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New Paradigms for Banking Regulation

Abstract

The current financial crisis and the high social cost it has incurred have shattered the confidence of economic agents in the banking system and brought into question the capacity of financial markets to channel resources in the most efficient way. In particular, investments in the financial industry have been shown to be excessively risky while the generally accepted view is that banks' investment strategies were very unsound. It is clear that, in order to prevent future crises, the reasons for banks' excessive risk taking have to be understood.

Disentangling whether the crisis was the result of managers' incentives, shareholders' appetite for risk, a general culture of risk or financial markets' "short termism" is still a complex issue. This article** briefly explores some of the driving forces behind the culture of excessive risk taking in the banking industry and questions to what extent the current changes in banking regulation can correct inadequate incentives. Our analysis raises serious concerns regarding the Basel III countercyclical buffer and maintains scepticism regarding the efficiency of changes in corporate governance, levels of information disclosure and market discipline.

Introduction

Risk taking is obviously an inherent part of banks' business, so the concept of excessive risk taking conveys the idea of a misalignment between the banks' value maximization objectives and economic efficiency. To be more precise, we will define excessive risk taking as a level of risk which, had it been known and taken into account *ex ante* by banks *stakeholders*, would have made the net present value of a bank's investment project negative, so that the *informed* market value of future random cash flows would have been lower than the investment initially made to obtain them. This view of "excessive risk taking" preserves the right for banks to invest in high risk ventures provided they yield a correspondingly high return, and that the risk is acknowledged by liability holders in that it does not jeopardize the continuity of the bank as a going concern.

Bank managers' incentives for excessive risk taking may arise from a variety of causes. Some of these, such as the existence of Systematically Important Financial Institutions (SIFIs), or the lack of additional capital buffers, have already been addressed by the regulatory authorities. However, various other issues have not yet been duly considered in the post-crisis regulatory reform. Excessive risk taking can be the result of:

1. Poor corporate governance in the banking industry;
2. Procyclicality of capital;
3. Insufficient disclosure; and
4. Inadequate bank resolution and restructuring mechanisms.

We will now consider the main lessons to be learned from the crisis in each of these fields.

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Corporate governance

It has been often stated that banks are different, and this is also true regarding their corporate governance. Mehran, Morrison and Shapiro (2012) survey the key differences that include leverage ratios, the multiplicity of stakeholders (insured and uninsured depositors, the deposit insurance company, bond holders, subordinate debt holders and hybrid securities holders) and the opacity and the complexity of banks' operations are in stark contrast with the characteristics of non-financial firms.

The first issue that comes to mind is the issue of executive compensation that has been widely debated in the media. The question here is whether the system of executives' compensation was adequately designed and whether academic contributions can allow us to provide a number of informed answers. To begin with, banks with higher option compensation and a larger fraction of compensation in bonuses for their CEOs did not perform worse during the crisis, and thus more "skin in the game" made CEOs more cautious. Complementing this view, Suntheim (2010) shows that, unsurprisingly, institutions where CEOs had more incentives to take risks (higher Vega) performed worse. Moreover, a whole host of papers (using pre-crisis data) found that higher risk taking incentives did indeed lead to higher volatility.

The issue is, therefore, why banks should implement incentive schemes that promote risk taking. Again, a number of contributions can help us structure an answer. Interestingly, Fahlenbrach and Stulz (2010) find some evidence that banks with CEOs whose incentives were better aligned with the interests of shareholders performed worse and obtained no evidence that they performed better. Why would shareholders want to provide incentives to perform worse? One possibility is simply that shareholders gave CEOs the incentives to take on risks, which happened in this case not to pay out. In other words, is it possible that shareholders wanted to create a culture of risk taking that fostered huge losses in bad times?

The culture of risk constitutes a key element in determining banks' willingness to gamble in a way that may threaten their solvency. Regarding this point, it is interesting to discuss the notion of "residual compensation" used by Cheng *et al.* (2010). Residual compensation consists of the residuals of a regression of compensation for firms' characteristics like size or industry. Interestingly, the firms with persistently high levels of residual compensation include Bear Stearns, Lehman, Citicorp, Countrywide and AIG. The authors find that residual compensation is strongly correlated with several measures of risk taking and with institutional ownership. They interpret this as meaning that a culture of

short termism is present at these firms, in part due to the preferences of institutional shareholders. Ellul and Yerramilli (2010) and Laeven and Levine (2009) also identify a significant positive relationship between institutional ownership and multiple types of risk that may point to short termism.

