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Marinc, M.

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*Citation for published version (APA):*

Marinc, M. (2008). *Essays on bank monitoring, regulation and competition*. Universiteit van Amsterdam, Amsterdam Center for Law & Economics.

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# Chapter 4

## Regulation of a Competitive Banking System

### Abstract

The regulation of a highly competitive and rapidly changing banking system presents daunting challenges. Competition typically increases efficiency, yet, is traditionally considered a threat to stability. Recent research, however, argues that competition and stability could (sometimes) also go hand in hand. This chapter discusses direct and indirect barriers to competition stemming from stability-oriented regulation. Despite the potential beneficial effects of competition, regulators should only cautiously liberalize their banking sectors. Liberalization, and the period of transformation that it implies, can induce opportunistic behavior suggesting the need for precaution. Moreover, competition might lower the effectiveness of existing regulatory tools. I also consider the efficiency and effectiveness of current regulatory practices in light of the recent consolidation in the banking industry.

Keywords: Bank Regulation, Competition, Consolidation

JEL CLASSIFICATION: G21, G28

## 4.1 Introduction

Under the pressure of fierce competition, the banking industry is rapidly reshaping its structure (see Berger and Mester (1996), Stiroh and Strahan (2003) and Boot (2003)). On the one hand, banks appear to be scrambling to become bigger, whether through organic growth or through mergers and acquisitions. On the other hand, banks need to decide whether to specialize or be broad (all-purpose) financial institutions. For bank regulators, this offers challenges in that they must follow the developments and ask themselves whether the past regulatory framework is still suitable under the quickly evolving, dynamic banking environment. In this chapter I provide an overview of the insights that the literature so far has produced on the interaction between competition and stability. In particular, I focus on the impact of the more competitive environment on the effectiveness of bank regulation.

The main objective of prudential regulation is clear. The regulator stands for the stability of the banking system, yet also needs to take into account the efficiency of the industry. In light of long-lasting efforts of regulators, the implementation of the stability objective appears to be a difficult task. Banks may intrinsically lack stability, having on one side of their balance sheets liquid demand deposits and, on the other side, illiquid loans. A weak position of a bank might induce depositors to withdraw their funds. In the worst case, such a bank run could induce a confidence crisis and spread to other banks and create a systemic banking crisis with negative repercussions for the entire economy. Indeed, the negative externalities of a bank failure justify the existence of bank regulation in the first place.

The question appears whether the stability and efficiency (and competitiveness) objectives are compatible with each other. More specifically, higher competition may improve the efficiency of the banking industry and that could be good for stability; yet, in the extreme case, it may also produce cut-throat competition that leads to bank failures. Older studies argue that higher competition induces banks to behave more riskily and creates instability (see Keeley (1990)). This influence might be especially strong in developing countries with weak institutional and legal structures. In developed countries, however, the link between stability and competition could be more positive. Although older studies emphasize the potential negative impact of competition, recent studies are more positive (see Boyd and De Nicolo (2005)).

Even though competition does not have a clear-cut effect on stability, it might distort stability-oriented regulatory practices and make them ineffective. I argue that this does not justify limiting competition. The regulator should respond by reshaping stability-oriented regulation to suit the more competitive environment.

The chapter is organized as follows. In Section 4.2, I review how bank regulation aims to assure stability of the banking system. Section 4.3 analyzes the direct impact of competition on bank stability and efficiency. Section 4.4 reviews regulatory practices that might (intentionally or unintentionally) limit competition. In Section 4.5, I discuss the impact of competition on the effectiveness of stability-oriented regulation, with a particular focus on deposit insurance and capital regulation. Section 4.6 assesses the effectiveness of regulation

in light of the recent consolidation and conglomeration of the banking industry. Section 4.7 concludes the chapter.

## 4.2 Rationales for Bank Regulation

The reasons for bank regulation stem from the functions that banks perform in the economy. In particular, banks can be considered a lubricant for the economy at large, and bank instability might impose substantial externalities. In this section, I seek to uncover the main source of externalities in banking. This helps in understanding the optimal regulatory and supervisory design.

Banks are active on the asset side as well as on the liability side of their balance sheets. On the asset side, banks have loans that need monitoring. These assets, often rather opaque, reflect the idiosyncracies of bank borrowers that may not have access to financial markets. In particular, information asymmetries could make capital markets inefficient in financing informationally opaque companies (e.g., small and medium enterprises). Banks aim to resolve this market failure by screening and monitoring borrowers (e.g., business that need financing). This allows them to intermediate between investors (depositors) and businesses that need financing.<sup>1</sup> The additional information that banks possess inevitably makes them opaque (see Morgan (2002)).

On the liability side, banks create liquidity. That is, banks finance illiquid loans with liquid demand deposits.<sup>2</sup> Demand deposits, however, present an underlying threat for a bank. Depositors can withdraw their funds at any time. This could create instabilities, but it also exerts pressure on banks to behave prudently (see Calomiris and Kahn (1991)).

The opaqueness of banks on the asset side together with liquidity provision on the liability side make banks inherently unstable institutions. More specifically, if many depositors unexpectedly withdraw funds, the bank involved incurs high liquidation costs and even a previously solvent bank might be forced in liquidation. A broader, systemic bank crisis could result because the banking industry is highly interconnected and the failure of one bank can have negative repercussions for other banks and hence for the economy at large. Empirical evidence points at a cost of a bank crisis ranging from 5 to 20% of annual GDP (see Hoggarth, Reis, and Saporta (2002) and Bordo, Eichengreen, Klingebiel, and Martinez-Peria (2001)).

These huge negative externalities could provide a justification for bank regulation. More specifically, due to externalities, banks on their own may not fully internalize the costs of failure; that is, the social cost of failure exceeds the private cost. A widely accepted form of regulation is the implementation of deposit insurance. Deposit insurance prevents bank runs because depositors know that their money will be repaid anyway. However, it creates other distortions. Depositors do not carefully examine the stability of their banks anymore. The

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<sup>1</sup>Banks screen borrowers, prevent opportunistic behavior by borrowers by monitoring, and punish and/or audit them (see Freixas and Rochet (1999)).

