia, is probably the best illustration of such a scenario.

The BCBS has proposed two liquidity ratios to check whether financial institutions meet minimum liquidity needs. The first ratio is the Liquidity Coverage Ratio (LCR). It is to be introduced in 2015 and is defined as follows:

$$\frac{\text{Stock of high-quality liquid assets}}{\text{Total net cash outflows over the next 30 calendar days}} \geq 100\%$$

A bank must have at least one dollar in unpledged highly liquid assets for every potential dollar of cash outflows within thirty days. In the revised version of the document, the reliance of a financial institution on short-term funding through its access to clients' and counterparties' assets has finally been considered. This is good news. Such access has been very unstable and has led to severe cash outflows during the crisis. For example, assets that are 'parked' with prime brokers by institutional investors can be very quickly withdrawn and no longer available as a source of financing in repo transactions. These sources of financing are included in the category entitled "Unsecured wholesale funding provided by other legal entity customers".⁹ In addition, the BCBS claims that the LCR has been built upon "a significant stress, albeit not a worst-case scenario", and assumes "a significant increase in secured funding haircuts" (among others). This is an important point since repo transactions backed by risky assets whose haircuts can increase dramatically during a financial meltdown should not be trusted upon as a source of short-term funding.

The second liquidity ratio is called the Net Stable Funding Ratio (NSFR) which is to be introduced in 2018. It is defined as follows:

$$\frac{\text{Available stable funding (ASF)}}{\text{Required stable funding (RSF)}} > 100\%$$

The NSFR requires a minimum amount of stable sources of funding at a bank relative to the liquidity profiles of the assets, as well as the potential for contingent liquidity needs arising from off-balance sheet commitments, over a one-year horizon. The goal of the NSFR is to

⁹ This category consists of "all deposits and other funding from other institutions (including banks, securities firms, insurance companies, etc.), fiduciaries, beneficiaries, conduits and special purpose vehicles, affiliated entities of the bank and other entities that are not specifically held for operational purposes." The run-off factor for these funds is 100%. The run-off factor is 100% which means that one dollar in this category increases the (potential) cash outflows by one dollar.

restrict the dependence on short-term wholesale financing when market liquidity is abundant and promote better measurement of liquidity risk across on- *and* off-balance sheet elements.

In the components of the ASF category, it is worth noting that a 50% weight has been attached to “unsecured wholesale funding, non-maturity deposits and/or term deposits with a residual maturity of less than one year, provided by *non-financial corporates*, sovereigns, central banks, multilateral development banks and public sector entities”. While the exclusion of financial corporates is fully justified, the inclusion of non-financial corporates is not as such type of unsecured wholesale funding does not typically contribute to funding stability over the short-term.

In the components of the RSF category, off-balance sheet items are weighted. They will (at last) matter. This is best explained by the potential impact of contingent calls on funding liquidity, i.e. revocable and irrevocable lines of credit and liquidity facilities granted to clients, including SPEs and SIVs (through liquidity backstops). As a consequence, once the standard is in place, off-balance sheet commitments will need to be funded. Given the low weight attached to them (typically 5%) and compared to the sharp increase in capital requirements (see above), this is nevertheless unlikely to affect the future development of the shadow banking industry.

3.3. Leverage ratio

The BCBS has also introduced a minimum Tier 1 leverage ratio of 3%. It is intended to put a floor under the build-up of leverage in the banking sector and to better protect against model risk and measurement error by supplementing the risk based measure with a simpler backstop criterion based on gross exposures.

The BCBS proposes a number of options for defining the numerator of the ratio (i.e., the capital measure - T1) and the denominator (i.e., the total *gross* exposure or assets measure – TA).¹⁰ Interestingly, the BCBS proposes that the denominator comprise not only capture on-balance-sheet assets, *but also appropriately integrate off-balance-sheet assets*. To make it comparative across countries and their varying regulatory regimes, the BCBS proposes adjustments to the leverage ratio to harmonize it internationally.

The introduction of a consistently defined assets measure could render a wide number of asset-based financial ratios globally comparable and prove valuable to the marketplace. This is a big challenge because the accounting treatment of their assets varies across countries. Adjustments to the accounting measure of assets will be required for the purposes of calculating the leverage ratio in a consistent and comparable manner. For example, reporting under IFRS results in significantly higher total balance sheet exposures and therefore a lower

¹⁰ The BCBS will test the ratio during the parallel run period from 1 January 2013 to 1 January 2017. The leverage ratio will become a mandatory part of Basel III requirements in 2018. Interestingly, Basel I already limited accounting leverage but on a risk-weighted basis only. If a bank is required to hold 8% of capital against an asset (being risk-weighted), that is the same as an accounting leverage limit of 12.5 to 1.

apparent leverage ratio for similar types of exposures than U.S. GAAP. One of the main reasons is the accounting rules related to netting, which are generally less demanding under U.S. GAAP than IFRS. Netting is recognized under very demanding rules under IFRS, only if an institution has the right and intent to settle on a net basis. Under U.S. GAAP, netting of derivatives and repurchase transactions are possible when they are subject to enforceable master netting agreements.¹¹

Although the leverage ratio could supplement risk-adjusted capital metrics and could help identify outliers, it should be ‘handled with care’. If the leverage ratio happens to be poorly calibrated, there may be unintended consequences. To comply with a stringent minimum Tier one leverage ratio, banks may manage down their low-risk, low-yielding exposures on the interbank market and to the economy. Such actions could potentially be damaging, particularly in Europe where financial intermediation remains dominant.

