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Jean Dermine and
Dirk Schoenmaker

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Jean Dermine and Dirk Schoenmaker*

Abstract

The state-led resolution of the 2007-2009 financial crisis has proven to be costly. Calls are being heard in Belgium, the Netherlands and Switzerland to cap the size of domestic banks. Is small beautiful? In this policy paper, we first match bailing out cost data to the relative size of banks for a sample of 14 countries and 29 banks. An important observation is that some countries with relatively small banks faced large bailout cost when correlated systemic risk affected many banks. Secondly, we call to the attention that capping the size of banks can have an unintended effect: a lack of credit risk diversification. Risk diversification is needed to reduce the costs of financial distress, which are quite significant in the banking industry. If reducing public bail out costs is the right objective, capping the size of banks is not the best tool. So as to keep large banks that provide highly skilled employment opportunities in a services economy, we discuss four policy options that help to ensure financial stability: independence and accountability of bank supervisors, prompt corrective action mechanisms, burden sharing across countries, and an end to the too-big-to-fail doctrine.

* INSEAD and Duisenberg school of finance, respectively. The authors acknowledge the comments of J. Drèze, C. Goodhart, A. Lucas, M. Massa, G. Schinasi, and T. Vermaelen.

Introduction

The state-led resolution of the 2007-2009 financial crisis has proven to be costly. Upfront government financing has reached 5.5% of GDP for advanced economies (IMF, 2009). This includes capital injection, purchase of assets and lending by Treasury and central bank support with Treasury backing.[1] If one adds to this the guarantees granted by Treasury, this figure rises to 19.5%. Quite naturally, countries which are home to large banks are concerned with the threat to public finance and the solvency of the country that would result from the bail out of a large bank. Calls are being heard in Belgium, the Netherlands and Switzerland to cap the size of domestic banks. Is small beautiful?

In this policy paper, we analyse the options available to countries which are home to large banks. In Section 1, we present data on the relative size of banks in small and large countries, on the relative size of banking systems and on the public bailout cost incurred during the 2007-2009 financial crisis. In Section 2, we review the public policy options available to countries that host large banks. A main conclusion of the paper is that reducing the size of a bank can lead to an unintended effect: a lack of geographical credit risk diversification. Such a lack of diversification is particularly harmful in countries operating with a single currency, as devaluation is not allowed any more to help the economy at a time of a recession. In addition, large banks are often providers of highly skilled employment in corporate banking and treasury. A reduction of bank size will entail the loss of jobs in financial services, a vital sector in a services economy. If reducing public bail out costs is the right objective, capping the size of banks is not the best tool. Public policy mechanisms must be developed to allow countries to operate large banks while maintaining a satisfactory level of financial stability.

Section 1: Relative Size of Banks and Bailout Costs

In Table 1, we document the relative size of 29 banks located in 14 countries at the end of 2007, a few months into the U.S. subprime crisis. Both assets-to-GDP and equity (book value)-to-GDP ratios are reported. As banking assets can incorporate both risky and less risky assets (such as holding of government bonds) and as they ignore activities off-balance sheet, we believe that the ratio equity-to-GDP is a better indicator of the unexpected losses that could arise and of the subsequent public bail out costs. An indicator of relative size should attempt to capture the potential bank losses and subsequent public bailout costs in a country.[2] The equity-to-GDP ratio can be justified by the fact that, under Pillar 2 of the Basel 2 capital regulation, banks must plan economic capital large enough to cover unexpected losses. Although not a perfect indicator as some banks might choose to be more conservative, the equity-to-GDP ratio is likely to provide robust information on the relative magnitude of bank risk.[3] Without surprise, several small countries such as Belgium, the Netherlands and Switzerland are home to large banks. The equity-to-GDP ratio stands at 10.5% and 5.4% for Fortis and KBC in Belgium, 5.5% and 6.2% for ABN-AMRO and ING in the Netherlands, and 8.2% and 11.7% for UBS and Credit Suisse in Switzerland. In larger countries such as Germany, the equity-to-GDP ratios of

[1] As of June 2009.
[2] Note that the concern of the paper is with potential public bail out costs. In a related context, relative size could be used to identify the systemic banks, those institutions which, in case of default, create significant macroeconomic losses.
[3] Alternative indicators could be based on BIS Capital or Core Tier 1 Capital.

Deutsche Bank and Commerzbank stand at 1.6% and 0.7%, respectively, while in the United States, the same ratio for Bank of America and Citigroup stand at 0.8% and 1.1%. Similar figures were reported in earlier studies (Dermine, 2000 and 2003). They were used to indicate the potential vulnerability of small countries that were home to large banks.[4] One significant development over the last seven years has been the growth of British banks. The equity-to-GDP ratios of Royal Bank of Scotland and HSBC stood at 6.5% and 4.9% at the end of 2007, figures to be compared to 2.4% and 2.3% in 2000.