<sup>2</sup>For a further discussion of liquidity provision, see Von Thadden (1999) and Bhattacharya, Boot, and Thakor (1998).

regulator may now have to take full responsibility for the prudent behavior of each bank.

Several regulatory tools have been created to deal with the banks' potential excessive risk taking. Intrusive regulation in the past included restrictions on activities, geographical limitations, and various limitations on the banks' prices (e.g., deposit interest rate ceiling). An example of intrusive regulation was the Glass-Steagall Act in the U.S. that kept investment banking and commercial banking separated.<sup>3</sup> Nowadays, rather than being "brute forced" into desired behavior, prevailing regulation is more of an indirect nature, in which banks are indirectly "compensated" for being prudent or alternatively charged for risk taking. An example is capital regulation, in which banks are obliged to hold a level of equity capital that corresponds to the riskiness of their activities.

Basel I was the first widely implemented form of capital regulation. Despite several criticisms, its aims are largely fulfilled. It has raised capital across the banking industry across the world. While Basel I had some calibration to risk taking, it was rather rudimentary. The new Basel II framework aims to improve on this. It also has a greater emphasis on market discipline.

In summary, banks provide for an efficient allocation of funds in the economy, mainly by resolving informational problems between firms and their financiers and providing liquidity transformation. As argued, banks' role in resolving information asymmetries and liquidity transformation makes them prone to bank runs and other potential instabilities. To safeguard the banking system, deposit insurance and prudential regulation is needed.

Before focusing on the connection between regulation and competition, I first analyze the effects of competition in light of the stability and efficiency objectives of the regulator.

## 4.3 Competition, Efficiency, and Bank Stability

In this section I first analyze the link between competition and the efficiency of the financial system. Following this, I evaluate the impact of competition on bank stability.

### 4.3.1 Competition and efficiency

An efficient financial system should minimize transaction costs, where these costs should be interpreted broadly as the resources that dissipate or evaporate in the process of allocating resources. This generally necessitates a certain degree of competitiveness. Indeed, competition is generally found to be of critical importance for cost efficiency (including productive efficiency) and for the optimal allocation of resources (allocative efficiency).

Stiroh and Strahan (2003) analyze the link between growth and the performance of the banking industry after the deregulation in the U.S. in the 1980s. They show that deregulation shifted the market share from less to more efficient banks. Similarly Carlson and Mitchener (2006) present evidence on the positive effect of competition on stability. They argue that

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<sup>3</sup>See Boot, Milbourn, and Deželan (2001) on the distinction between direct and indirect regulation.

the expansion of branching in the U.S. in the 1920s increased competition, which weeded out inefficient banks and effectively made the banking system stronger. This is related to a study by Berger and Hannan (1998), in which the efficiency of banks is linked to the market structure. In particular, more monopolistic banks tend to be less efficient than banks subjected to more competition. Evanoff and Ors (2002) evaluate the level of cost efficiency after competition increases. They find that the incumbent banks respond by increasing their level of cost efficiency if a new bank enters or an existing competitor becomes stronger. Similarly, Kořak and Zajc (2006) show that opening up the European banking system decreased the efficiency gap between Western banks (in the old EU member countries) and Eastern banks (in the new EU member countries).

Jayaratne and Strahan (1998) analyze increased competition in the U.S. due to relaxation of bank branch restrictions. They show that per-capita growth in income and output increases significantly following deregulation of the financial industry. Hence, higher competition in the banking industry has a positive effect not only on the efficiency of the banking industry but also on the productivity of the real economy.

Competition might have a somewhat different effect on the optimal allocation of resources in banking due to the presence of information asymmetries. Petersen and Rajan (1995), for example, show that competition might hamper the intrinsic role of banks as a monitor of borrowers. In particular, in Petersen and Rajan's view, banks may invest less in relationship building and are less willing to grant credit because they expect lower future relationship rents due to the more competitive environment.

However, several studies give a more positive view on the role of competition in enhancing bank monitoring ability and consequently in credit allocation. Boot and Thakor (2000) suggest that competition drives banks to focus on activities that are less prone to price competition, such as relationship lending. Competition undermines rents more in transaction lending, such as mortgage loans, than in more information-based lending, as in relationship banking. Contrary to Petersen and Rajan, they predict that competition could lead to more relationship lending. Similarly, Dell'Ariccia and Marquez (2004) suggest that competition induces more sector specialization. That is, banks may choose to escape price competition by investing more in knowing their borrowers and thus offer more tailored services. Sector specialization helps in doing this. The positive effects of competition in their analysis are twofold. First, competition assures lower interest rates for borrowers and, second, informationally opaque borrowers obtain financing more easily.<sup>4</sup>

In short, findings in the literature point to a favorable effect of competition on efficiency. It typically improves the cost efficiency of banks and capital allocation across the economy. Competition may also intensify bank-borrower relationships despite popular notions to the contrary. Now I turn to the mixed evidence on the relationship between competition and stability.

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<sup>4</sup>Beck, Demirgüç-Kunt, and Levine (2003) empirically confirm that bank concentration increases obstacles to obtaining finance.

### 4.3.2 Competition and stability

In this section I analyze the interaction between competition and bank stability. Competition and stability are often seen as conflicting rather than complementary objectives in banking, thus possibly presenting regulators with a difficult trade-off. I show that this might especially be true in developing countries, whereas in developed countries competition and stability often go hand in hand.

Historically speaking, up to the 1980s, competition was generally strictly contained in the banking system. Globalization helped to force policy makers to open up banking systems for competition. In this more dynamic environment concerns about stability became more prevalent.

Keeley (1990) theoretically justifies the connection between competition and instability. Keeley argues that banks behave prudently because they want to preserve high future rents, which are lost if banks fail. High competition erodes future rents, making banks' risky behavior more attractive. In a similar spirit, Dell'Ariccia and Marquez (2006) show that deregulation that reduces information asymmetry between banks might increase competition. In order to obtain additional market share, banks loosen their credit standards, which might result in a lending boom and potentially in a banking crisis.