Bank profitability is also going to be under pressure because lower leverage reduces risks as well as profits. The Bank of England (2011) shows that if their overall level of leverage had been cut back to the average level of the 1990s, the big UK banks would have met their most recent targets of return on equity in fewer than half of the past 30 years – and not once since 2004. The good news of the current deleveraging process is that the capital base in the banking system seems to strengthen: In the UK banking system, the average leverage ratio is down to about 20 times capital, compared with a peak of about 50% as the crisis hit; cash ratios are at their highest point for decades; and the gap between customer deposits and loans is less than half what it had been. The banking system is being pushed ‘back to basics’.

4. Ring-fencing regulation

‘Ring-fencing’ regulation is designed to limit the size and/or allowable business of important financial institutions that would need to be bailed out in case of a systemic crisis. The general idea is that the taxpayer liability must not extend to supporting anything other than ‘core’ banking activity. Such regulation includes measures like the Glass-Steagall Act or the (yet more restrictive) ‘Narrow Bank’ proposal. One of the objectives is to prevent commercial (or utility-type) banks being ‘contaminated’ by different types of risk encountered in ‘casino-type’ banking activities (e.g. investment banking and securities trading). Interestingly, the BCBS has not proposed to take any such measure (yet), contrary to US senators Dodd and Frank and the British Independent Commission on Banking (ICB).¹²

The evidence of the crisis indicates that a wide range of different types of banks failed and was bailed out: large, small, highly diversified, focused, state-owned, privately-owned,

¹¹ For example, Standard and Poor’s (2010) computes that Deutsche Bank’s total assets under U.S. GAAP stood at €891 billion as of year-end 2009, compared with €1,501 billion under IFRS. The main reason for this significant difference was argued to be a disparity in accounting standards for the netting of derivatives.

¹² In its final report (also called the ‘Vickers report’) published in September 2011, the ICB calls for a bank’s ringfenced operation to have its own board of directors and equity capital equivalent to 10% risk-weighted assets. In crucial concessions, the banks will nevertheless be able to choose which non-core businesses to place inside the ringfence, with a deadline of 2019.

commercial banks and investment banks. Some banks that failed were ‘retail’ banks. In the UK, Northern Rock was a retail commercial bank, even though it adopted a different model of banking with heavy use of wholesale funding. In Belgium, the loan activities by Dexia were focused on the ‘safe’ public sector; the main shareholders were local public authorities. Like Northern Rock, Dexia used short-term funding extensively. Equally, not all universal banks which combined the full range of activities (such as HSBC) encountered serious problems in the crisis.

Under a Glass-Steagall Act or a ‘Narrow Bank’ proposal, most German *landesbanken* and Spanish *cajas* would have been included in the group of ‘utility-type’ banks, potentially justifying their bail-out. However, Hau and Thum (2009) show that the systematic underperformance of German state-owned banks in the recent crisis (compared with privately owned banks) ultimately boils down to the incompetence of supervisory boards of savings institutions.¹³ Under such regulation, the bail-out of poorly-managed, state-owned, utility-type banks would be allowed, while in principle the bailout-out of poorly-managed, privately-owned, casino-type institutions would not. In fact, it is very likely that the ‘casino-type’ institutions would still be systemically significant even though they were not conducting core commercial banking business. For instance, Lehman Brothers was not a commercial bank conducting core banking business, and yet its failure clearly did impose substantial systemic costs.

Systemic problems are related to excess gearing, cross-sector contagion, and the connectedness of banks. It is far from clear that a formal separation of different types of banking activity would address this central issue. It is also unlikely that such separation would protect against systemic risk between firms in a crisis.

Such structural distinction between ‘good’ and ‘bad’ activities would even reinforce instability and moral hazard in the financial system by promoting pro-cyclical behaviors. Llewellyn (2010) argues that in the uptrend, depositors and business are likely to move to the unprotected sector and accentuate the upswing whereas a migration of funds to ‘utility-type’ banks is likely to occur when trouble strikes, aggravating the downswing and making the crisis worse. Llewellyn (2010) cites Brunnermeier *et.al.* (2009), “The combination of a boundary between the protected and the unprotected, with greater constraints on the business of the regulated sector, almost guarantee a cycle of flows into the unregulated part of the system during cyclical expansions with sudden and dislocating reversals during crises”.

An approach based on systemic risk management and capital adequacy regulation and supervision is a more practical and appropriate approach. If necessary, differentiated capital adequacy regulation could even achieve the same result as any structural regulation designed to enforce separation of different types of banks. For instance, a higher regulatory capital requirement could be imposed on universal banks rather than ‘narrow’ institutions.

¹³ In July 2011, Banco Cam became the third Spanish savings bank since 2008, after Caja Castilla La Mancha (CCM) and CajaSur, to be taken over by the central bank.

A sense of déjà vu

Although the Basel III deal imposing extra capital charge for G-SIBs and higher liquidity standards on banks is an improvement on the existing rules, it does have a sense of ‘déjà vu’. There is still tremendous potential for regulatory arbitrage, even if the new accord has moved away from T1 to CET1 capital (to prevent financial institutions from ‘playing with’ the numerator of the ratio). The denominator of the ratios (i.e. the risk-weighted assets) can still be (extensively) minimized through risk-weighting arbitrage and securitization, with the risks shifting elsewhere in the system (See Section 0). Such risks can easily collapse back on to the banking system.

The regulators are trying to make the existing financial system less unsafe, incrementally. That is better than nothing. However, higher capital requirements for banks will only work *if* (currently, a ‘big if’) regulators are able to identify the emergence of systemic risks sufficiently quickly and come up with sound bank crisis management plans. In the meantime, the securitization and shadow banking industries are likely to flourish again in the coming years given such a favorable environment. The target will certainly not be shot more easily than before.

5. Intervention and resolution arrangements

The top priority in the regulator’s agenda must be to address the socially unacceptable mechanism that lets banks privatize their profits when the sky is blue and socialize their risks when the hurricane is unstoppable. Unfortunately, the rush to regulate that we have been witnessing could merely spawn an even greater crisis later. The cycle of crisis/regulation/new crisis/new regulation is depressingly familiar.