A priori, a country hosting a large bank is exposed to the financial distress of that bank in case of public bail out. However, if many small banks of a country face financial distress at the same time (a case of systemic risk), a country with small banks could be exposed as well. In the case of systemic risk, the relative size of the banking system could matter. Data on the public bail out cost incurred during the subprime crisis allow comparing the exposure of different countries. The public bail out cost data collected by the IMF (2009) refer to upfront government financing as of June 2009. As stated above, this includes capital injection, purchase of assets and lending by Treasury and central bank support with Treasury backing.[5] A word of caution concern these cost data. It does not include the potential cost arising out of guarantee on assets given by Treasury to banks in several countries. Moreover, these are gross cost data as recoveries are expected when government will sell their equity stakes. Finally, a very strict provisioning policy in a country might have forced some banks to call on public money to replenish their Core Tier 1 capital ratio, while softer provisioning policies would have reduced such a need.

In Table 2, we divide our sample of countries into two groups: those countries having large banks defined as those with an equity-to-GDP ratio above 4% (Austria, Belgium, Denmark, Ireland, Netherlands, Spain, Sweden, Switzerland, and United Kingdom), and a second group of countries with banks with equity-to-GDP ratios below or equal to 4% (France, Germany, Greece, Italy, and United States). In the first group of countries with large banks, the cost of public bail out is above 4% of GDP for 7 countries out of 9, the exceptions being Spain and Switzerland with reported public bail out cost of 3.9% and 1.1%. The second group of countries with smaller banks (relative to GDP) is split. Three countries have relatively small public bail out cost (France, Germany and Italy with 1.6%, 3.7% and 0.7%), while two countries face high cost (6.7% in United States and 5.4% in Greece).

In Table 3, we classify countries according to the relative size of banks and relative size of banking systems. As said above, large banks are those with an equity-to-GDP ratio above 4%, while large banking systems are those with a ratio banking assets-to-GDP above 400%.[6] Countries with relatively large banks are split between countries with small banking systems (Austria, Belgium, the Netherlands, Spain, Sweden), and countries with large banking systems (Denmark, Ireland, Switzerland, United Kingdom). Countries with small banks all have small banking systems (France, Germany, Greece, Italy, United States). As bailout cost data indicate, countries with relatively small banks and small banking systems, such as Greece and United States, can still be exposed to large bailout costs. The large bail out cost in the United States arises from correlated exposure to the mortgage market, while in Greece it is likely due to the common exposure to Balkan countries and the shipping industry.

[4] An anecdotal anchor was the bailing out cost incurred for the French Credit Lyonnais in the early 1990s. It amounted to twice the book value of its equity.
[5] Similar data for euro countries only are available in ECB (2009).
[6] The ratio banking assets-to-GDP ratio is a standard ratio of the size of banking systems in the literature.

Although the definitive cost of public bail out will only be know in several years, one can draw two conclusions from the 2007-2009 financial crisis. Countries having large banks (in countries with small or large banking systems) can face the cost resulting from the idiosyncratic distress of a large institution. Examples include Belgium with the case of Fortis, or the United Kingdom with the case of Royal Bank of Scotland.[7] Countries having smaller banks are relatively protected from idiosyncratic risk (the loss arising from the distress of one bank), but they still remain exposed to correlated or systemic risk if many banks face problems at the same time. This was the case in Greece and the United States. An important observation is that small bank size does not reduce always the bailout cost. With respect to correlated systemic risk, it is no surprise that plans are drawn to control systemic risk explicitly (G20 Report (2008), de Larosière Report (2009), Turner Review (2009), US Treasury proposal for a regulatory reform (2009), and HM Treasury plan in the United Kingdom (2009)).

But in smaller countries exposed not only to correlated risk but also to the idiosyncratic failure of one large institution, there are calls to reduce the size of banks. The governor of the central bank of Belgium is quoted as saying "It is necessary to reduce the size of financial activities in our economies. The size of banks is something that should be reviewed. If a bank is too big to fail, then it is too big".[8] The Dutch Minister of Finance (Bos, 2009, p. 10) argues that "The model that financial institutions would be active both at the global level and at the full range of activities (i.e. commercial and investment banking) is less obvious from a risk management perspective. This implies that not only the relative size of the (global) financial sector, but also that of individual financial institutions will be lean and mean in the future". A similar call is voiced in Switzerland.[9] If these reactions to the public cost incurred in recent bail outs are understandable, they seem to imply a source of competitive disadvantage for small countries. Due to the size of their GDP, they cannot allow the creation of large financial institutions. Small is beautiful !