Outside the field of executive compensation, Mehran *et al.* (2012) point out that the level of board engagement is another component of a real challenge. On this point, Adams and Mehran (2010) show that the performance of bank holding companies deteriorates when directors who are busier serve on the bank board (that is, busy directors serve on other boards). This finding within the banking industry is consistent with other studies in non-financial institutions (see Fich and Shivdasani, 2006). In addition, banks with busy executives who serve as directors of other companies also generally perform poorly. Finally, Adams and Mehran document that interlocks – that is, when the CEOs of two companies each sit on the other's board – can adversely affect bank performance. Minton *et al.* (2010) find that a higher outside director ratio does not mean that a bank holding company will fare better during a financial crisis.

The importance of the chief risk officer (CRO) and the risk committee, an issue directly related to the culture of risk, is examined in depth by Ellul and Yerramilli (2010). Using a sample of the 74 largest bank holding companies in the US from 2000 to 2008, they offer some details on the prioritisation of risk. They construct a risk management index (RMI) using a principal component analysis of the variables that define if a CRO is present, if the CRO is an executive officer, if the CRO is among the top five compensated, and the CRO's compensation can be divided by the CEO's compensation. Their findings show that a higher RMI index means that the volatility of the banks' results will be lower. In other words, the board of directors' decision to make risk management a lower priority leads, unsurprisingly, to a higher variation in profits. Thus, using Ellul and Yerramilli's results, it is difficult to argue that banks were adversely affected by an unexpected shock (asset price, liquidity or solvency is here irrelevant), when those banks that were more concerned with their risk management succeeded in reducing the volatility of their results.

The overall impression from these studies is that short term oriented shareholders might be willing to provide incentives to take risks that lead managers to excessive risk taking. Even before the crisis, Macey and O'Hara (2003) argued that the right response to this problem would be to extend the fiduciary duties of banks beyond the usual shareholder-maximisation objectives, in order to include an obligation towards the safety and soundness of their institutions. More recently, Bolton *et al.* (2011) propose tying a CEO's compensation, at least in part, to a measurement of the default riskiness

of the firm, in order to align the CEO's objective with social objectives in terms of risk choices. To sum up, the new evidence of the banks' corporate governance points at: (i) the difficulties in finding the correct executive compensation for managers, (ii) the importance of board members' engagement, that is in putting the required level of effort in their activities, and (iii) determining the adequate level of risk. If, prior to the crisis, it was possible to believe that these issues would be solved through market discipline and the "survival of the fittest", this is no longer the case and the existing recommendations of the OECD and Basel committee regarding corporate governance should be monitored and strictly enforced by regulatory agencies.

Procyclicality of capital and countercyclical buffers

Because the absence of capital buffers has been one of the critical aspects of the banking crisis, increasing the contagion from one bank to another as well as its total cost, Basel III regulation (BCBS 2009) has established a mechanism for countries to impose additional buffers to their banking industry.

Although there is now wide agreement regarding the need of an anticyclical buffer, the specific type of buffer to be built is a more delicate issue. Three broad principles have to be respected:

1. First, because of the distinction between expected losses to be covered by provisions and unexpected losses to be covered by capital, *banks should make provision for an upturn in their expected losses in a downturn.*
2. Second, *capital requirements should be tightened in an upturn* so that banks accumulate capital in good times that can be depleted in bad times.
3. Third, *an additional capital buffer should be required if excessive credit growth jeopardises future financial stability.*¹

The Basel III two buffers, the capital conservation buffer and the countercyclical capital buffer correspond to the last two principles. The former is an *ex post* mechanism designed to cope with the increase of capital requirement created by the combination of huge bank losses and rating downgrades during a crisis. The latter is an *ex ante* mechanism that should prevent excessive lending and its perverse effects.