Banking activities are in fact driven by competition, profitability, and innovation. These powerful forces must *not* be suppressed. They cannot even be controlled effectively in market economies. Yet regulation is often based on the belief that financial institutions can be pressured to become less competitive, to accept lower profitability levels, and to give up innovation as a competitive tool. This may work in short run, so long as there is an atmosphere of crisis and no political pressure to do otherwise. When the situation goes back to normal, all three forces reassert themselves. If they run up against regulatory barriers, ways round them will be found, opening up in the process new areas of activity that are potentially much more dangerous. The regulator must learn to deal with these unavoidable forces.

The regulator must recognize that placing technical constraints on individual banking activity alone will certainly be ineffective. Regulatory strategy needs to base reform across several dimensions. First and most importantly, the possibility of failure needs to be built in the overall system and in the Basel Capital Accord in particular. Better internationally coordinated-intervention and resolution regimes are strictly required in this respect. Second,

the control of systemic risk through macro-prudential regulation must be given priority over micro-prudential regulation, as explained in the next section (Section 6).

Intervention and resolution regimes are known under many different terminologies and terms which are reflective of the fact that usage has come to differ between countries and that authors in this field did not have a ready-made set of terms. Thus, ‘Special Resolution Regime’ (SRR) and ‘conservatorship’ have achieved a certain usage in the UK and the US, respectively. In the US; the ‘Structured Early Intervention and Resolution’ (SEIR) regime embraces the preventive action dimension (Prompt Corrective Action - PCA) as well as resolution. In the UK, the Financial Services Authority has recently issued a consultation paper on Recovery and Resolution Plans (RRP), based on the work published by the Financial Stability Board and the Special Resolution Regime (SRR) introduced by the 2009 Banking Act in the UK (FSA, 2011).

The high-level idea is nevertheless the same: The need to build into the competent authorities’ prudential framework for banking an approach to regulation that puts at its heart the aim of forestalling crises through quick intervention as well as designing statutory institutional and legal mechanisms to forcibly resolve troubled banks in the public interest when crises happen. In other words, resolution kicks in when intervention has failed or has been delayed too long to save the bank as a going concern. The ultimate goal of intervention and resolution arrangements is to address the time-inconsistency and credibility issues of the ‘no bail-out’ government policy.

5.1. Intervention arrangements

The experience of banking crises shows that a well-defined strategy for responding to the possible insolvency of financial institutions is required as there is a strong case against forbearance when a financial institution is in difficulty. As the critical issue focuses on when intervention is to be made, having clearly-defined rules and pre-determined responses enhances the credibility of the intervention in that market participants have a high certainty that action will be taken.

In its consultation document on RRP, the FSA (2011) indicates that recovery plans must consist into lowering the probability of failure by obliging firms to identify feasible ways to recover when a crisis emerges. These plans must be established and continued by the firm, in coordination with the FSA. According to the FSA (2011), they should have the following features:

- “sufficient number of material and credible options to cope with a range of scenarios including both distinctive and market wide stresses;
- *options which address capital shortfalls, liquidity pressures and profitability issues and should aim to return the firm to a stable and sustainable position;*
- options that the firm would not consider in less severe circumstances such as: disposals of the whole business, parts of the businesses or group entities; *raising equity capital which*

- has not been planned for in the firm's business plan*; complete elimination of dividends and variable remuneration; and debt exchanges and other liability management actions;
- appropriate governance processes including triggers and procedures to ensure timely implementation of recovery options in a range of stress situations;
- plans should be reviewed at least annually and approved by the Board.”

The prefailure recapitalization of weak banks is clearly an important issue in such arrangements (as indicated in italics in the list above). Clearly-defined rules and pre-determined responses are particularly useful to overcome the impediments to such a recapitalization. There are indeed two major obstructions.

First, weak financial institutions are typically affected by debt overhang. In such a situation, debt is excessive and new debt cannot be issued because default is likely. The solution would be to issue new shares at a discount. However, the existing equity owners typically do not want to issue new stock because only part of the funding will go toward financing new projects (with potentially positive net present values). The rest will go toward improving the position of creditors, who would otherwise absorb losses at default. To accept supporting the resulting dilution effect, the existing shareholders must be convinced that the distressed costs on equity value could be greater if there were no new equity issue.

Second, the potential buyers may view the new shares offered by the weak financial institution as ‘lemons’. Because of information asymmetry between the potential buyers and the insiders at the bank who are better informed about the true value of the shares, the new shares would need to be sold at such a big “lemons” discount that the existing shareholders would be against it. This impediment to a sale is due to adverse selection: Potential buyers require a discount in order to avoid paying a too high price for the new shares issued by the weak company.

To break through this recapitalization gridlock and avoid excessive forbearance by the regulators, well-designed and automatic recapitalization mechanisms must be considered, such as the acquisition by banks of put options on their own shares, mandatory equity rights offerings, or contingent capital.

5.1.1. Purchase of put options

The risk of this mechanism is that the put seller may itself be in financial trouble and incapable to meet the requirement to buy shares. To eliminate the risk (or reduce it, at least), some insurance companies have chosen to purchase their put options from a special-purpose vehicle that is obliged to invest in comparatively safe assets that could be employed to cover the exercise costs of the options. Only if these assets turn out to be not safe enough, the SPV (or the put seller) will itself be in financial trouble and unable to meet the obligation to buy shares.