For advanced economies relying on a large service sector, a reduction in financial services activity could entail a significant loss of output, in particular when highly skilled services are involved. Moreover, reducing the size of financial institutions could hamper scale and scope economies which can create sources of competitive advantage in the banking sector (Dermine, 2003). An example of revenue-based economies of scale is corporate banking, for which a large equity base and an international presence are sources of competitive advantage in servicing large international corporate clients. So, small banks will have difficulties catering for multinationals. Finally and most importantly, the retrenching of activities, away from international to domestic, can create a new source of risk: a lack of credit risk diversification. This would be a particular concern for countries of the euro zone. Indeed, as discussed in Dermine (2003), the inability to devalue the currency at the time of a recession could increase the size of unexpected losses.[10] Retrenching into one's domestic market could thus expose a bank to a lack of

[7] These two banks were members of the consortium which acquired ABN-AMRO at the peak of the market in 2007.
[8] La Libre Belgique 24 June 2009.
[9] "The central bank envisaged direct and indirect measures to limit (large banks') size" says Mr Hildenbrand (FT 19/6/09). "Philip Hildebrand, vice chairman of the Swiss central bank, warned that unless the world could quickly agree how to handle cross-border collapses, Zurich would have to consider capping the size of institutions to avoid risk posed by "too-big-to-fail" banks" (FT 9/07/09).
[10] With respect to the benefits of credit risk diversification, one cannot but observe that internationally diversified banks such as Santander (with activities in Spain, England, Latin America and United States) or BBVA are faring much better than local Cajas exposed to the Spanish recession in 2009.

geographical risk diversification. Slijkerman (2007) finds a similar result. Slijkerman investigates the downside risk dependence between banks in the European Union.
He compares downside risk dependence between banks in a country and across borders in the European Union. Due to differences in country risk, the likelihood of simultaneous losses is larger for domestic banks than for international banks.[11]

Credit risk diversification

The necessity of risk diversification needs to be justified. Indeed, in the field of finance, it is often taught that firms do not need to diversify as shareholders can do it themselves through the holding of a diversified portfolio of shares. For example, a Spanish bank does not need to invest in Brazil or the United Kingdom, as the shareholders of the Spanish bank can buy themselves shares of a Brazilian or British bank. As this argument of homemade risk diversification is powerful, one needs to justify the need for in-company diversification of risks. The argument is the need to avoid the costs resulting from the state of financial distress. If home-made portfolio diversification allows mitigating the loss of holding shares of one bank (say, a loss from holding shares of a British bank at a time of a deep recession) with the better stock performance of a Brazilian bank, there are additional losses arising from the distress of a bank. These are referred to as the costs of financial distress.

In banking, at least four sources of costs of financial distress can be identified. Firstly, in case of a deep recession and distress, there can be a run on short term bank deposits and a loss of a deposit franchise. Secondly, the complexity and opacity of bank operations can cause a large decrease in stock price at a time of a recession. In such a situation, insider managers do not want to issue undervalued stocks because of an earnings dilution effect (high cost of external finance). As a consequence, positive present value investment opportunities can be missed.[12] Thirdly, the restoration of regulatory capital ratio can entail the sale of assets. Fire sale of distressed assets can cause a significant loss of value. Fourthly, if private capital is not available, a bank can be nationalized fully or in part with shares purchased by Government at a low closing stock price (low stock price linked to the opacity discussed above). Not only earnings dilution will follow, but, in the European Union context, a call can be made to force the bank that benefit from public support to divest of some activities. To avoid facing the very significant costs of financial distress, a bank will want to reduce the probability of distress. This can be achieved by reducing risk, by increasing equity, or by risk diversification. The last option is often very valuable as it allows to keep profitable (but risky) activities and avoid the cost of expensive external equity. This is a core strategy adopted by insurance companies. The important conclusion is that homemade diversification by shareholders do not allow to avoid the costs resulting from financial distress of one firm. Risk mitigation has also to be managed at the level of the firm.

There was a hope before the crisis that trading credit risk could be used for diversification. Trading credit risk has taken two forms: securitization with the sale of assets and insurance with credit derivatives. The crisis has shown the limits of trading credit risk. Due to lack of liquidity, securitized assets have had to be refinanced on-balance sheet by several banks. And credit risk

[11] Slijkerman (2007) finds that a merger between banks from different countries offers a better opportunity for risk diversification than a merger between two domestic banks. Mergers by banks in the same country increase systemic risk.
[12] This argument is being used in the current banking crisis to clean the balance sheet of banks so as to facilitate the financing of new activities.

transfer with credit derivatives has created a new type of risk, that of the default of the counterparty. Moreover, trading credit risk may reduce lending standards. Under the traditional 'originate and hold' model the loan officer collects information on the creditworthiness of the borrower. This information is also useful for the monitoring of the borrower until the loan matures. When the credit risk is traded away, the incentive to gather information at the origination stage is diluted. Reputation considerations of the originating bank mitigate this problem, but do not eliminate it. Credit risk diversification will therefore have to be managed inside the firm.[13]

In this context, it appears useful to review the policy options available to small countries, the objective being to ensure financial stability in the presence of large banking groups.

Section 2: Public Policy Options for Countries with Large Banks

Four non-mutually exclusive proposals are made to increase financial stability or to reduce the cost of public bail out in the banking sector: increase the independence and accountability of supervisory agencies, create a prompt and corrective action mechanism, create a burden-sharing system across a number of countries, and put an end to the too-big-to-fail doctrine.