Although competition could make the banking system more fragile, it is not the cause for fragility in the banking system (see Vives (2001a)). As argued earlier, banking has inherent features that make it potentially fragile. In this spirit, Boyd, De Nicolo, and Smith (2004) show that banking crises are not only confined to competitive banking systems, but can also occur in a monopolistic system. More recently, people have argued that competition might even have a positive effect on bank stability. The analysis of competition and efficiency in Section 4.3.1 already pointed to this. Competition helps strong banks gain market share, and this very survival of strong banks could lead to a more stable banking system. Boyd and De Nicolo (2005) provide a different argument. They argue that competition forces banks to charge lower interest rates to their borrowers, which could induce borrowers to behave more prudently.

Often it is too easy to blame competition for banking crises. Looking back at many recent crises (e.g., the S&L crisis and the Swedish banking crisis), acute regulatory problems including lax enforcement, weak internal controls, poor supervision, poor transparency, and lack of market pressure were pervasive (see Barth, Trimmath, and Yago (2004) and Englund (1999)).

The empirical study by Beck, Demirgüç-Kunt, and Levine (2003) confirms the positive role of competition on bank stability. Their cross-country analysis shows that crises are less likely in banking systems with fewer restrictions on bank competition and activities. In addition, stronger national institutional arrangements that encourage competition lower the probability of bank failure.

Demirgüç-Kunt and Detragiache (2001) are more cautious in presenting beneficial effects of liberalization. Although they control for several macroeconomic variables, they show that

liberalization is negatively related to the stability of the banking system. This points to an important insight. Competition per se might not be bad for stability, but *changes* in the (competitive) environment might cause instabilities because one needs to adjust to this new environment. Thus, the path towards a new equilibrium entails risks (see also Chapter 3). The negative effect of liberalization on stability in the Demirgüç-Kunt and Detragiache (2001) study is weaker where the institutional environment is stronger. In particular, countries with low respect for rule of law, where corruption is high and contract enforcement is low, should be very careful when introducing financial liberalization. These circumstances particularly apply to developing countries.

Honohan and Stiglitz (2001) further defend the view that financial liberalization should be approached carefully in developing countries. In developing countries, agency and information problems are severe. That is, banks might be managed to the benefit of corrupt owners.<sup>5</sup> In addition, reliable information about a bank's behavior such as its risk taking and its economic value (e.g., the true value of loans and collateral) is more difficult to obtain. In light of these problems, prudent regulation might be difficult. Competition may then exacerbate this problem. In their view, a lower level of competition might then be desirable and help support sound regulatory practice to contain risky bank behavior.

Altogether, while competition clearly enhances efficiency, the link between competition and stability is rather inconclusive. Foremost, structural changes in banking systems entail risk. Thus, any liberalization should be managed carefully during the transformation path. From a more steady-state perspective, the evidence points to the following tentative conclusion. Competition seems beneficial in more developed banking systems, whereas in underdeveloped systems it poses a severe threat to stability.

## 4.4 Regulatory Barriers to Competition

What can policy makers do to foster competition? In this section I focus on the impact that prudential regulation has on competition in the banking system. The key conclusion is that one needs to carefully reexamine existing stability-oriented regulatory practices that may implicitly entail barriers to competition. I primarily focus on regulatory induced barriers to competition in the context of the U.S. and EU banking systems.

As a response to the Great Depression, the U.S. implemented the Glass-Steagall Act, which enforced tight control over banking activities. The Glass-Steagall Act separated the activities of commercial banks and securities firms. The U.S. also imposed Regulation Q to restrict the level of competition with the aim of increasing bank stability. Regulation Q prohibited paying interest rates on demand deposits and capped the interest rate on savings deposits.<sup>6</sup> Interestingly, regulation Q had an unexpected outcome. It hampered banks'

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<sup>5</sup>For instance, the Russian banking sector, though growing rapidly, remains fragmented, with a large population of very small banks. Many of these small banks are banks in name only and are used by their owners for such purposes as tax "optimization" or money laundering (see Tompson (2004)).

<sup>6</sup>The Glass-Steagall Act also introduced deposit insurance by the Federal Deposit Insurance Corporation



ability to compete against money market mutual funds. The micro-created instability forced its removal in the 1980s. U.S. banks were also geographically restricted; for example, by limitations on opening branches in different U.S. states (the McFadden Act). The Riegle-Neal Act of 1994 removed most barriers to interstate branching. The Gramm-Leach-Bliley Act of 1999 lifted restrictions on the activities that banks could undertake (i.e., combining securities and insurance with commercial banking). In doing so, it allowed for the creation of a financial services holding company.

Deregulation had a huge effect on the structure of the U.S. banking industry. Whereas as in 1984, 14,407 U.S. banks operated 43,250 branches, by 2005 the number of banks had fallen to 7,527 and the number of branches had increased to 71,716.<sup>7</sup> Deregulation of restrictions on activities together with intensifying competition forced banks to search for rents in their non-traditional business and identify their true comparative competitive advantages. The rapid transformation of the banking industry indirectly points to previously established inefficiencies, which in part were induced by excessive regulation. Jayaratne and Strahan (1996) and Clarke (2004) provide empirical evidence supporting the conclusion that the interstate bank deregulation (and also the removal of intrastate branching restrictions) enhanced economic growth. The consolidation also appears to have led to a more efficient provision of banking services. Claessens and Laeven (2004) find no evidence that concentration negatively affects the level of competition in the banking system. The level of competition is largely driven by allowing for foreign entry and reducing activity restrictions.

The diversity of the European Union presents a different challenge for policy makers. Policy makers are trying to overcome the geographic segmentation of banking markets but are only very slowly succeeding. The Single Market Program of 1992 stipulating home country control on regulating the cross-border activities of banks is only slowly showing positive effects. This Single Market Program of 1992 makes banks accountable to their home regulators, without (extensive) intrusion of the host regulator for their branches abroad. Bank consolidation is largely a domestic phenomenon and only recently are cross-border mergers being observed.<sup>8</sup> A variety of reasons can be suggested for this. For most, cultural differences between countries and implicit barriers involving domestic “favoritism” come to mind.