Repullo and Saurina (2012) explore the mechanisms that should be in place to attenuate excessive credit growth. As a consequence, their paper considers in particular how the Basel III proposal tackles this issue

and to what extent it reaches its objectives. Regarding countercyclical buffers, the Basel III proposal stipulates that an increase in capital ratios is required by a country whenever an excessive deviation of the private sector credit-to-GDP ratio to its trend is observed. The aim of Repullo and Saurina's contribution is to check, over a long period of time that includes several banking crises, whether countercyclical regulation can achieve its objectives. The authors begin by observing that any countercyclical capital regulation has to be based on a macroeconomic variable that will trigger the building of a capital buffer and will therefore slow down credit growth. However, surprisingly, their analysis of how deviations in the relationship between the credit-to-GDP ratio and GDP growth shows that the correlation between these two variables will be negative for the majority of countries. Two tentative explanations for this are put forward by the authors. Firstly, the decrease in credit usually lags the corresponding downturn in the business cycle that causes it, a lag that may be explained by the existence of previously committed credit lines; secondly, the use of deviations in the credit-to-GDP ratio with respect to its trend compounds the problem, because it takes some time before the ratio crosses the trend line.

To prove their point, Repullo and Saurina compute the correlations between GDP rate of growth y_t and the *credit-to-GDP gap* z_t , defined as the deviation of the credit-to-GDP ratio from its trend following the Basel III directives on the one hand and the buffer b_t which it implies on the other. The results appear in Table 1, on the next page. With the exception of the US, the empirical analysis teaches us a paradoxical lesson: it is during a recession that we will observe a positive credit-to-GDP gap, alerting us that credit should be curtailed.

It is important to note that correlations for individual countries are very sensitive to the definition of the credit variable and the choice of sample period, so that, for instance the use of "private credit by deposit money banks and other financial institutions" in the database of the world Bank on Financial Development and Structure leads to a negative sign for the US as well. From a qualitative perspective, the results are robust, even if it would be interesting to extend them to all OECD or EU27 countries.

The results reported by Repullo and Saurina open up a completely new perspective on the impact of the countercyclical buffer. As the authors state "a mechanical application of the buffer would tend to reduce capital requirements when GDP growth is high and increase them when GDP growth is low" (p. 1). Of course, the Basel Committee leaves the ultimate decision to regulatory discretion,

¹ Notice that the fact that the credit cycle and the business cycle are not coincident is an additional complication in designing a well-functioning countercyclical mechanism to complement capital regulation.

Table 1 Correlation between GDP growth y_t and the credit-to-GDP gap z_t and between GDP growth y_t and the countercyclical capital buffer b_t computed according to Basel III rules for selected countries, 1986-2009, using World Bank data on domestic credit to the private sector.

	Corr. (y_t, z_t)	Corr. (y_t, b_t)
France	-0.42	-0.48
Germany	-0.06	-0.04
Italy	-0.22	-0.35
Japan	-0.19	-0.22
Spain	-0.29	-0.01
United Kingdom	-0.58	-0.48
United States	0.30	0.26

Source: Repullo and Saurina (2012)

so that the application is not automatic. Nevertheless, if the objective is to have cross-country homogeneous rules in order to avoid a regulatory race to the bottom, regulatory discretion should be limited and countries will be expected to closely follow the deviations of the credit-to-GDP ratio to its trend to identify and to correct excessive credit growth precisely during a downturn, thus aggravating the situation. Interestingly, Gersl and Seidler (2011), using a completely different sample of selected Central and Eastern European countries, also show that the Basel III estimate of excessive private credit is not necessarily a suitable indicator of excessive credit growth.

Repullo and Saurina pursue their argument by simply considering an even simpler alternative than the deviations of the credit-to-GDP ratio regarding its trend. This is the rate of growth of credit. The authors show that the rate of growth of credit is positively correlated with the general rate of growth. Thus, the authors offer an insightful analysis and an alternative proposal for the building of countercyclical buffers to be considered in any discussion of the Basel III proposals.

Because the countercyclical buffer would then be activated precisely during an expansion, this produces the expected effect of the countercyclical buffer and minimizes the negative effect on economic growth.