Independence and Accountability of Supervisory Agencies[14]

It is a common observation that over the last two years, unlike the case of CEOs of banks, very few heads of national supervisory authorities have been invited to step down.[15] This raises a question of the accountability and independence of banking supervisors. An illustrative example is the case of several countries of Central and Eastern Europe (ECB, 2006, 2007). Banks were allowed to lend massively in foreign currency (mostly Swiss francs, euro, and Yen) on the individual mortgage market. This created a large source of systemic risk, as the devaluation of the local currency would raise the rate of default in the entire banking system. Why has this source of systemic risk been allowed to develop? It is not difficult to imagine that, for many ministers, a strong development in the real estate market was helping the economy, employment, real estate developers, and the public budget with increased tax receipts. One would have needed a very brave bank supervisor to put a break on foreign currency lending, slowing down the economy and hurting real estate developers.

Another example is the risk division index imposed on mutual funds in some countries. So as to protect investors and provide them with minimum risk diversification, a mutual fund cannot invest more than 10% of its assets with the same counterparty. However, when money market funds were created in Europe, competing with bank deposits, banks have lobbied successfully in some countries for an exception to this 10% rule. In Belgium for example, money market funds can invest up to 25% of assets in money market certificates issued by the sponsoring bank (CBFA, 1991). For the sponsoring bank, the exception to the 10% risk rule was welcome

[13] Some object correctly that, correlations increasing at the time of a recession, the benefits of risk diversification are overstated. While recognizing the increase of correlations and that diversification is not a panacea, we can still observe many cases of banks that have fared much better than others during the crisis, such as Santander, BBVA, HSBC, BNP-Paribas, thanks to diversification. With respect to the trading of credit risk, the development of standardized regional/industry indices and the move from an over-the-counter market to central clearing with margin requirement could in theory provide adequate vehicles for credit risk diversification.

[14] This section borrows from Dermine (2009).

[15] Exceptions include the head of banking supervision in Ireland, or the president of the central bank in Iceland.

to retain liquidity in the bank. The argument for the exception is that, regulated by competent authorities, the risk of bank default is minimum. Here is again an example of how lobbying and a twist in regulation could harm the systemic stability of the financial system if worries about bank soundness start to migrate to the money market funds market.

Some (Rochet, 2008) are calling for truly independent banking supervisors who would be evaluated on their success in maintaining the stability and soundness of a banking system. In the same way as central banks have been given independence to conduct monetary policy to control inflation, independence would be given to banking supervisors to develop soundness of the banking system. One must recall that the independence of central banks is justified by the argument that, due to short cycles of political elections, Ministers of Finance will be tempted to expand money supply to steer the economy in the short term, at a cost of creating inflation and longer term ills for the economy. To reduce the impact of lobbying or too short term goals of public policy makers, independence was given to central banks to control inflation. Should banking supervision be given a similar independence?
The de Larosière report (2009, footnote 10, p 47)[16] is very explicit on this issue and the limited degree of independence that should be given to banking supervisors:

"*As such the supervisory authority must be empowered and able to make its own independent judgements (e.g. with respect to licensing, on-site inspection, off-site monitoring, sanctioning, and enforcement of the sanctions),without authorities or the industry having the right or possibility to intervene. Moreover, the supervisor itself must base its decision on purely objective and non-discriminatory grounds. However, supervisory independence differs from central banking independence (i.e. in relation to monetary policy), in the sense that the government (usually the Finance Minister) remains politically responsible for maintaining the stability of the banking system, and the failure of one or more financial institutions, markets or infrastructure can have serious implications for the economy and the tax payer's money*."

Day-to-day banking supervision should be independent, but, unlike monetary policy, the government is responsible for maintaining the stability of the banking system. Since this system seems to be prone to regulatory capture by the financial sector lobby and/or short term political interest, one wonders as to whether banking supervision should not receive the same degree of independence as that given to monetary policy and central banks. Note that the decision to bail out an institution with implications for tax payers money would still remain with the government. What would be given to the independent authority is the authority to pass regulation and to enforce supervision with the sole objective of preserving the stability and soundness of the banking system. In the authors' opinion, given that it is not a lack of regulations[17] but poor enforcement by banking supervisors that has contributed to the crisis, a reinforcement of the accountability of banking supervisors is a must.