One of the direct barriers is the reluctance of national regulators to allow foreign banks in. Examples include the takeover of two Italian banks, Banco Nazionale del Lavoro and Banca Antonveneta, by respectively, the Spanish bank Banco Bilbao Vizcaya Argentaria (BBVA) and the Dutch bank ABN-AMRO; respectively. In these cases, pressure from the EU helped overcome the intrusion of the domestic regulator. Both domestic banks were ultimately taken over.<sup>9</sup> It may well be that these developments establish a “turning point”

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and increased the ability of the Federal Reserve to increase money supply.

<sup>7</sup>See FDIC Statistics on Banking, A Statistical Profile of the United States Banking Industry, March 2006.

<sup>8</sup>Cross-border mergers are observed at the regional level; for example, between the Netherlands and Belgium, and within the Scandinavian countries.

<sup>9</sup>Also in the U.S., the interests of more powerful players affect regulation. Kroszner and Strahan (1999)

and that cross-border activity may accelerate.

In a recent initiative, the European Commission proposed an amendment to EU legislation that would restrain the discretion of national regulators in preventing a cross-border takeover. Current EU rules allow national supervisory authorities to block proposed merger if they consider that the “sound and prudent management” of the target company could be put at risk. The proposed new directive would in particular clarify the criteria against which supervisors should assess possible merger operations. This would improve clarity and transparency in supervisory assessment and help ensure the consistent handling of merger requests across the EU (see European Commission (2006b)).

Chapter 3 gives another arguably pertinent reason for domestic mergers. It shows that especially weak domestic banks could “delay the inevitable” by merging to gain extra economies of scale and market power to defend against entry of foreign competitors.<sup>10</sup> In the short run this seems viable. However, in the long run inherent weaknesses of these banks would put their (independent) survival at risk and, even worse, the potential distress of these institutions may cause substantial systemic problems. This would suggest that opening such a domestic market should allow for takeovers of weak domestic institutions by foreign entrants. The previously mentioned directive of the European Commission works in this way.

Potential barriers to competition also come from stability-oriented regulation. For example, the costs and complexity of implementing Basel II standards might put small banks at a competitive disadvantage. The dispersed EU regulatory and supervisory structure could also lead to high costs and complexity discouraging entry. For example, in the EU, regulatory costs are increased because cross-border operating banks often have to report to several regulators. Although EU directives and other international standards leave limited scope for typical national arrangements, national rules are still not fully harmonized, and also regulatory and supervisory arrangements differ. This is particularly relevant for banks that have their foreign operations in subsidiaries. These are, contrary to branches, regulated by the host-country regulator (see Section 4.6.1 for further discussion).

The answer to this puzzle might be that local regulation suits local players. Foreign banks may then be at a disadvantage. Regulators might also be biased toward the needs of their domestic banks, especially if the domestic banks are large (see Boot and Thakor (1993)). Such sizable domestic banks may also find themselves implicitly protected by too-big-to-fail policies. The failure of such a bank might simply be too costly to the economy at large, and/or to the popular support of domestic politicians.

Another disadvantage of foreign banks might be a “home” bias of the local clientele. That is, customers (especially in retail banking) seem to prefer domestic banks over foreign banks simply because they are domestic. The existence of “home” bias can in part be attributed

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find that the process of branching deregulation in the U.S. was mainly driven by the relative strength of interest groups of potential winners (large banks) and losers (small banks). Their analysis confirms that the same factors influenced congressional voting on branching deregulation.

<sup>10</sup>One could speculate that the recent merger between two Italian banks, Capitalia and Unicredito, could partially be a strategic response to the entry of ABN-AMRO in the Italian banking market.

to differences in national consumer-protection laws, which make it difficult for banks to standardize their products (see Dermine (2006)). In any case, even if home bias were not present, inertia on the part of customers together with real switching costs make it difficult for new banks to enter.

Another important barrier to entering a foreign country is the existence of asymmetric information. Particularly in small-business lending, domestic banks have more information about the business conditions in their country than their foreign competitors. Consequently, foreign competitors are initially at a disadvantage. Degryse and Ongena (2004) predict that asymmetric information induces more entry by mergers and acquisitions than by *de novo* entry, in which a bank opens branches in the foreign country on its own. Merging with a domestic bank could allow a foreign entrant to overcome the lack of domestic expertise and to gain local borrowers and local knowledge. Although entry via cross-border mergers has until now been fairly limited, Degryse and Ongena (2004) predict that eventually it will occur as targets become larger and their quality more verifiable (the competition authorities will also play a role).

In conclusion, *explicit* barriers to cross-border mergers do not seem excessive. Implicit barriers are still quite prevalent. The picture is, however, less clear due to the special nature of banking activities. Contrary to other industries, stability concerns may give domestic regulators an excuse to limit competition.

## 4.5 The Effect of Competition on the Effectiveness of Regulation

In order to understand how regulatory practices should be adapted to a more competitive environment, this section analyzes the *interaction* between competition and the effectiveness of regulation. The special nature of banking, and particularly the concerns about instability and its potential consequences for the rest of the economy, seems to continue to warrant regulatory scrutiny. However, competition poses unique challenges to the effectiveness and viability of regulation. Problems of regulatory arbitrage and level-playing-field issues come to mind. To this end, I review first the effect of competition on the effectiveness of deposit insurance. Next, I assess the influence of competition on capital regulation.

### 4.5.1 Competition and deposit insurance

As highlighted in Section 4.2, the justification for heavy regulatory interference in the banking industry is primarily to prevent costly systemic crises. Individual failures as a natural outcome of a Darwinian survival process without system-wide adverse consequences could be tolerated. With this in mind, I analyze how competition affects the effectiveness of deposit insurance and the distortions that deposit insurance induces. I show that the *design* of deposit insurance is particularly complicated in a more competitive environment. In par-

ticular, the coverage of deposit insurance needs to be carefully specified. Also, competition exacerbates the distortions in bank behavior that deposit insurance creates. To contain the distortions, deposit insurance could be designed more closely to reflect the risk of a bank.