To sum up, according to Repullo and Saurina, “credit growth appears to be a much better common reference point for the countercyclical capital buffer, in the sense that it is a good signal of the build-up of systemic risk and it does not exacerbate the underlying pro-cyclicality of the minimum capital requirements” (p. 58). By contrast, in its current shape, the countercyclical capital buffer of Basel III, will not help to dampen the pro-cyclicality of bank capital regulation and may even exacerbate it. For this reason, the credit-to-GDP “common reference point” should be abandoned.

Disclosure, transparency and market discipline

It is widely acknowledged that information plays a particularly important role in guaranteeing that capital is used in investors’ best interests, which, in the absence of externalities, corresponds to putting capital to its most productive use. For this to be the case, prices, and particularly prices of liabilities issued by financial institutions, have to reveal available information; guaranteeing trade between equally informed parties and adequately reflecting the liability risk, which is the basis for market discipline.

Prior to the crisis, market discipline was thought to be the perfect complement to supervision. Its role in channeling funds to sound institutions while penalising those taking excessive risks was acknowledged in Basel II, where it constitutes the third pillar. However, this perspective has now completely changed and both regulators and academics have come to regard market discipline with some degree of scepticism. With regard to this, the Turner report was adamant when it stated that “market discipline expressed via market prices cannot be expected to play a major role in constraining bank risk taking, and that the primary constraint needs to come from regulation and supervision.” (FSA, 2009; p. 47) Thus, even if, in theory, an increase in the market interest rate spreads and a limited access to funding should curtail banks’ risk taking, in practice the market response may lead to a complete run on the banking system. Thus, although the mechanism of market discipline as a way to get rid of lame ducks in good times and improve the overall efficiency of the banking system is sound, during the recent banking crisis it appears, instead, to have throttled the financial system and deprived it of access to liquidity. Indeed, a key issue in the collapse of subprime related assets during the 2007-2008 crisis was the fact that the assets that were

Table 2 Correlation between GDP growth y_t and real credit growth cr_t and between GDP growth y_t and nominal credit growth cn_t for selected countries, 1986-2009, using World Bank data on domestic credit to the private sector.

	Corr.(y_t , cr_t)	Corr.(y_t , cn_t)
France	0.62	0.60
Germany	0.32	0.52
Italy	0.30	0.43
Japan	0.61	0.62
Spain	0.67	0.69
United Kingdom	0.62	0.55
United States	0.43	0.44

Source: Repullo and Saurina (2012)

being traded were opaque and might have been the object of asymmetric information, with some informed agents having an advantage in trading; thus generating a market for lemons, whereby only lower quality goods were being traded. This has led to two lines of research: one is to explain the failure of market discipline on the basis of financial market imperfections (bank runs and liquidity spirals) and the other is to consider the failure of the transmission of banks' information to the market. The latter view is the object of Freixas and Laux's (2012) paper.

Such information is relevant for investors who are intending to take action to discipline management. It is on the basis of relevant accurate information that investors can deprive management of financial resources by not providing or extending funds, withdrawing funds, or firing a manager.

For financial statements, but also, more generally, for information disclosure, it is important to distinguish between voluntary and mandatory disclosures and to ascertain whether information can be certified by third parties (auditors, credit rating agencies, credit registers, financial market regulators) or not.

There is also an element of processing in the use of publicly available information, because investors, possibly assisted by financial analysts, take their decisions only after carefully contrasting and combining different sources of information. This leads the authors to distinguish the notion of disclosure from the notion of transparency. In their view, disclosure corresponds to the act of providing information on behalf of firms and issuers, while transparency arises when the disclosed information is effective in reaching the market and being adequately interpreted. Consequently, an analysis of transparency has to take into account not only the incentives of firms and credit rating agencies in disclosing information to the market, but also the ability of the

information receiver to invest into the processing of the disclosed information. Indeed, a failure at one of the two ends of the communication line is enough to make the information process fail.