The evaluation of bank supervisors will call for the development of measures of performance. In the case of central banking, it is easier: inflation or inflation expectations. In the case of banking supervision, it is more difficult as a single index of financial stability is not directly available. A

[16] The main recommendations of the de Larosière report have been adopted by the Council of the European Union on 19 June 2009 (11225/09).
[17] The traditional argument for bank regulation is the need to limit moral hazard arising out of deposit insurance or of the inability of depositors to assess bank riskiness. An additional argument brought out by the crisis is the need to internalize the systemic costs resulting from financial distress. Regulatory tools include control of management, capital, permissible activities, and rules of conduct.

comparison can be made with the evaluation of the risk department of a bank for which a single index of the bank riskiness does not exist. To evaluate performance, quantitative data (such as spread on banks' CDS contract or subordinated debt, and probabilities of bank default provided by external firms) will have to be mixed with softer data (such as evaluation of regulation and supervision by a panel of experts). Publication of results[18] and a clear linkage between results and promotion/remuneration appear necessary to build the correct incentive structure. Indeed, financial sector assessment programs (FSAP) undertaken jointly by the IMF and the World Bank since 1999 did not prevent the crisis. Independence with clearly set objectives -soundness of the banking system- would contribute greatly to accountability.

Prompt and Corrective Action Mechanism

There are complaints that supervisory authorities have been slow to react once they find out that a financial institution is in distress. The practice that the supervisor allows the distressed financial institution to continue operation even though it is unable to meet the minimum regulatory requirements is referred to as *forbearance*. Alternatively, the supervisor can intervene and resolve the distressed institution by requiring capital injections, the sale of assets, a merger with a sound institution, or liquidation once the regulatory capital ratio falls below a predetermined threshold. This response is generally called *prompt corrective action* (PCA). While PCA has been prescribed in the United States in the 1991 Federal Deposit Insurance Corporation Improvement Act (FDICIA), in the EU Member States supervisory authorities may choose forbearance. Forbearance may dilute banks' incentives to behave prudently and induce undue liquidity support (De Haan, Oosterloo and Schoenmaker, 2009).

In view of the emergence of large cross-border banking groups, the European Shadow Financial Regulatory Committee (2005) advocates the implementation of a system of PCA as part of the supervisory process in each Member State. These procedures would reduce the likelihood of a sudden banking crisis and contribute to host country supervisors' trust in home country supervisors. Mayes, Nieto and Wall (2008) also argue that an EU version of PCA could improve the prudential supervision of banks operating in more than one Member State. The effectiveness of PCA as a mechanism to reduce agency problems among supervisors would rely on the availability of information to prudential supervisors as well as supervisor's use of market information. The use of market based risk measures could be mandated in the supervisory process. At a minimum, this would include requiring additional examinations of banking groups whose reported capital exceeds minimum required levels but which are identified as high risk by financial markets and mandating that the relevant banking supervisors meet to share their evaluations of the group. PCA reduces supervisors' ability to exercise forbearance, but it by no means eliminates supervisory discretion. Supervisors retain substantial discretion in their implementation of PCA so long as a bank's regulatory capital exceeds the critical level at which it is forced into resolution. Mayes, Nieto and Wall (2008) note that effective implementation of PCA would require various institutional prerequisites: supervisory independence and accountability (see above), adequate authority, accurate and timely information, and adequate resolution and bankruptcy procedures (see below).

[18] The use of a panel of experts may partly solve the issue of confidentiality. Confidentiality means that supervisors are not allowed to publish information about individual banks. This principle is enshrined in legislation. So, supervisors cannot publish successful actions: cases were failure was averted because of prompt intervention by the supervisor. Moreover, publication would be counterproductive, as knowledge about supervisory intervention would harm the reputation of a financial firm.

In the authors' opinion, the early closure of problem banks may reduce the number of bank failures. However, expectations should not be too high. The main challenge for PCA is the timely identification of problems. An illustrative example is the reaction speed of supervisors in the 2007-2009 financial crisis. In this crisis, US supervisors operating under a mandatory PCA regime were not faster than their European counterparts to spot, and act on, problems with (overvalued) CDOs related to subprime mortgages. Supervisors on both sides of the Atlantic were equally overtaken by the march of events. So, PCA may be helpful, but will not eliminate bank failures.

Burden Sharing System

So far, home countries have taken the full burden of bailing out international banks. The bailout cost of large international banks can be too large for small countries, as explained in Section 1. To spread the cost of bailing out cross-border banks, burden sharing has been proposed in the European context (Goodhart and Schoenmaker, 2009). The idea behind a burden sharing system is that the European banking landscape is becoming increasingly integrated. In such an integrated banking system, financial supervision and stability should be managed at the European level (Dermine (2009) and Schoenmaker (2009)). The de Larosière proposals (2009) go some way towards establishing a European System of Financial Supervision. Moreover, de Larosière (2009) proposes to set up a European Systemic Risk Board to monitor and manage financial stability at the European level. The ECB, the national central banks and the chairs of the European Supervisory Committees will participate in this European Systemic Risk Board. But de Larosière (2009) stops short of recommending the final part of European crisis management: burden sharing. This is due to lack of political support across the European Union. Most EU Member States guard their sovereignty, in particular with regard to spending tax payers' money.