5.1.2. *Going concern mandatory equity offerings*

In a mandatory issue of rights, existing shareholders purchase new shares at a price well below the current market price. As indicated in Section 3.1, the trigger must be sufficiently well-designed and automatic to avoid excessive forbearance (or zeal) by the regulators. Such offering provides new cash but it may still be unlikely to avoid the self-fulfilling prophecy of a run on the company given the time lag between the offering and the cash settlement. Therefore, the trigger must be based on the cash liquidity of the company and be ‘high’ enough to avoid such an undesirable outcome.

5.1.3. *Going-concern contingent capital*

Contingent reverse convertible bonds (often called ‘Cocos’) have recently become very popular in the financial press. They have a fixed maturity and pay interest. However, they either convert into equity or are written off completely if a trigger is breached, usually when the issuer does not meet predetermined capital requirements.¹⁴ There are several issues related to the practical use of these instruments.

First, the trigger must be determined. If the trigger for automatic conversion is an accounting capital ratio, it must be based on a ratio which reacts to market conditions as quickly as possible. For example, a ratio of tangible common equity to tangible assets should be used as it excludes preferred shares and intangible assets such as goodwill and tax shields from net operating loss carry-forwards, all of which are relatively useless assets during a solvency crisis. Alternatively, the trigger may be based on the market value of equity (relative to debt) but it may create a ‘death spiral’ effect. In any case, the trigger that converts the debt to equity should be set at a high level so as eliminate the debt claims before a liquidity crisis is likely to begin, with a sufficiently strong impact on the balance sheet to forestall a self-fulfilling presumption of a liquidity crisis. High-trigger contingent capital would also presumably get converted not infrequently which, in terms of reducing myopia in capital markets, would have the merit of reminding holders and issuers about risks in banking.

Second, the conversion ratio must be determined appropriately. Pennacchi, Vermaelen, and Wolff (2010) propose to set the conversion price significantly below a trigger based on the market value of equity (relative to debt). At the same time, equity holders have the option to buy back the shares from the bondholders at the conversion. These ‘Callable Option Enhanced’ Reverse Convertibles (COERCs) imply that the bondholder sells a put on the equity *as well as* a call on the debt to the stockholder. The advantage of the COERC structure would be to reduce concerns about putting the company in a “death spiral” as a result of

¹⁴ So far, only Lloyds Banking Group, Britain’s biggest mortgage lender, Rabobank, the Dutch lender, Bank of Cyprus, the country’s largest lender, and Credit Suisse have issued a total of \$24 billion of the securities. In the US, Goldman Sachs is among banks that will not sell the bonds, in part because the Internal Revenue Service, unlike its European counterparts, treats CoCos as equity rather than debt: Issuers’ interest payments on convertible bonds are not tax deductible.

manipulation or panic.¹⁵ Indeed, equity holders have the option to repay the debt to avoid a dilution that they may view as unjustified. This instrument also reduces the risk to the debt holders and makes the instrument more marketable than traditional reverse convertibles. An additional feature of COERCs is that they keep regulators away from the decision process. Coercion is not enforced by a regulator, but by the fear of dilution. However, the equity holders must not be liquidity-constrained for the call option to be valuable, which implies that the trigger must be sufficiently high. Another drawback is that COERCs (and Cocos) will not be easy to value under a particular model.¹⁶

Third, the issuance of going concern contingent capital may be a regulatory requirement or an optional method. If we argue for a regulatory requirement, a quantitative floor must be specified in order to determine the minimum proportion of equity that must be issued through CoCos once the trigger is pulled. For example, the Swiss authorities have recently proposed to set the minimum CET1/RWA ratio at 10%, *plus* 9% of RWA covered by contingent capital (i.e. 3% in ‘high level trigger’ CoCos and 6% in ‘low level trigger’ Cocos).¹⁷ As indicated in Section 3.1, the BCBS has recently chosen the optional method for contingent capital (BIS, 2011). As “high-trigger contingent capital could help absorb losses on a going concern basis”, the BCBS still “supports” the use of contingent capital but only to meet higher national loss absorbency requirements than the global requirement.

The ongoing discussion about the usefulness of contingent capital should not substitute for the fundamental issue: namely how to produce a meaningful cross-border system to handle bank failures. Otherwise, the “Too Big to Fail” problem will haunt us, leaving taxpayers implicitly underwriting the biggest banks. That is a scenario that cannot be comforting to anyone, CoCo lovers and haters alike.

5.2. Resolution arrangements

Faced with the prospect of severe bankruptcy costs, the creditors of weakened financial institutions might be better off should they voluntarily reduce their contractual claims. By exchanging their old debt for a new package of new debt and avoid a bankruptcy, they could recover a higher amount. Such an out-of-court restructuring is nevertheless difficult to coordinate because of the “prisoner’s dilemma”: Each creditor has an incentive to hold out and wait for the others to agree to such a restructuring, given the likelihood that the restructuring would save the firm from default, leaving the hold-out creditor with a full payment of his original claim.

¹⁵ Another proposal to mitigate the ‘death spiral’ (whereby short-sellers may be tempted to attack the issuer’s stock in order to trigger the conversion and profit from the resulting dilution) would be to base the trigger on a trailing average share price.

¹⁶ It is also true that CoCos do not improve the cash position when the trigger is pulled. Nevertheless, the cash proceeds of a CoCo issue could be escrowed in a trust (or else) and become available to the issuer in cash when it is converted.

¹⁷ On a par with Switzerland, the ‘Vickers report’ published in the UK by the Independent Commission on Banking (2011) also calls for banks to maintain additional loss-absorbing capital in the form of contingent capital equal to a further 7 to 10 per cent of risk-weighted assets (over and above a 10% CET1/RWA ratio).

Bankruptcy is normally an effective mechanism for breaking through the restructuring gridlock just described. However, the failures of banks require a special regime given the economy-wide costs of systemic risk they generate. For the failure resolution of systemically important financial institutions, the costs and benefits to the taxpayer and the general economy must be considered, as in Jackson (2010) who proposes special bankruptcy procedures and Kroener (2010) who explain government-coordinated receiverships or conservatorships.