In order to view the process of information transmission to the market, Freixas and Laux argue that the best way is to consider it as a complex game between information providers and investors, whereby each agent will act according to its best interests. Indeed, when in a state of equilibrium, market participants understand where information comes from and are not easily fooled by accounting information. So, in particular, the issues of supervision and certification (e.g. by auditing firms) and their impact on prices as well as on firms' behaviour (market discipline) need to be taken into account by firms choosing their disclosure strategy. Symmetrically, investors decide how much effort they should put into verifying the reliability of the available information. This implies that any financial market imperfection will be also taken into account by the agents. If security prices overreact to information, firms will try to decrease its accounting losses and increase its accounting profits. If security prices are more sensitive to some specific accounting information, firms will be careful to hide their losses in other accounting items. This explains why firms are quite sensitive to the disclosure of their current income, while "other comprehensive income" or the information included in the notes and its priori equivalent are considered to be less relevant. Once we take strategic disclosure by firms into account, it is necessary to acknowledge that transparency involves trade-offs that accounting standard setters have to take into consideration, since information disclosure has benefits but also has costs in terms of equilibrium. From the perspective of the design of an information accounting system, the trade-offs imply the disclosure of a non-manipulable proxy rather than certain highly relevant but manipulable information. Yet the main difficulties with information communication stem from

the fact that (i) issuers prefer not to disclose information or to distort it, (ii) standard setters and regulators have to impose penalties, while (iii) markets have to rely on gatekeepers and use “second-best information” that the firm cannot manipulate. With this perspective on information transmission as a background, the paper proceeds to focus on the main sources of information for the market: firms’ financial reports and credit rating agencies.

To begin with, it is necessary to acknowledge that some users of accounting information might confuse real performance with accounting measures of performance. Even the managers believe that users can be misled and therefore to put too much emphasis on earnings would suffice to disclose accounting information in a distorted way. Verrecchia (2010) refers to this phenomenon as “accounting alchemy” and documents cases where managers seem to believe that disclosed earnings do matter, even when real performance is not affected and when it is straightforward for users to look through the accounting numbers.

The crisis has seen a number of criticisms levelled at the use of fair value accounting (FVA).² Nevertheless, there is no clear cut consensus. On the one hand, critics argue that fair value accounting forces banks to (excessively) write down asset values, jeopardizing their financial health and contributing to the uncertainty in the market. On the other hand, users of information argue that the implementation of FVA allowed banks too much flexibility and that banks used this flexibility to hide losses and their true risk exposure, thereby contributing to the uncertainty in the market. These two perspectives show that transparency is no panacea and is not easy to achieve.³

In fact, FVA plays a limited role as it only affects the trading portfolio and, in addition, it offers substantial discretion to banks if the losses are considered temporary. So, the case against the use of FVA is a weak one.

Once we agree that FVA is not to be considered as an aggravating factor in the crisis, we also have to acknowledge that information transmission during the crisis has not been satisfactory. With regard to this, Freixas and Laux conclude that “information is more difficult to transmit when the market needs it most”, because

information aggregation, data reliability and interpretation through the crisis have led to higher degrees of uncertainty. Overall, the quality of information worsens during a crisis because both firms and issuers have incentives to hide bad information.

The second channel that allows market participants to obtain information is through third party disclosure. Here, the failure of credit rating agencies (CRAs) in providing accurate information has played an important role during the crisis. One of the lessons that can be learned by analysing CRAs is the extent to which their conflicts of interest in serving their clients, the issuers of securities, may have been underestimated. CRAs incentives to produce accurate information come from their reputations for objectivity. In turn, their incentives to maintain their reputation result from the future profits they generate. Because of this, one of the implications of reputation based incentives is that competition, by decreasing future profits, may exacerbate conflicts of interests and make CRAs more subservient to the issuers. Another empirical prediction regarding reputation based incentives is that CRAs will presumably inflate their ratings in good times when the probability of getting caught is lower and the demand for ratings is high. Nevertheless, it should be acknowledged that, in this case, the failure of the ratings was limited to structured products and did not affect corporate ratings.