In a well-designed burden sharing system, each country's contribution to the costs (i.e. the share in the burden) is aligned with that country's benefits (i.e. the maintenance of financial stability). The design of the key for sharing the burden needs to reflect the financial stability benefits. Goodhart and Schoenmaker (2009) discuss two mechanisms. In a first general mechanism, financial stability is assumed to be a truly public good which affects all participating countries. All countries then contribute according to their relative share (e.g. relative to GDP). In a second specific mechanism, financial stability is assumed only to affect those countries where a failing bank is doing business. The burden is financed directly by the involved countries according to some key reflecting the geographic spread of the business (e.g. assets) of the failing bank. Insofar as assets are a good proxy for the real and contagious effects of a bank failure, the specific sharing mechanism will come close to an efficient solution of the coordination problem of bailing out an international bank. Countries facing systemic disruption are asked to contribute. They will do so if the stability effects in their country exceed their contribution.[19]

An illustrative example of the impact of burden sharing on the bailout cost is Unicredit, a large European cross-border bank. Table 1 indicates that its Equity/GDP ratio was 4.0% in 2007. So Italy could face a bail out cost of 4% of its GDP if the equity of Unicredit was completely wiped out. Table 4 provides data on the geographic distribution of assets of some large European banks. In a specific burden sharing system, the cost to Italy of bailing out Unicredit in our

[19] Note that countries participating in a co-insurance system will legitimately demand joint supervision of banks, which may ultimately lead to European supervision.

hypothetical example would be 1.7% of its GDP (42% of 4%). The remainder would be paid by Germany (25%), Austria (12%) and other European countries, mostly new Member States (18%). Although Unicredit was classified as a relatively large bank (equity/GDP ratio of 4%), it becomes a relatively small bank in Italy (1.7%) once a burden sharing scheme is implemented.

A first best would be to agree on burden sharing across the European Union. Based on the home country principle of the Second Banking Directive, cross-border banking is spreading throughout the European Union. As stressed by Goodhart and Schoenmaker (2009), burden sharing will only work if the rules are agreed ex ante and are legally binding.[20] If full burden sharing across the European Union or the euro area may politically not be feasible at this stage, a start could be made among more likeminded countries at the regional level. Table 4 suggests that more limited burden sharing systems among certain countries can be a useful starting point to take care of regional banks. An illustrative example is Nordea. Sweden faces currently a potential bailout cost for Nordea of 5.3% of its GDP (see Table 1). Under a regional burden sharing system, the four Nordic countries (Denmark, Finland, Norway, and Sweden) would split the bill almost equally (26%, 32%, 13% and 28%). Regional burden sharing would thus substantially reduce Sweden's share from 5.3% to 1.5% of its GDP.

The too-big-to-fail doctrine

Several of the international proposals call for closer supervision of systemic institutions. Although not explicitly mentioned, as central banks have generally chosen to keep some constructive ambiguity, there is an implicit recognition that the default of large institutions would cause systemic risk, and that, in case of distress, they would benefit *de facto* from some type of public support. As public support has often taken the form of public guarantees on the debt issued by these firms, the systemic institutions benefit from a significant source of competitive advantage: the ability to raise debt at a lower cost. There is no doubt, in the authors' opinion, that this state of affair has facilitated the creation of very large financial institutions. And one is forced to recognize that the resolution of the crisis has created even larger systemic institutions. In the United States, Bank of America has purchased Countrywide and Merrill Lynch. In Europe, the Belgian government has sold Fortis to the French BNP-Paribas. In the United Kingdom, Lloyds Banking Group has been formed with the merger of Lloyds TSB and HBOS. To resolve the moral hazard resulting from the implicit debt guarantee, the authorities are calling for a closer supervision of systemic institutions with potentially a larger capital ratio, as, unregulated, they would not take into account the systemic cost of a failure. We recognize the need to supervise closely systemic institutions. But as these institutions have been identified long ago, one is left wondering again as to why large institutions, such as Citigroup or UBS, were allowed by supervisors to grow so much and take large risks. The first proposal -granting more independence to supervisors- would reinforce their power and accountability.

A complementary mechanism would be to increase private discipline. Several participants have claimed that private discipline has functioned properly during the crisis as shareholders of banks

[20] The institutional setting without binding burden sharing rules was not capable to reach a collective approach for Fortis in October 2008. The rescue of Fortis was done on national lines (Schoenmaker, 2009). When Fortis was first recapitalised on 28 September 2008, the Belgian, Dutch and Luxembourg governments provided capital injections to domestic subsidiaries (Fortis Bank NV/SA (Belgium), Fortis Bank Netherlands and Fortis Bank Luxembourg respectively) and not to the Fortis Group as a whole. When the first recapitalisation of € 11.2 billion proved to be insufficient, Fortis was torn apart along national lines: the Dutch parts nationalised by the Dutch government and the Belgian/Luxembourg parts sold to BNP Paribas.

have been penalized dearly. But, this is not enough. Equity is a very small fraction of the funding of banks' assets. In most cases so far, bank debt -including non-insured deposits, interbank debt, subordinated debt- has been protected, often with explicit public guarantees. A way to increase scrutiny of banks, beyond that of supervisors, is to put bank debt at risk, that is to create the risk of bank failure. As these systemic institutions are vital for the proper functioning of the economy, one needs to design a bankruptcy system that allows for the benefits of default (increase in market discipline), with a maximum reduction of the cost of default.

