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THE ACCELERATING INTEGRATION OF BANKS AND MARKETS AND ITS IMPLICATIONS FOR REGULATION

by

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Abstract

The financial sector is undergoing massive changes. Both the institutional structure of financial institutions and the boundary between financial institutions and financial markets are undergoing metamorphosis. Interbank competition is intensifying and banks face increasing competition from non-banking financial institutions and the financial markets. In this paper we review the existing literature to analyze the various implications of these developments and what they portend for bank regulation. We discuss how banks choose between relationship and transaction lending, the role of debt versus equity instruments, and the economic functions of banks. We conclude that banks and markets are becoming increasingly integrated and co-dependent. In this context, we also focus on credit rating agencies and new intermediaries like private equity firms, which one could interpret as intermediation driven from the equity side, and examine their impact on financial fragility. We address the regulatory challenge coming from financial fragility, and focus on this in the context of the "mushrooming" of the financial sector with greater diversity in institutions and an increasingly blurred distinction between intermediaries and financial markets.

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1 INTRODUCTION

The financial sector is evolving rapidly, with the impetus for change provided by deregulation and advances in information technology. Competition is becoming more intense. Interbank competition within domestic markets as well as across national borders, and competition from financial markets, are gaining importance. Both the institutional structure of financial institutions and the boundary between financial institutions and financial markets are being transformed. This paper reviews the literature related to these developments and uses it to examine the importance of this changing landscape for the structure of the financial services industry and the design and organization of regulation.

We begin by discussing the key insights from the financial intermediation literature, including the potential complementarities and conflicts of interest between intermediated relationship-banking activities and financial-market activities (underwriting, securitization, etc.). While debt contracts dominate the financial intermediation literature, the impressive growth of private equity firms has turned the spotlight on equity. In a sense, one could interpret private equity (PE) as intermediation driven from the equity side. That is, PE firms bring together funding from a group of investors ("partners") and invest that capital as equity in businesses in which they take a position. As in the case of debt, where bank loans compete with public market bond issues, PE firms compete with public equity markets. Given their respective economic functions as debt and equity intermediaries respectively, how do banks and PE firms interact?

Our discussion reveals that the interaction between banks and PE firms is only one aspect of an increasing integration of banks and markets. Banks have a growing dependence on the capital market for sources of revenue, for raising equity capital and for risk management. Likewise, many market participants rely increasingly on banks for a variety of things, e.g. hedge funds that depend on banks continuing to originate and securitize new assets to satisfy their portfolio needs. This immediately raises potential regulatory concerns. What do these developments imply for prudential regulation and supervision? Will the increasing interactions between banks and markets increase or decrease financial system fragility? These questions have become particularly germane not only because of growing banks-markets integration, but also due to the growing cross-border footprint of financial institutions.

These developments have also focused attention on the role of "gatekeepers" (Coffee (2002)), like credit rating agencies. While the financial intermediation literature has acknowledged the role of credit rating agencies as information processors and sellers for some time now (e.g. Allen (1990) and Ramakrishnan and Thakor (1984)), the literature has not discussed how rating agencies may impact on the

fragility of the financial sector through the important role they play as "spiders in the web of institutions and markets." We take up this issue in our discussion.

The organization of the paper is as follows. In section 2, we will focus on the economic role of financial intermediaries. This discussion will summarize the key insights from the modern literature of financial intermediation. In section 3 we focus on the increasingly intertwined nature of banks and financial markets. Private equity is discussed in Section 4. Section 5 focuses on the role of credit rating agencies. Section 6 discusses regulatory implications. Section 7 concludes.

2 UNDERSTANDING BANKS AS INFORMATION-PROCESSING INTERMEDIARIES

In this section we discuss two issues: (1) what is the key role of banks *vis-à-vis* markets? and, (2) how does competition impinge on this role?

2.1 The Economic Role of Banks

We first discuss the role of banks in qualitative asset transformation; i.e. the process by which banks absorb risk to transform both the liquidity and credit risk characteristics of assets (see Bhattacharya and Thakor (1993)). For example, banks invest in risky loans but finance them with riskless deposits (e.g. Diamond (1984) and Ramakrishnan and Thakor (1984)). They also invest in illiquid loans and finance them with liquid demandable deposits (e.g. Diamond and Dybvig (1983)). The theory of financial intermediation has placed special emphasis on the role of banks in monitoring and screening borrowers in the process of lending. Bank lending is typically contrasted with direct funding from the financial markets. What are the comparative advantages of bank loans over public capital market bond financing?