Substantial reform efforts have been made in some countries in an attempt to implement effective and credible resolution regimes. The United States, for example, has adopted a new resolution regime (i.e., Title II of the Dodd-Frank Reform). Strikingly though, the issue of minimizing the costs of bank failures through resolution regimes has been seriously addressed in many countries since the current crisis only.

The best example is the Special Resolution Regime (SRR) in the UK, which was enshrined in the 2009 Banking Act, in the context of the absence of any special insolvency arrangements for banks, as well as weak and ill-defined institutional arrangements to deal with failing institutions. In the SRR, special power is given to deal with banks in difficulty. Firstly, there is power to intervene in the affairs of a bank when its likely failure threatens financial stability or the interests of the tax-payer. Secondly, the SRR allows for resolution to be instituted even when the bank has positive net worth: i.e. before it has become insolvent. Thirdly, it allows for the continuation of business and fast pay-outs in the event that the deposit protection scheme needs to be invoked.

A Bank Insolvency Order can be made to the courts by the Bank of England, the FSA, or the government on grounds such as: the bank is unable, or unlikely to become unable, to pay its debt, that the winding up of the bank would be in the public interest, and that the winding up of the bank would be fair.

Four resolution options are created. Firstly, there is the private sector purchase of a failing bank (implying deposit transfers). Secondly, there is the transfer of the bank to a Bridge Bank. The rationale of the Bridge Bank (as in the US) is that services and access to the bank are not disrupted. It buys time for a permanent resolution plan to be constructed, and it gives time for the bank to be restructured to make it viable for a trade sale in due course. Thirdly, there is a partial transfer of ownership, such as splitting an institution into a Good and Bad Bank. The Bad Bank is put into administration and the good parts (including the deposits) are sold to another bank. Finally, there is a temporary public ownership option.

As explained just above, the legitimate goal of resolution arrangements is to make it easier to close banks, without sparking panic. However, the problem with the national initiatives is that they are national, not international, and most large banks, by definition, are cross border.

An international resolution system is urgently needed but that looks impossible to produce now. Even getting mutual recognition could be very tough. In desperation, some European central bankers are now promoting another idea: “living wills” that would stipulate how banks themselves see the winding up of their own operations. But that concept is also highly insufficient without a meaningful cross-border system to handle bank failures.

6. Systemic risk measurement

Intervention and resolution regimes may fail to deliver the expected results, i.e. to avoid bank failures (at best) or minimize the costs of bank failure (at worst). Unless and until a robust, *time-tested* resolution mechanism to deal with multiple, large financial firm failures is put in place, the risk that financial institutions will keep generate massive negative externalities on the whole economy, cannot be neglected. It would be naïve to think otherwise.

The taxpayer must therefore be compensated for the implicit subsidy given to the banking industry. This is a question of social justice. Firms are often regulated to limit their pollution or are taxed based on the externality they cause. Similarly, the tightness of regulation should be based on the extent to which a given firm is likely to contribute to a general crisis, so that the correct price can be charged to each firm for its contributions to systemic risk. Interestingly, under the new arrangements in the UK, penalties (including tax) could be imposed on banks with access to safety nets. It could take the form of what amounts to *ex ante* insurance premia to be paid by banks. These would be the compensation for rescues that might be needed in the future. The objective is to minimize the potential burden on the taxpayer who has hitherto effectively acted as an “insurer of last resort” without extracting *ex ante* premia.

6.1. Systemic risk contribution

The contribution to systemic risk of each financial institution is not easy to measure. In its July 2011 consultative document on Global Systemically Important Banks (G-SIBs), the BCBS has selected several indicators to measure the systemic dimension of financial institutions (BIS, 2011). These indicators reflect “the size of banks, their interconnectedness, the lack of readily available substitutes for the services they provide, their global (cross-jurisdictional) activity, and their complexity” (see Table 1).¹⁸ Each indicator is given a score calculated by dividing the individual bank amount by the aggregate amount summed across all banks in the sample for that given indicator.

¹⁸ 73 banks were chosen from the largest banks in the world on the basis of size and supervisory judgment by the BCBS. Based on this methodology, the BCBS considers that the number of G-SIBs will initially be 28. Several ancillary indicators are also identified.

Table 1
Indicator-based measurement approach

Category (and weighting)	Individual Indicator	Indicator Weighting
Cross-jurisdictional activity (20%)	Cross-jurisdictional claims	10%
	Cross-jurisdictional liabilities	10%
Size (20%)	Total exposures as defined for use in the Basel III leverage ratio	20%
Interconnectedness (20%)	Intra-financial system assets	6.67%
	Intra-financial system liabilities	6.67%
	Wholesale funding ratio	6.67%
Substitutability (20%)	Assets under custody	6.67%
	Payments cleared and settled through payment systems	6.67%
	Values of underwritten transactions in debt and equity markets	6.67%
Complexity (20%)	OTC derivatives notional value	6.67%
	Level 3 assets	6.67%
	Trading book value and Available for Sale value	6.67%

Source: Basel Committee (2011)

The BCBS argues that “the advantage of the multiple indicator-based measurement approach is that it encompasses many dimensions of systemic importance, is relatively simple, and is more robust than currently available model-based measurement approaches and methodologies that only rely on a small set of indicators.” However, the relative robustness of *both* approaches remains to be checked. In addition, the Basel quantitative indicator-based approach can be supplemented with “qualitative information that is incorporated through a framework for supervisory judgment. The supervisory judgment process, however, is only meant to override the results of the indicator-based measurement approach in exceptional, egregious cases and is subject to international peer review to ensure consistency in its application.” Only time will tell if that holds true. Unfortunately, past experience shows that exceptions abound in practice.