The explanation of this difference is that the complexity of structured products implies that different CRAs will give different ratings to the same issue. In addition, if the subordinated first loss tranche is broadened, some CRAs may be willing to reconsider the initial rating and report an improved rating for the issue. Consequently, it is in the interest of the issuer to formally or informally solicit some pre-rating information and then choose the best ratings available, while the less favourable ones will be concealed from the market. This is referred to as “shopping” and is a common practice among issuers that reinforces the CRAs’ conflict of interest because the CRA might lose their clients if they offer accurate but potentially negative ratings.⁴

While CRAs can obtain highly detailed and precise information from the issuers, they only produce a single

² Fair Value Accounting was progressively introduced starting in 2006 to substitute historical book accounting that implied huge biases between the market price and the book price of an asset. It was particularly important for financial institutions. The fair value of an asset would be, according to the Financial Accounting Standards Board as “The price that would be received to sell an asset paid to transfer a liability in an orderly transaction between market participants at the measurement date.” In a liquid market the fair price of an asset is its market price. Yet, in illiquid markets the price of an asset such as a loan has to be estimated or even computed according to a model (marked to model) which makes fair value accounting different from mark to market accounting.

³ See Laux and Leuz (2009) for a discussion of the different arguments surrounding the use of FVA and references.

⁴ Evidence on investors’ overconfidence is provided by Ashcraft *et al.* (2009a), who show that MBS deals with opaque characteristics, such as a high fraction of low-documentation mortgages, underperform their rating, consistent with the predictions of recent theoretical literature.

rating that is supposed to constitute an exhaustive summary of the characteristics of the issue. Consequently, the question arises as to why investors cannot have access to the information CRAs input into their models. The answer is that more transparency combined with limited information on behalf of investors may lead to a 'winners' curse' situation. As Pagano and Volpin (2009) suggest, if some investors have better information than others, trading in the secondary market becomes more costly for the uninformed investors, and liquidity in the market may collapse.

Overall, the main lesson of the crisis regarding information disclosure and transmission is that the quality of disclosed information often deteriorates in times of trouble, so that the efficiency role of market discipline vanishes precisely at the time when uncertainty increases.

Banking resolution

To grasp the intricacies of bank resolution it is helpful to recall the theoretical perspective justifying debt and bankruptcy. Indeed, bankruptcy is intrinsically associated with the existence of debt as a hard claim. The existence of debt is justified because of the *ex ante* incentives generated by the threat of bankruptcy and the corresponding market discipline it provides (Jensen 1986, Hart and Moore 1995). This implies that the renegotiation of debt terms should not be easy, as otherwise it can lead to a "soft budget constraint".

At the same time, the bankruptcy literature (Bebchuk 1988 or Aghion *et al.* 1992) has devised schemes that try and induce *ex post* efficiency, i.e. the maximisation of creditor proceeds in bankruptcy (as well as the respect of priority rules). Yet the pursuit of *ex post* efficiency may be attained by automatic recapitalisation rules or debt-equity swaps that will erode the *ex ante* incentives. Consequently, there is a trade-off between *ex ante* incentives and *ex post* efficiency that has to be taken into account in the design of bankruptcy rules.

When it comes to banking, the tension between *ex ante* incentives and *ex post* efficiency is exacerbated. *Ex ante* incentives are more relevant because the opacity of assets provide higher opportunities for managers to engage in investments that can potentially benefit them as well as shareholders. *Ex post* efficiency is critical because of the huge social cost of a bank bankruptcy, particularly because of the risk of contagion. The existence of banking supervision was supposed to rein in moral hazards and consequently the *ex ante* incentives were assumed to be under control. This is why, prior to the crisis, regulatory authorities agreed that banks were to be bailed out if and only if they were systemic. If they were not systemic, the social cost of their resolution was limited and if they were, the *ex post* efficient restructuring was the main issue to be considered.

Because of the excessive social cost of banking panics, short-term claimholders cannot be penalized in case of a bank failure (This agreement has been around since the 1930s and the "Lehman experiment" has generally reinforced the general consensus). Consequently, banks are really in a stronger position than non-financial firms in terms of being bailed out. Thanks to the understanding by short-term claimholders that they will be rescued in case of trouble, they can avoid financial distress by raising funds at risk-free rates in spite of the risk inherent in their investment activity. The main regulatory goal of an efficient banking regulation should therefore be to put into place mechanisms that penalise managers and claimholders when things go wrong, while ensuring "continuity" for short-term depositors. This is precisely the aim of a well-defined bank bankruptcy procedure.