It is true that competition promotes efficiency, but through which mechanism? Stiroh and Strahan (2003) show that high competition shifts the market share from low-to high-quality banks. Eventually, low-quality banks are forced to exit the market unless they choose to restructure themselves. In general, the regulator should endorse such efficient evolution of the industry. More importantly, as said, a possible failure of an individual bad bank can be tolerated if no adverse consequences spread to the entire banking system. Taking this into account, regulation and supervision should ideally go hand in hand with market discipline. Market discipline refers to borrowers, depositors, and other banks that should be cautious enough to spot possible failure and put pressure on banks to behave prudently.

Deposit insurance, however, shifts the burden of bank surveillance almost exclusively to the deposit insurer. Because the deposit insurer bears the potential losses of failure, depositors are no longer interested in the stability of the bank. However, this does not mean that deposit insurance must be eliminated. Without deposit insurance, costly bank runs may occur with a high cost for the entire economy, and indeed precisely the threat of costly bank runs was the reason d'être for deposit insurance.

Even without deposit insurance, implicit guarantees are prevalent. That is, high perceived costs of a systemic bank crisis may force the regulator to bail out failed banks and their creditors even in the absence of deposit insurance. An example for this is the rescue of the Bank of Crete by the Greek central bank in 1989 even though at that time Greece did not have any deposit insurance scheme. In the case of the Swedish banking crisis, formal deposit insurance was also not present, yet the government felt compelled to provide a blanket guarantee.

Gropp and Vesala (2004) claim that a bank might behave more safely in the presence of carefully designed explicit deposit insurance. They argue that deposit insurance that is limited only to depositors commits the regulator not to bail out other creditors, such as large creditors or holders of subordinated debt. An example is Germany, where several small banks failed with explicit deposit insurance present (a recent example is the failure of Gontard and Metallbank AG in 2002). Only depositors were protected whereas other creditors incurred full losses.

What this may point to is that in a competitive environment the coverage of deposit insurance should be strictly contained and well specified, and should not cover all creditors. Some market discipline is then preserved. Some ambiguity might be desirable to encourage market discipline. This could be consistent with UK regulatory policy, in which the regulator issued a general policy that the regulator would step in only in case of failures leading to systemic bank fragility (see Financial Service Authority (2003)). By being ambiguous on when systemic fragility was deemed to be present, some ambiguity was created.

A related negative effect of deposit insurance is that it potentially changes bank behavior

towards a more risky behavior. Competition could further encourage this. A potential solution is to make deposit insurance premiums risk sensitive. However, Chan, Greenbaum, and Thakor (1992) show that deposit insurance cannot be correctly priced to the bank's risk in a perfectly competitive environment due to informational problems. A fairly risk-priced deposit insurance can only be implemented if banks are subsidized through a deposit insurance premium. Freixas and Rochet (1998) show that a certain level of subsidization might be optimal to separate inefficient banks from efficient ones. However, subsidization may hinder competitive processes such as banks entry decisions.

Pennacchi (2005) demonstrates that risk-based deposit insurance also generates procyclical effects. He suggests that in order to minimize procyclicality deposit insurance should be structured as a moving average of contracts. In the U.S. the Federal Deposit Insurance Corporation (FDIC) is designing deposit insurance to more closely reflect the risks of the financial institution. The FDIC computes deposit insurance premium using capital levels, supervisory ratings, and also financial ratios and issuer ratings.<sup>11</sup>

Chapter 3 provides a more complete analysis of true effect of deposit insurance in an industrial organization model of banking in which banks are of a heterogeneous quality. It shows that, as long as the deposit insurance premium cannot be made fully type (and/or risk) dependent, deposit insurance effectively subsidizes low-quality banks relative to high(er)-quality banks. This makes low-quality banks more competitive than they would otherwise be, and makes it more difficult for good banks to gain market share at their expense.<sup>12</sup> The consequence of this is that lending rates are pushed down by the over-competitive low-quality banks, and this discourages entry. Increasing capital requirements mitigate this by reducing the deposit insurance subsidy for lower-quality banks, thereby reducing their competitive strength and encouraging entry.

In short, there is a need to reassess the design of deposit insurance in the highly competitive banking system. The easiest modification of deposit insurance is to introduce strictly contained coverage such that some of the creditors are left exposed. Theoretical studies show that the implementation of risk-based deposit insurance may be difficult, although some regulators have made attempts in this direction. The next section discusses how capital regulation can mitigate the distortions created by deposit insurance.

## 4.5.2 Competition and capital regulation

In order to limit distortions of deposit insurance, regulators have predominantly turned to capital regulation. Capital regulation demands that each bank has enough capital at stake, and this helps counter the tendency of deposit insurance to gamble. First, I focus on banking

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<sup>11</sup>See Federal Register, Vol. 71, No. 230, p. 69282.

<sup>12</sup>Although lack of contractability generally makes it infeasible to have deposit insurance premiums fully risk-based (i.e., type and risk dependent) and effectively introduces cross-subsidies, systemic concerns in the banking industry create all kinds of other cross-subsidies and interdependencies. For example, many agree that the functioning of the banking sector depends crucially on the confidence that the public has in the financial system at large.

systems in developing countries, where competition may decrease the responsiveness of banks to capital regulation. Second, I analyze capital regulation in developed countries. There banks respond quickly to capital regulation and the design of capital regulation becomes important.

In Chapter 3 I give a positive view on the rather rudimentary Basel I capital framework. I show that the positive effect of Basel I was to increase the level of capital throughout the banking industry. As stated in Section 4.5.1, I argue that fixed-price deposit insurance effectively subsidizes weak banks; capital regulation helps counter this. It mitigates the artificially inflated competitive strength of weak banks, and in doing so helps mitigate the distortions associated with deposit insurance. When endogenous entry is allowed for, high capital requirements “cleanse” the banking system by reducing the competitive strength of weak banks, and in doing so can encourage entry. This positive effect of capital requirements is especially strong if competition is fierce and the distortions created by deposit insurance are high.