Models for quantifying the systemic dimension of banks are indeed at an early stage of development and the robustness of their results has not been seriously tested yet. However, no methodology on the measurement of systemic risk has passed the test of time yet. In these circumstances, it is better to be safe (by using both) than sorry (by using the worst of the two).

A model for measuring systemic importance of banks is developed by Acharya *et al.* (2010). They introduce what they call a bank’s *Systemic Expected Shortfall* (SES). SES_i is the amount a bank’s equity w_1^i drops below its target level, which is a fraction z of assets a^i , in case of a systemic crisis when aggregate banking capital W_1 is less than z times aggregate assets A :

$$SES^i \equiv E[za^i - w_1^i | W_1 < zA]$$

The *SES* is used to identify the firms which are most exposed and contribute the most to the losses incurred during an economy-wide downturn (such as the Great Depression or the ongoing “Great Recession of 2007-2009”). In Acharya *et al.* (2010), the proxy variable for *SES* (called *realized SES*) is the ex-post return of financial firms during the period July 2007-Dec 2008. Based on daily market data for a sample of 102 US financial firms with a market cap in excess of 5 billion dollars, Acharya *et al.* (2010) proposes to estimate a US bank’s *SES* through the following regression:

$$\begin{aligned} \text{Realized SES} = & 0.02 - 0.15 * \text{MES} - 0.04 * \text{LVG} \\ & - 0.12 * 1[\text{Other}] - 0.01 * 1[\text{Insurance}] + 0.16 * 1[\text{Broker-Dealers}] \end{aligned}$$

MES is the *Marginal Expected Shortfall* (MES) firms. It estimates the loss that the equity of a given firm can expect if the broad market experiences a large fall.¹⁹ In Acharya *et al.* (2010), the MES of a firm is its average return during the 5% worst days *for the market* (i.e. during days in which the market return was below its 5th percentile). In addition to MES, Acharya *et al.* (2010) add the leverage of a firm (*LVG*) and its industry type dummy (*Brokers-Dealers, Insurance, Others*). A firm with a high *SES* will find its capital most depleted in a financial crisis relative to required minimum solvency standards and therefore faces high risk of bankruptcy or regulatory intervention. It is such under-capitalization of financial firms that leads to systemic risk.

Acharya *et al.* (2010) propose to introduce a tax on banks based on their *SES* in order to force them to internalize their negative externality. The tax would be equal to the sum of two components: (i) a traditional institution-risk component, i.e., the probability of default of the bank times the expected loss in default on its guaranteed liabilities (since deposits are insured)²⁰, and (ii) a systemic-risk component, namely, the probability of a systemic crisis times the bank’s contribution to systemic risk as captured by *SES*.

Acharya *et al.* (2009) also suggest a way to determine the extra capital charge that the ‘global systemically important banks’ would have to bear under Basel III (See Section 3.1). This extra capital charge is called the *Systemic Capital Charge (SCC)* of a firm (i.e., the

¹⁹ Based on MES estimates, Acharya (2011) indicates that securities dealers and brokers show up as being most systemic in every single year since 1963. By contrast, A.I.G. is a natural one-way insurance provider of large quantities that is not identified by stock market data as being significantly systemic until six months into the crisis. In the case of A.I.G., indicators of interconnectedness (such as those proposed by the BCBS) would have been more useful, indicating that both approaches (indicator-based and MSE-based) are probably complementary.

²⁰ In recognition that insurance is not free, the Federal Deposit Insurance Corporation (FDIC) in the United States imposes a fee on financial institutions. Until 1993, this fee was based only on the size of the institution’s deposits and not on its risk. While new FDIC contracts do lead to premiums increasing in the risk characteristics of financial institutions, no systemic measure is incorporated into the assessment rate formula. In addition, the FDIC must return premiums to the sector if losses are low. It is equivalent to returning fire insurance fees to the insured agents if there has been no fire yet.

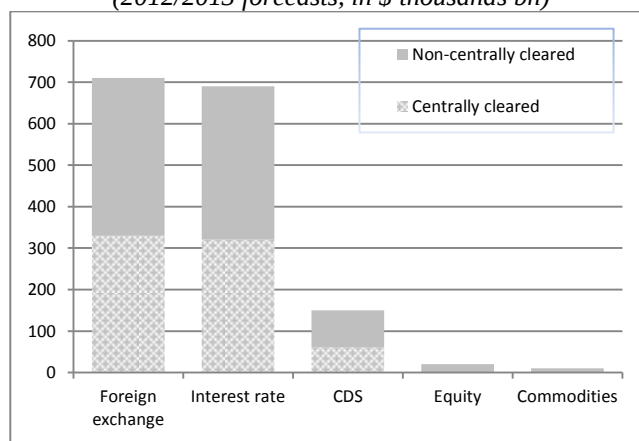
appropriate safety buffer that a firm should have in systemic crises). It is defined as follows: $SCC = s * MES\% * A$, where $MES\%$ (the marginal expected shortfall expressed in percent of assets) measures the aggregate tail risk on the firm, A is the assets of the firm, and s would be the systemic factor chosen by the regulator to achieve a given degree of aggregate safety and soundness.

The proposal to calibrate regulatory capital requirements on the basis of a financial institution's contribution to systemic risk is based on sound economic theory. The tightness of regulation should indeed be based on the extent to which a given firm is likely to contribute to a general crisis. While this may increase the cost of business and imply that consumers pay more for banking services from these 'systematically important financial institutions', there is likely to be offsetting welfare gains by lowering both the probability of failure *and*, indirectly, the cost of bank failures. Social justice would even require turning this systemic capital charge into an explicit tax.