This social cost of a bank bankruptcy, associated with contagion, constitutes the *raison d'être* of banking regulation. Consequently, the first objective of regulation should be to limit the impact of such an externality at the lowest possible cost. This should be done by addressing the issue at the point where it originates; that is by reducing the cost of a bank's liquidation and restructuring, in order to ensure its continuation as a going concern.

In order to address the issue of banks' efficient resolution, Dewatripont and Freixas' starting point (2012) is to view the banking resolution process as a bargaining game between managers-shareholders on the one hand and regulatory authorities on the other, but with different objectives; as shareholders want to maximise the value of their shares while the regulatory authorities' main objective is to preserve financial stability at the lowest possible cost. This asymmetry in the objective functions, with time playing against the regulatory authorities, leads the authors to argue for a bank-specific bankruptcy rule, different from that for non-financial corporations. The argument is simply that a bank-specific bankruptcy procedure implies a lower cost for a bank's bankruptcy because it limits contagion and clearly defines each liability holder's rights in terms of the possible resolution. This makes the liquidation of the bank a credible threat to shareholders and therefore improves the bargaining position of the regulatory authorities.

The bank-specific bankruptcy procedure has to be set, not only to maximise value to creditors and provide a fair treatment to claimholders, but also to minimise the social cost of banks' bankruptcies and preserve the safety and soundness of the banking system. This implies that the procedure has to be speedy in order to avoid speculation and bank runs, and it has to be orderly; that is, characterised by legal certainty and no renegotiation. In particular, the existence of a bank specific bankruptcy procedure may be crucial for large complex financial institutions (Cliffs) and systemically important finan-

cial institutions (SIFIs); since unwinding their positions may be very difficult for them.⁵ Directly related to the creation of a bank specific bankruptcy procedure is the imposition of a living will; that is, a detailed procedure of how the bank operations will be unwound and sold in the case of its liquidation; as part of banking regulation, with exactly the same objective: to organize a speedy and orderly resolution. This requirement has led the Bank of England to ensure that banks to write living wills so as to reduce the cost of unwinding the different contracts and the overall cost of a bank's bankruptcy, again increasing the credibility of such a threat. Finally, the liquidity of claims involved in the procedure should also be preserved (see Diamond and Rajan, 2005). Indeed one of the lessons to be learned from Lehman's bankruptcy was that the liquidity of derivatives markets greatly simplified the unwinding of Lehman's derivative positions (see Summe, 2010).

Next, even if a perfectly efficient bankruptcy procedure is in place, once a bank is in financial distress, the regulatory authorities should take action quickly regarding its closure or its bail-out and, in the later case, regarding the way support is provided, whether as debt, equity or hybrid capital notes. The experience of the banking crisis in different countries demonstrates great variety in the way the procedures were followed, while established theory has no really clear-cut recommendations to offer. The action to be taken by regulatory authorities will be the result of a cost-benefit analysis, and it will be determined, in the first place, by whether the crisis affects a single institution or is pervasive and concerns all of them.

Whatever the strategy chosen by the regulatory authorities in agreement with the treasury when confronted with a bank in distress, the cost of the bank resolution or its restructuring will depend upon the mechanisms that have been put in place before the crisis. This is why the *ex ante* design of the bank resolution mechanisms is critical. This is an area that has been the subject of new developments. Although some argue that a sufficient layer of capital is the best option to prevent future crises, contingent capital (like contingent convertibles or capital insurance), opens up new lines of intervention as an attractive way to limit moral hazard while enhancing financial stability and limiting the rise in the cost of extending credit. In addition, the very existence of a well-defined contingent bank resolution – rather than the regulators' discretion in the choice of closure versus bail-out – can undoubtedly reduce the banks' incentives to take risks. Indeed, whatever specific form the contingent bank resolution takes, it will always penalize shareholders; whether by wiping them out or by diluting their value.

The recent proposal to use contingent convertibles (cocos) and bail-ins enters this category of mechanisms, as they trigger an automatic recapitalisation of banks in difficulty (see Goodhart, 2010). Contingent convertible securities are defined as securities that, once some threshold is reached, can be converted into capital or allow a loss to be sustained. A typical example of contingent securities is reverse convertibles that are converted into shares when share prices are low.