Chapter 3 also points to the critical aspect of capital regulation in connection with bank stability and interbank competition. It analyzes how effective capital requirements are at inducing banks to behave prudently. It shows that increasing interbank competition typically compromises the effectiveness of capital requirements precisely for low-quality banks (such that low-quality banks respond less to higher capital requirements). That is, competition makes capital requirements inefficient especially for the banks that need them most – for low-quality, risky banks. In Chapter 3, I also show that competition makes capital regulation less effective in weak banking systems whereas it strengthens the effectiveness of capital regulation in high-quality banking systems. These results point to the difficulty of introducing more competition when the banking system is of low quality.

Hellmann, Murdock, and Stiglitz (2000) go even further. They claim that high competition can make capital requirements counterproductive. They argue that costly capital decreases banks’ franchise values. Banks that expect lower profits in the future care less about their future existence and their stability. Consequently, higher capital requirements might induce banks to behave more riskily.<sup>13</sup> Repullo (2004) mitigates their concerns. He shows that banks pass the losses due to costlier capital requirements to depositors. That is, an increase in capital requirements reduces equilibrium deposit rates in such a way that banks’ franchise values do not change. He shows that capital regulation stays effective despite high competition. He also shows also that risk-based capital regulation is more efficient than flat-rate capital regulation.

Particularly in the developing countries, where corporate governance and institutional

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<sup>13</sup>Several other contributions argue that capital requirements may enhance bank risk rather than lower it. Blum (1999) shows in an intertemporal setting that a bank may want to increase risk today if it anticipates an increase in capital requirements in the future. He argues that a unit of capital is worth more if capital requirements are tight. One way of increasing capital in the future is to boost profits by immediately taking riskier strategies. Besanko and Kanatas (1996) show that increasing capital requirements augments the proportion of outside ownership and lowers the proportion of inside (managerial) ownership. Consequently, managers employ less effort in assuring bank stability and banks might become less stable.

control are weak, the effectiveness of capital requirements might also be hampered due to agency problems. A bank manager that maximizes its own wealth instead of the shareholders' value might be inclined to take on considerable amount of risk despite a high level of external capital financing. Designing complex risk-adjusted capital formulas such as Basel II may not substantially improve the accuracy of capital regulation, yet it should result in higher regulatory costs. Particularly in the U.S., for these very reasons a different approach to capital is advocated. What is called a leverage ratio is defended as providing a good measure for timely intervention. Capital requirements then need to be robust, such that the regulator can correctly compute them and take action if capital is too low. Boot, Milbourn, and Deželan (2001) and Honohan and Stiglitz (2001) argue that in developing countries capital regulation may have to be combined with direct regulation that includes strong regulatory supervision, deposit interest rate ceilings, and limits on bank activities.

Whereas in developing countries with closed banking systems banks might be insufficiently responsive to capital regulation, in developed countries with fierce competition banks may be affected by capital regulation in an excessive and/or unforeseen way. For example, the imprecision of the rather rudimentary capital requirements used in the Basel I framework could spur regulatory arbitrage. That is, banks may try to avoid capital requirements by engaging in off-balance-sheet financing, such as securitization, and/or more risky activities that in the rudimentary Basel I standards do not require extra capital.<sup>14</sup> To prevent this, the response of regulators was to move to better calibrated risk-based capital requirements also involving the possibility for banks to use their own internal models to assess necessary capital. This led to the Basel II capital regulation framework.

However, competition might also render Basel II incomplete. In particular, the Basel II capital framework allows banks to opt for the more advanced, internal-rating-based approach (IRB), whereby banks develop their own empirical models to quantify required capital and the regulator limits its role to certifying those models. It is far from clear what the effects of the Basel II framework will be. First, it is not without risk to have capital regulation depend on the banks' own models. The necessary certification of those models might induce their standardization and the potential invalidity of such models might lead to a newly induced systemic risk. Second, the implementation of the IRB framework is demanding and suitable only for large banks and it might give them a comparative advantage against small banks. This might deter new entry and lower competition. Alternatively, banks might use the "standardized" approach although they have already implemented the IRB framework for their own use.

Moreover, at a more fundamental level, one could question whether capital regulation should aim at precisely calibrating optimal capital levels, or rather enforce a strict lower limit essentially as a certification requirement. In the latter interpretation, one could even

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<sup>14</sup>Greenbaum and Thakor (1987) show that banks tend to securitize safe loans whereas they typically keep risky loans on their balance sheets. Calomiris and Mason (2004) empirically confirm that through securitization banks may seek to avoid minimum capital requirements. Jones (2000) reviews the principal techniques for regulatory capital arbitrage invoked by the Basel I standards.

envision banks voluntarily choosing higher levels of capital because being well capitalized may also offer a distinct competitive advantage.

An additional negative effect of risk-based capital regulation is that it might act procyclically (see Kashyap and Stein (2004)). That is, in a recession banks must hold higher capital requirements due to greater risk of their borrowers. Higher capital requirements may then limit access to bank loans, which might deepen the recession.

However, Basel II also has positive features. It attempts to better match pricing in the capital markets by limiting (costly) capital to risks. This may help enhance transparency and market discipline. Indeed one of the objectives of Basel II is to augment market discipline. Its third pillar on disclosure and transparency also explicitly aims to facilitate market discipline. Particularly in the more competitive environment of a developed banking system, the benefits of correct alignment of incentives in Basel II together with augmented market discipline might be welcomed.

Summing up, competition exacerbates the distortions of bank regulation. In particular, deposit insurance has two distortionary effects. First, it puts banks on an equal footing and helps low-quality banks. Second, deposit insurance may increase banks' risk taking. A careful design of deposit insurance (i.e., limited, well-specified coverage of deposit insurance) could partially contain its distortions and at the same time prevent a costly bank run. Capital regulation may additionally mitigate the distortions of deposit insurance. If competition is high, capital regulation is less effective in the developing banking system and it needs to be complemented with direct regulation; that is, regulatory supervision and intervention. Capital regulation is more effective in a developed banking system. However, the competitive environment makes its implementation far from trivial.

## **4.6 Regulation in the Presence of Consolidation**

Regulators need also to adapt to the observed consolidation in banking, which has elevated the complexity of these financial institutions. In this section, I assess the viability of regulation in light of this elevated complexity. I focus first on the causes and effects of consolidation. Next, I evaluate the effectiveness of regulatory tools for these more complex institutions.