6.2. Systemic risk and central clearing

Currently, the majority of OTC derivatives positions are not cleared. Although large quantities of interest-rate swaps are cleared, the majority is not (Figure 1). There has been nevertheless some discussion for clearing significant quantities of OTC derivatives that are based on equities, commodities, and foreign exchange. The potential for central clearing is indeed important, as shown by the estimated percentage of derivatives products eligible for clearing through the standardization of contracts (Figure 2).²¹

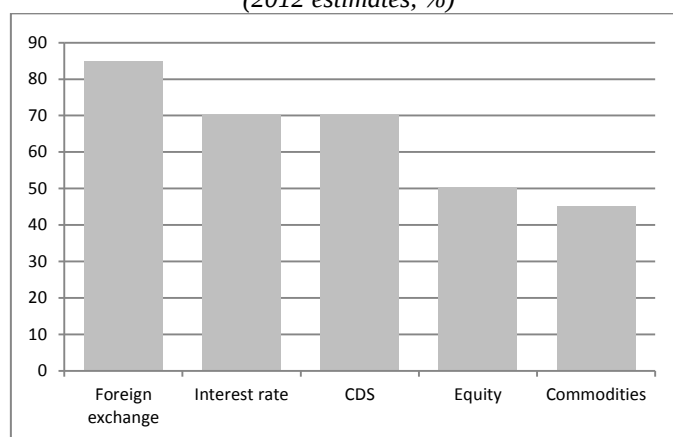
Figure 1: Global value traded in OTC derivatives
(2012/2013 forecasts, in \$ thousands bn)



Source: Morgan Stanley / Oliver Wyman (2011)

²¹ As much as 40–50% of the total annual traded volume of OTC contracts could be cleared by 2012/13, according to Morgan Stanley and Oliver Wyman.

Figure 2: Derivatives products eligible for clearing
(2012 estimates, %)



Source: Morgan Stanley / Oliver Wyman (2011)

The central clearing of OTC derivatives transactions has many advantages. Firstly, the multilateral netting of positive against negative OTC derivatives exposures that occurs with clearing reduces the risks facing each financial institution. In other words, it reduces risk in the financial system by simplifying a network of numerous exposures. Secondly, it lowers the need for expensive collateral positing. Thirdly (and most importantly in our discussion), the reductions in exposures to counterparty risk also lower the diffusion of systemic risk in the financial system, implying systemic risk would be easier to locate.

Nevertheless, the success of central clearing hinges heavily on the financial health and risk management of central clearing counterparties (CCPs). When a CCP has cleared an important number of derivatives contracts, it becomes itself a systemically important financial institution, and may justify a need for implicit government backing. The systemic risk consequences of shifting OTC derivatives to CCPs and the contagion risk of connecting CCPs must not be neglected.

In September 2009, the Group of 20 certainly did not realize the consequences of their Pittsburgh declaration to central trading and clearing of OTC derivatives. While most CCPs will increase the level of systemic risk, there are no adequate answer to key systemic issues such as the risk-weighting of banks' credit exposures towards CCPs, the effect on financial markets of the expected huge increase in CCPs' collateral assets, the CCP ability to find liquidity in stressful market conditions, and the consequence of the failure of foreign clearing members.

These risks are all the greater in Europe where bankruptcy and other laws are much less harmonized than in the US, and the proposed European market infrastructure regulation does little to counterbalance the resulting risks.

In the current environment, forcing all types of derivatives on to CCPs would probably make the financial stability objective even more difficult to achieve. Moreover, the so-called

“portability” of *derivatives* trading positions in the event of the default of a clearing member remains in the testing phase (to say the least).

From the clients’ perspective, portability would allow them to move their trades to another clearing member should their existing clearing member default or fall into difficulty. The goal is to reduce systemic losses in case of a single default. From the clearing members’ perspective, portability means one member commits to accept clearing clients from a defaulting competitor, which is a potentially huge contingent funding obligation. Assuming clients have the chance of porting, they need to find another clearing member to take their trades. If the clients have large positions and bring a high degree of risk, persuading another clearing member to take on that risk is not easy. It has actually dissuaded many dealers from offering portability at all – at least while the BCBS is still working out how to treat those obligations.

The European Commission (EC) has an easy recommendation: Just ignore the portability risk! Laid out for the first time in late July 2011 in the Capital Requirements Directive (IV), the EC proposes ‘value of zero’ for contingent risks associated with clearing portability (EC, 2011).²² Even a reckless bank would not follow such a rule and would recognize the contingent funding liabilities that are the results of such portability arrangements. Because a clearing firm is committing to immediately accept a portfolio for clearing, portability is likely to produce a ‘natural’ demand for additional default fund contributions from the clearing firm, which will in turn require more capital to be held against it.

Central clearing would also require clients (i.e. users of derivatives) to post billions worth of high-quality collateral assets. So clients are also likely to require the collateral transformation services, essentially enabling them to post non-eligible instruments with the CCP, which will be switched into cash via the repo market and then posted with the CCP. Those services also expose to contingent funding risks.

Similarly challenging are ownership and governance. Is robust risk management best served by clearing organized as a for-profit business or as a quasi-utility owned by market participants? A surge in demutualization among exchanges has changed many CCPs from utilities into firms integrated into exchanges that aim at maximizing shareholder value. In fact, the best quality of a CCP is its ‘safety’. It must therefore have very good collateral to prevent systemic risk, even at the cost of lower revenues. As rightly pointed out by the Bank of England (2010), “not-for-profit, user-owned CCPs provide strong incentives for effective risk management”, while those incentives “are weaker among CCPs operating on a for-profit basis”.

²² In part 2 of the regulation proposal, we can read at page 152 that “where an institution acting as a clearing member enters into a contractual arrangement with a client of another clearing member in order to ensure that client the portability of assets and positions [referred to in point (b) of paragraph 5], that institution may attribute an exposure value of zero to the contingent obligation that is created due to that contractual arrangement”.