A bail-in procedure is a contract that triggers the conversion of some of a bank's claims in such a way as to provide additional equity while reducing the amount of debt. A simple example would be the conversion of equity into an out-of-the money warrant, the conversion of subordinated debt and a fraction of long-term debt into equity and the conversion of the residual fraction of long-term debt into subordinated debt.

From the point of view of the existing trade-off between *ex ante* incentives and *ex post* efficiency there is, however, a key difference: while cocos dilute *ex ante* incentives, bail-ins constitute hard claims that imply a specific burden sharing for "non contagious" liability holders. In the case of cocos, compulsory conversion of debt into equity implies that the threat of bankruptcy, which is supposed to discipline managers and shareholders, is more unlikely. On the other hand, a bail-in procedure, while also recapitalizing the financial institution, will do so by penalizing shareholders and subordinating debt long term debt holders, so that the disciplining effect can provide the correct *ex ante* incentives. The recent European proposal is fully in line with the bail-in approach.

The recent changes in European regulation, as exemplified by the sixth June European Commission proposal (COM 2012 280/3) for a directive establishing a framework for the recovery and resolution of credit institutions, the recent Memorandum of Understanding to cope with the Spanish banking crisis that pointed to a fundamental transformation in the management of banking crises, and the 2010 Danish Act on Financial stability, seem to be heading in the right direction, although there is still much legal and regulatory work ahead, particularly with regard to the management of transnational banks in financial distress.

As it stands, two possible ways to deal with international insolvencies exist: the universal or single approach and the territorial approach. When the universal/single approach is used, the totality of the assets is allocated to claimholders independently of the country where their claim has been contracted. Under territoriality, the value of the assets in one country is assigned to the claimholders in that country. Universality is the

⁵ According to Claessens *et al.* (p. 43, 2010), "The administrators of the Lehman bankruptcy in the US have estimated that at least \$75 billion have been wasted because of the complete lack of any preparation for bankruptcy."

insolvency resolution procedure that is consistent with financial integration, while territoriality is associated with segmentation of the international financial market. Of course, the coexistence of these two banking regimes makes resolutions particularly complex. To make matters worse, in their cross-country operations, banks have the possibility of operating as branches or as subsidiaries. The branch structure implies a unique institution that in Europe is supervised by the home country. If a subsidiary is created instead, since it is a distinct legal entity, the subsidiary may go bankrupt without leading to the insolvency of the parent company.

To sum up, both theoretical contributions and new policy recommendations converge: a bank-specific bankruptcy procedure is essential for the efficient resolution of banks in distress. The proposals for contingent convertibles and bail-ins seem to be moving the process in a positive direction by providing the correct incentives for managers, while allowing for an orderly, i.e., contagion free, bank resolution.

Conclusions

To conclude, we should be cautious and acknowledge that, in spite of there being a generally limited understanding of some of the phenomena witnessed during the crisis, regulatory authorities from across the world have joined efforts to rapidly improve the operational framework of banking. The contribution of our paper

is to point out the additional difficulties and challenges that, because of the required time frame of the international regulatory reform leading to Basel III, had to be ignored. We would argue that, although these issues are not part of the first batch of regulatory changes, they have to be considered in the medium and long term if we are to succeed in creating a worldwide efficient banking industry.

In terms of our major concern; that is, in terms of the excessive risk taking of banks; we have to acknowledge that the Basel III reform will require banks to hold additional capital and that this will lead managers and shareholders to act in a more cautious way, as they will have more 'skin in the game'. Yet we also have to acknowledge that this is not enough. Firstly, the level of risk in actions taken by the board of directors of a bank regarding executive compensation packages, the level of board member engagement and the perception of existing risk might be biased. Secondly, the Basel III countercyclical buffer may in fact be badly designed and work in a procyclical manner. Thirdly, regulatory authorities should be able to monitor information to the market in a very reliable way (e.g. by conducting stress tests), as it is in times of trouble when the quality of information tends to deteriorate. Finally, the current regulatory reform should be complemented by a bank resolution framework that allows for a prompt efficient liquidation of banks with practically no contagion effects, a process which has already been successfully carried out in a number of countries.

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