### **4.6.1 The effectiveness of current regulation in the consolidated banking industry**

The efficiency of the current regulatory design should be reconsidered in light of the ongoing consolidation in the banking industry. First, I show that consolidation may positively affect bank efficiency and stability. Second, based on the situation in the EU banking system, I highlight several drawbacks of consolidation. To account for this, I propose a few potential improvements in the regulatory design.

Recent research points to the presence of scale economies in many bank activities. How-



ever, mergers typically involve not only scale economies but also increased organizational complexity. Not surprisingly many studies find little overall value gains in mergers, with often overall negative effects. More recently, mergers up to \$10 billion of total assets appear to offer some potential value creation. Typically however, the potential for value gains is increasing with the geographical and product specialization of the institutions involved. Penas and Unal (2004) and Focarelli and Panetta (2003) point to the efficiency gains from bank mergers that stem mostly from diversification and synergies between merging banks. In the short run, merged banks obtain higher market power; however, in the long run efficiency gains may dominate market power and consumer surplus could increase. The recent development of IT technology facilitating cross-selling of new products and running complex risk-measurement systems have somewhat improved the value gains in large mergers.

Empirical research describes a positive connection between concentration and stability. Beck, Demirgüç-Kunt, and Levine (2003) confirm that in more concentrated banking systems crises occur less often. They suggest that concentration should be viewed separately from competition. That is, the most stable banking system is one with strong competition between a few large players.

However, consolidation of the banking industry should still be considered with caution. Consolidation could have a negative influence on the effectiveness of bank regulation – particularly timely intervention. Increasing complexity might make this much more difficult; moreover, too-big-to-fail concerns may lead to regulatory paralysis. Large financial institutions might have a strong influence on the action of regulators through the political powers that they control.<sup>15</sup> This “regulatory capture” can be prevented with enhanced transparency of regulatory procedures combined with strong market pressure.<sup>16</sup>

Consolidation might also create a lack of accountability due to the involvement of too many regulators. For example, some European banks must report to more than 20 European regulatory bodies. Who should be responsible for resolving the failure of such a bank? The regulator of the institution’s home country might have incentives not completely aligned with other regulators. It could postpone the liquidation of an insolvent institution for too long in fear that such liquidation could trigger instability in the domestic banking industry; the “too-big-to-fail” problem.<sup>17</sup> Cross border activities with potential different systemic concerns in host versus home countries may exacerbate this problem. This makes it even more important that regulatory tools and practices such as closure policy be carefully designed. Only then can regulators be held accountable for their actions.<sup>18</sup>

The question is also who will act as a lender of last resort (LoLR). That is, who will

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<sup>15</sup>See Kroszner (1999) for more on the political economy of banking regulation.

<sup>16</sup>Regulators should put special focus on the stability of large institutions because they have the greatest effect on the stability of the entire banking system (see Mishkin (1999)).

<sup>17</sup>Boot and Thakor (1993) show that the regulator’s privately optimal bank closure policy is more lax than the socially optimal closure policy. They argue that the regulator concerned about its reputation (its monitoring ability) might postpone liquidation of an insolvent financial institution.

<sup>18</sup>Heinemann and Illing (2002) show that increased transparency of government policy reduces the likelihood of speculative attacks.

provide liquidity in the case of a liquidity crisis? In the EU the national regulator is legally responsible for the provision of liquidity. Again, optimal liquidity provision for one country might not be optimal for foreign operations.<sup>19</sup>

Despite possible political problems, the EU should think in the direction of at least partially centralizing the regulatory powers in European institutions such that the effective procedures in the case of failure of an international bank can be followed. Optimal synchronization across regulators and supervisors is crucial (see Vives (2001b) and Boot (2006)). Dell’Ariccia and Marquez (2006) show that, if regulation is decentralized, the regulators in competition select sub-optimally low standards. Although centralized regulation overcomes this problem, it entails a loss of flexibility in designing optimal regulation that suits the needs of each banking system separately. If banking systems are homogeneous enough, centralized regulation prevails over decentralized regulation.

Another problem is that consolidation complicates the provision of deposit insurance. In the EU, a bank is regulated by the home country regulator, including foreign branches. Accordingly, the home country regulator also insures deposits (in the home and host countries). This creates two problems. First, deposit insurance schemes are not fully harmonized across countries in the EU. Banks from different countries therefore compete with each other under different conditions.<sup>20</sup> More importantly, in small countries with large banks and sizable foreign operations the credibility of such deposit insurance schemes comes into question because those countries may not want to bear the burden of potential losses to sizable foreign depositors.

Regulation of a giant financial institution is not only a problem for the EU. The formation of globally operating financial institutions such as Citygroup poses identical problems. It is important that financial institutions face similar regulatory and supervisory requirements in different countries. Regulatory arbitrage might otherwise induce regulators to compete for banks by possibly lowering standards compromising the effectiveness of regulation (see Dell’Ariccia and Marquez (2006)). This also has some implications for the switch from Basel I to Basel II. A positive effect of the Basel I framework was that it created an equal level playing field for banks in different countries. The Basel II framework contains not only more discretionary elements but may also not be introduced in all countries and, even if introduced in a country, it may not apply to all banks.<sup>21</sup> These differences elevate regulatory compliance costs and could induce regulatory arbitrage.

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<sup>19</sup>In current EU regulation, the home country regulator is responsible for regulating domestic banks *and* its branches in other countries. It also provides deposit insurance for depositors of the bank in home and host countries. However, a branch might be important for the stability of the banking system of the host country. Hence, reporting to home and host country regulators is important.

<sup>20</sup>Due to the Deposit Guarantee Schemes (DGS) Directive (94/19/EC), EU countries are required to maintain a minimum coverage of deposit insurance of €20,000; however, they are free to set coverage above the minimum level. Further harmonization is needed, including fine tuning “topping up” arrangements (in which a bank branch in another member state voluntarily joins the host country’s deposit guarantee system); shortening the time it takes for schemes to pay out to depositors after a bank failure and improving exchange of information between schemes (see European Commission (2006a)).