To reduce the cost of the default of a large bank, two features must be met. The first is that the bank should be closed for only a few days (during a week end). As depositors and borrowers need to access their funds rapidly and as lending must continue, the resolution of bankruptcy must be swift. Bankruptcy court must be able to swap very rapidly debt for equity before the re-opening of the bank.[21] In such a system, small deposits can still be protected by a deposit insurance system. To limit the liability of the deposit insurance system, insured deposits would be senior claim, with all other debt becoming junior claim. In case of distress, the debt/equity swaps would only concern junior debt. Secondly, to avoid the fear of domino effects (the failure of one bank causes the failures of other banks), credible information on counterparty risk must be available on the spot. In short, all banks should be able to meet the bankruptcy acid test: they can be put into bankruptcy. If it is not feasible, then the structure of the financial institution must be changed. With bank debt at risk, there will be much more pressure from private financial markets to limit bank risk. It seems to us that the current EU proposals calling for closer supervision of systemic banks could be a step in the wrong direction if it increases incentives for banks to become large and systemic. Two countries, the United States and the United Kingdom, have proposed very recently a call for a reform that would allow the quick resolution of large financial firms:

"We recommend the creation of a resolution regime to avoid disorderly resolution of failing Bank Holding Companies (BHCs), including Tier 1 Financial Holding Companies (FHCs)) if a disorderly resolution would have serious adverse effects on the financial system and the economy" (US Treasury, 2009, p. 14)".

"The government believes that all firms should have detailed practical resolution plans for dealing with their own failure, and in particular expects the FSA to work with "high impact" firms to make sure that they have such plans in place "(HM Treasury, 2009, p. 13).

Time will tell if these proposals will pass to Congress and Parliament. In the European Union, it might be useful to revive the development of *Societas Europeae* in the banking sector. With this corporate structure which allows a company to operate abroad with branches, the bankruptcy regime of the parent company would then apply to the entire group (Dermine, 2006). This would greatly facilitate a bankruptcy resolution, as compared to the current web of subsidiaries which are governed by bankruptcy laws of each individual country.

But again as with PCA, expectations should not be too high. While there is a clear need to move away from an almost 100% certainty of bailout (reinforced by the multiple rescues during the

[21] So as to give initial shareholders a fair treatment in the case of bankruptcy and a debt/equity swaps, initial shareholders will receive the right to subscribe to fresh equity on the same terms that are offered to debtholders. This ensures that they can participate in case of underpicing of the equity issue.

2007-2009 financial crisis)[22], central banks still have an incentive to stay on the safe side and thus to give priority to bailing out and financial stability over moral hazard concerns during times of stress (time-inconsistency). The state aid regime of the European Union is, at least, helpful as banks are punished (i.e. forced to downsize) by the European Commission when they receive state aid.

To conclude

It was a well known fact that several countries hosting large banks were facing the potential costly threat of having to bail out these large financial institutions. The 2007-2009 crisis has turned this scenario into reality. Having had their fingers burnt, policy makers are wondering as to whether the size of banks should be capped, the benefit being to reduce the cost of a bail out to a country. A first observation is that countries with smaller banks are not immune from a costly bail out if correlated systemic risk affects many smaller banks. A second observation, is that one should be careful in capping the size of an institution if it implies a reduction of foreign activities and a focus on domestic activities. Good intentions can turn into unintended evils if this implies a lack of diversification of risks. A third observation is that, in advanced economies, the services sector provides opportunities for highly skilled employment. One should give financial institutions the sources of competitive advantage arising from economies of scale and scope. If reducing public bail out costs is the right objective, capping the size of banks is not the best tool. One needs to review the policy options that ensure financial stability in the presence of large financial services firms. Out of the four policy options mentioned in the paper -independence and accountability of supervisors, prompt corrective action, burden sharing, and end to too-big-to-fail-, it would seem that at least two options (increased accountability and burden sharing) would go a long way to reduce the risk of costly bail out.

[22] Under constructive ambiguity (Freixas, 1999), central banks follow a mixed strategy in emergency lending to banks (i.e. sometimes helping out; sometimes closing down). The credibility of constructive ambiguity depends on the regime for closure, or downsizing, of large systemic banks.