6.3. Systemic risk and the shadow banking system

As explained in Section 2, regulatory arbitrage has arguably led to the build-up of systemic risk in the shadow banking system. In such an unregulated environment, the systemic risk contributions of off-balance sheet conduits are very difficult to measure. Yet there have been some proposals to reduce systemic risk in the shadow banking industry.

Acharya (2011) proposes to explicitly guarantee the short-term liabilities of the shadow banking sector in a systemic crisis. In return for the guarantee (given by the state of the central bank), broker-dealers, ABCP vehicles and money market funds would (i) be imposed a fee similar to the FDIC premium²³; (ii) have their risk-taking activities curbed, (iii) be constrained to hold a capital buffer, and (iv) be subject to wind-down provisions to avert excessive risk shifting in distress. Unfortunately, these lines of action would probably lead to the creation of a ‘double shadow’ banking system.

Hanson, Kashyap, and Stein (2010) propose to impose similar capital standards on a given type of credit exposure, *irrespective of who winds up ultimately holding the exposure* - be it a bank, a broker-dealer firm, a hedge fund, or a special-purpose vehicle. To carry out this difficult task, they suggest a broad-based regulation of haircuts (i.e., minimum margin requirements) on ABSs and CDOs. Whoever holds them would be required to post and maintain a minimum haircut against it - with the value of the haircut depending on the seniority of the product, the quality of the underlying collateral, and so forth.

An alternative proposal is to leave the shadow banking institutions unprotected by setting up a robust mechanism for dealing with the shadow banking institutions in a systemic crisis. In a practical manner, such an institution would be allowed to suspend redemptions if there was a run on its liabilities. Bankruptcy proceedings would not be initiated and the institution would not be forced into receivership. The collateral underlying the liabilities would be sold off in a slow orderly fashion or alternatively pledged back to the lenders. Still, the government (or the central bank) would have to lend against the collateral, at a significant haircut and for a fee, since most of the creditors in the shadow banking system look for liquidity. Therefore, the creditors would have access to some funds during a systemic crisis, thus indicating their funds would not be frozen for a long time. However, any losses in the collateral would eventually be borne by these creditors and not by the taxpayers. Although this proposal is socially more desirable, it must be time-tested. It would also require extensive international coordination (See Section 5).

In any case, it should be recognized that many activities in the shadow banking system, most notably in ABCP conduits, consist in avoiding Basel capital requirements.²⁴ The loopholes created by the different accounting and regulatory capital treatments of on- and off-balance sheet assets should be minimized at the earliest as they facilitate leverage build-up in the

²³ See footnote 18.

²⁴ Money market funds are also generally an end-run around taxes or restrictions on banks to offer high interest rates on deposits or any interest rates on corporate deposits.

shadow-banking world in opaque forms. The new liquidity requirements of Basel III do not help much in this respect (see Section 3.2).

7. Think global

While the globalization of finance has been recognized (and often blamed) by the political world for years, politics remains fundamentally national. Still, globalized finance requires globalized supervision. The effectiveness of most of the preventive and remedial measures described in this paper requires a strong international coordination among central bankers and regulators.

The lack of coordination leads to regulatory arbitrage across national jurisdictions, which speeds up the race to the bottom in regulatory standards. ‘Beggar-thy-neighbor’ policies are much more likely in such a fragmented regulatory environment. For example, when commercial banks are principally active in countries which underprice deposit insurance guarantees, they are able to offer higher deposit rates, attract a greater base of deposits, and face a lower effective cost of funding, distorting global competition. The need for a strong united response was also obvious when beggar-thy-neighbour national policies were adopted when the storm first Europe in October 2008. These included not only blanket guarantees of savers' deposits announced by Ireland, Germany, and Greece but also the unilateral decision in the Netherlands to nationalize the Dutch part of Fortis group. Most embarrassingly, there is still no consensus on how national authorities should share the burden of failures of systemically important financial institutions. The lack of international coordination would also make the implementation of a systemic capital charge on SIFIs impractical.

In general, national politicians and regulators do not like to give up their independence and discretion. Although the Bretton Woods agreement avoided the return to ‘beggar-thy-neighbor’ policies of the pre-war period, the lack of enforcement at the international level is still blatant. Although the EU does a great deal of community-wide regulation in the real sector, cooperation on financial sector regulation is still perceived as a surrender of national sovereignty in individual member countries. The absence of any supra-national authority also explains the reason why the IMF could not play a significant coordinating role in the international response to the crisis. Even the Financial Sector Assessment Program (FSAP) reviews carried out by the IMF may only be conducted with the permission of national authorities. For example, The United States has never agreed. In the current situation, neither the IMF nor the BCBS (housed by the Bank for International Settlements) has a way of imposing an agreement on countries or penalizing non-cooperation.

8. Conclusion

Regulatory strategy must focus on both lowering the probability of bank failures *and* limiting their costs when they occur. As argued by Llewellyn (2010), the current debate about the role of regulation and supervision for financial stability is about the appropriate weight to be given to the two dimensions. In this paper, we argue that, however carefully constructed, rules-

based regulation will unfortunately never prevent bank failures and neither should it attempt to do so. Given the current regulatory environment, the top priority must be given to lowering the cost of bank failures directly through better bank crisis management.

It still remains that an effective overall regulatory regime must be sufficiently comprehensive and views both strategies are complementary. The key components of the regime must be: Basel-type rules *robust to off-balance-sheet arbitrage*; little forbearance in monitoring and supervision by regulatory agencies, tilted towards systemic risk control; automatic and quick intervention arrangements before the failure as well as effective resolution arrangements. While all are necessary, none are sufficient and without strong international coordination and implementation, none will be effective.

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