<sup>21</sup>The EU has already introduced this in its directives 2000/12/ES and 93/6/EES. The U.S. is cautiously lagging behind, and has announced that it will only apply it to the largest banks.

In brief, although consolidation may make banks more efficient and more stable, it may impinge the existing regulatory design. In particular, consolidation may hamper the power of the regulator to act against an insolvent (or excessively risky) bank. In the EU, the coexistence of several regulators with dimmed accountability may become critical in the case of the failure of a large cross-country bank. Further centralization of regulatory powers might be necessary. The existing design of deposit insurance may also turn out to be inadequate.

#### **4.6.2 Current regulatory tools and the increasing scope of financial conglomerates**

The removal of regulatory barriers may have induced banks to expand scope. Therefore not only the size is increasing, but also the scope. I analyze what drives conglomeration and its impact on regulation. First, I review potential efficiency gains and diversification advantages of conglomeration. Second, with respect to the optimal regulatory design, I stress the difficulties of regulatory supervision and point to the role of market discipline.

The empirical literature shows that diseconomies of scope are quite prevalent (see Saunders (2000)). Diversification in general destroys value (for studies on diversification discount, see Berger and Ofek (1995)). The reason behind conglomeration might well be managers' eagerness to grow large and powerful. Managers might also defend themselves from being acquired by acquiring other companies first.

One of the reasons that banks enter other activities is to diversify the risks of the banking business. It is difficult for the regulator to judge the risks stemming from such complex institutions. Moreover, banks increasingly engage in financial market activities such as securitization. Although this may reduce risks (assets might be removed from the balance sheet), it often also adds risks because banks take positions in the financial markets. This may introduce risks that originate from the interconnections between banks and financial markets. In addition, securitization has partially transferred credit risk from banking to the insurance industry. As Allen and Carletti (2005) argue, an idiosyncratic shock to the insurance industry can potentially be propelled back to the banking system, endangering its stability.

Herring (2002) argues that the regulators are afraid of closing financial conglomerates because of the complexity of such institutions; for example, because it is too complex to assess the costs of liquidation and its potential effects on other financial institutions. Hence, regulators might be inclined to rescue them. A potentially similar argument points to the difficulties in closing a financial holding company with many subsidiaries in different countries. In that case, the complexity is further elevated by uncertainty about which country's bankruptcy law should apply in closing such an institution.<sup>22</sup>

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<sup>22</sup>In closing a bank with branches in several EU countries, the bankruptcy law of the home country applies (the directive on Winding up of Credit Institutions, Official Journal 125, 5 May 2001). In the case of a subsidiary, this is different. However, even in the case of branches the host country may try to ring fence assets in order to protect its local constituency.

Regulation of financial conglomerates may call for a greater role of market discipline. However, opaqueness is a serious problem. This already applies to traditional banking business. Banks are inherently opaque institutions. Conglomeration exacerbates opaqueness, which might limit the scope for market discipline. Nevertheless, market discipline together with increased transparency deserves to be one of the cornerstones of regulation in a more competitive banking industry.<sup>23</sup> Without market discipline, the regulator would have to carry the entire burden of controlling financial stability, which could lead to the previously mentioned problems of regulatory capture and regulatory arbitrage.<sup>24</sup>

To summarize, some evidence shows that consolidation in banking leads to efficiency gains and to a more stable banking system. However, consolidation presents several potential dangers for bank stability. First, a large financial institution may have powers to influence the regulator, which results in regulatory capture. Second, its failure could trigger a system crisis; that is, it may become too large (or too complex) to fail, and the regulator could be forced to bail it out in the case of failure. In dealing with these dangers, the regulatory arrangements are important. In this respect, the situation in the EU is not encouraging. Regulation in the EU is decentralized between many regulators that lack clear accountability. Potential further cross-border integration between EU banks may call for regulatory powers to be at least partially centralized in European institutions.

## 4.7 Conclusions

Competition challenges both banks and regulators. Banks will seek to optimally position themselves to deal with a more competitive environment; regulators need to critically assess the suitability of regulating practices in this kind of more competitive environment. Although regulators should not work against these competitive forces, the stability of the banking system needs to be safeguarded. In Section 4.3 I show that particularly in developing countries the regulator may have difficulties in preventing banks from taking excessive risks if competition heats up. In developed countries, competition may generally help both efficiency and stability. Accordingly, regulators may aim to reduce direct and indirect barriers to competition. In Section 4.4 I have described the process towards a more competitive banking system, using lessons from the U.S. and EU situations.

Section 4.5 shows that, together with promoting competition, regulators must adopt stability-oriented regulation. To prevent regulatory distortions, regulators need to fine tune regulation, yet seek to limit regulatory interference. More risk-based regulatory interventions may help. Examples include risk-adjusted deposit insurance and risk-adjusted capital regulation. However, competition changes the banking environment quickly and even fine-tuned regulation is at risk if it runs counter to market forces. This also points to critically assessing the ambition of regulation. It is crucial that players fulfill some minimum requirements to

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<sup>23</sup>Market discipline is also one of the cornerstones of Basel II capital regulation, as stated earlier.

<sup>24</sup>Barth, Caprio Jr., and Levine (2004) show that banking systems are most stable when the biggest role is given to market mechanisms that help enforce prudent bank behavior.

operate, such as minimum capital requirements. The exact fine-tuning might be of lesser importance.

Bank regulation will continue to play a critical role. The potential costs of banking crises are high and substantial externalities exist. In Section 4.6 I have highlighted the importance of clear accountability of regulators in their supervisory review process in light of the consolidation of the banking industry, and the increasingly prevalent cross-border and cross-sector operations of banks. Regulators also need to increasingly use market discipline and enhance transparency to alleviate the burden that falls on supervisors and regulators. Market discipline should operate in conjunction with supervision.

In future work, the impact of competition on the efficiency of capital regulation and deposit insurance deserves further study. Although I have provided some indications of what the structure of regulation should be, for the time being we know little about the optimal design of regulation in a competitive and dynamic banking sector.