Country	GDP (bn local currency, 2007)	Assets of Credit Institutions / GDP (2007)	Bailout cost (% of GDP)	Bank name	Asset (bn local currency, 2007)	Equity (bn local currency, 2007)	Asset/GDP	Equity/GDP
Austria	272	329%	8.9%	**Erste**	200	11	73.9%	4.1%
Belgium	335	353%	4.8%	**Fortis**	869	35	259.5%	10.5% (3.9%)[1]
				KBC	355	18	106.0%	5.4%
				Dexia	604	16	180.4%	4.8% (0.7%)[2]
Denmark	1687	429%	5.9%	**Danske**	3349	104	198.5%	6.2%
France	1892	353%	1.6%	**BNP-Paribas**	1693	60	89.5%	3.2%
				SocGen	1068	31	56.4%	1.6%
Germany	2422	312%	3.7%	**Deutsche Bank**	2016	39	83.2%	1.6%
				Commerzbank	611	16	25.2%	0.7%
Greece	228	168%	5.4%	**NBG**	90	7.6	39.4%	3.3%
				Alpha	54.5	3.4	23.9%	1.5%
Ireland	191	701%	5.9%	**AIB**	178	12	93.4%	6.3%
				BofIr	197	7	103.4%	3.7%
Italy	1544	216%	0.7%	**Unicredit**	1014	62	65.7%	4.0%
				IntesaSanPaolo	571	52	37.0%	3.4%

Netherlands	567	387%	13.6%	**ABN**	1022	31	180.3%	5.5%
				ING	1304	35	230.0%	6.2%
Spain	1050	280%	3.9%	**Santander**	902	56	85.9%	5.3%
				BBVA	498	28	47.4%	2.7%
Sweden	3064	304%	5.2%	**Nordea**	3670	162	119.8%	5.3%
				Svenska H.	1859	75	60.7%	2.5%
Switzerland	512	681%	1.1%	**UBS**	2270	42	443.2%	8.2%
				CS	1355	60	264.6%	11.7%
UK	1400	611%	20.0%	**RBS**	1898	91	135.6%	6.5%
				Barclays	1226	32	87.6%	2.3%
				HSBC	1184	68	84.6%	4.9%
				Lloyd TSB	353	12	25.2%	0.9%
USA	13807	109%[3]	6.7%	**Citigroup**	2187	114	15.8%	0.8%
				BofA	1715	147	12.4%	1.1%

Table 1: Country size, Bank Size, and Public Bailout Cost.

Source: IMF (2009), IMF (World Economic Outlook , International Financial Statistics), Thomson One Bankers Analytics, ECB, Swiss National Bank.

Public bailout cost refers to Upfront Government Financing. It includes capital injection, purchase of assets and lending by Treasury and central bank support provided with Treasury backing. Equity is taken at book value.

1.Number in parenthesis is equity over the combined GDP of Belgium and the Netherlands. 2. Number in parenthesis is equity over the combined GDP of Belgium and France. 3. For USA, banking institutions.

Countries with large banks (Equity/GDP > 4%)	Bailout cost (% of GDP)	Countries with small banks (Equity/GDP ≤ 4%)	Bailout cost (% of GDP)
Austria	8.9%	**France**	1.6%
Belgium	4.8%	**Germany**	3.7%
Denmark	5.9%	**Greece**	5.4%
Ireland	5.9%	**Italy**	0.7%
Netherlands	13.6%	**USA**	6.7%
Spain	3.9%		
Sweden	5.2%		
Switzerland	1.1%		
United Kingdom	20.0%		

Table 2: Bank Size and Public Bailout Cost.
Source: IMF (2009), IMF (World Economic Outlook), Thomson One Bankers Analytics; for Denmark, the source is Wall Street Journal (2/7/09).
Equity is taken at book value. Public bailout cost refers to Upfront Government Financing. It includes capital injection, purchase of assets and lending by Treasury and central bank support provided with Treasury backing.

	Large banking systems (assets/GDP > 400%)	**Small banking systems (assets/GDP ≤ 400%)**
Countries with large banks (equity/GDP > 4%)	Denmark, Ireland, Switzerland and United Kingdom	Austria, Belgium, the Netherlands, Spain and Sweden
Countries with small banks (equity/GDP ≤ 4%)		France, Germany, Greece, Italy, United States

Table 3: Countries classified according to size of banking systems and size of banks.

Fortis (2007)		**Nordea (2007)**	
Countries	**Geographical distribution of assets**	**Countries**	**Geographical distribution of assets**
Benelux	81%	Nordic countries	99%
• Belgium	54%	• Denmark	26%
• Netherlands	20%	• Finland	32%
• Luxembourg	7%	• Norway	13%
		• Sweden	28%
Rest of Europe	11%	Rest of Europe	1%
Rest of the World	8%	Rest of the World	-
Total	100%	Total	100%
Santander (2007)		**Unicredit (2007)**	
Countries	**Geographical distribution of assets**	**Countries**	**Geographical distribution of assets**
Main countries	75%	Western Europe	79%
• Spain	49%	• Italy	42%
• UK	22%	• Germany	25%
• Portugal	4%	• Austria	12%
Rest of Europe	8%	Rest of Europe	18%
Rest of the World	17%	Rest of the World	3%
Total	100%	Total	100%

Table 4: Geographical spread of activities of some cross-border banks.
Source: 2007 annual reports.

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