The most striking insight of the contemporary theory of financial intermediation is that banks are better at resolving informational problems than markets. The possession of better information about their borrowers allows banks to get closer to their borrowers. Interestingly, a feedback loop is generated as this proximity between the financier and the borrowing firm in bank lending arrangements may also help mitigate the information asymmetries that typically plague arms-length arrangements in market transactions. This has several aspects. A borrower might be prepared to reveal proprietary information to its bank that it may have been reluctant to reveal to the financial markets (Bhattacharya and Chiesa (1995)). A bank might also have better incentives to invest in information acquisition. While costly, the substantial stake that it has in the funding of the borrower and the enduring nature of its relationship with the borrower—with the possibility of information reusability over time—increase the marginal benefit of information acquisition to the bank.[1]

[1] Ramakrishnan and Thakor (1984) and Millon and Thakor (1985) focus on pre-contract information asymmetries to

Such borrower-lender proximity may also have a dark side. An important one is the hold-up problem that stems from the information monopoly the bank may develop due to the spontaneous generation of proprietary information on borrowers. Such an informational monopoly may permit the bank to charge higher loan interest rates *ex post* (see Sharpe (1990), Rajan (1992), and Boot (2000) for a review). The threat of being "locked in," or informationally captured by the bank, may dampen loan demand *ex ante*. Potentially valuable investment opportunities may then be lost. Alternatively, firms may opt for multiple bank relationships (see Carletti, Cerasi and Daltung (2007)). This may reduce the informational monopoly of any individual bank, but possibly at a cost. Ongena and Smith (2000) show that multiple bank relationships indeed reduce the hold-up problem, but can worsen the availability of credit; see Thakor (1996) for a theoretical rationale.

Another aspect is that relationship banking could accommodate an intertemporal smoothing of contract terms (see Allen and Gale (1995, 1997)), that would entail losses for the bank in the short term that are recouped later in the relationship. Petersen and Rajan (1995) show that credit subsidies to young or *de novo* companies may reduce the moral hazard problem and informational frictions that banks face in lending to such borrowers. Banks may be willing to provide such subsidized funding if they can expect to offset the initial losses through the long-term rents generated by these borrowers. The point is that, without access to *subsidized* credit early in their lives, *de novo* borrowers would pose such serious adverse selection and moral hazard problems that *no* bank would lend to them. Relationship lending makes these loans feasible because the *proprietary* information generated during the relationship produces "competition-immune" rents for the bank later in the relationship and permits the early losses to be offset. The importance of intertemporal transfers in loan pricing is also present in Berlin and Mester (1999). They show that rate-insensitive core deposits allow for intertemporal smoothing in lending rates. This suggests a complementarity between deposit taking and lending. Moreover, the loan commitment literature has emphasized the importance of intertemporal tax-subsidy schemes in pricing to resolve moral hazard (Boot, Thakor and Udell (1991), and Shockley and Thakor (2001)) and also the complementarity between deposit taking and *commitment* lending (see Kashyap, Rajan and Stein (1999)).

The bank-borrower relationship also displays greater contractual flexibility than that normally encountered in the financial market. This flexibility inheres in the generation of hard and soft proprietary

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rationalize the value financial intermediaries add relative to markets. Diamond (1984) focuses on post-contract information asymmetries to rationalize intermediation. While these papers focus on cross-sectional information reusability, Chan, Greenbaum and Thakor (1986) discuss both cross-sectional and intertemporal information reusability. James (1987), Lummer and McConnell (1989) and Gande and Saunders (2005) provide empirical evidence on the informational value of bank financing. See also the "stories" provided by Berlin (1996) supporting the special role of banks.

information during a banking relationship. This information gives the bank the ability to adjust contractual terms to the arrival of new information and hence encourages it to write "discretionary contracts" *ex ante* that leave room for such *ex post* adjustments (see Boot, Greenbaum and Thakor (1993)). This is in line with the important ongoing discussion in economic theory on rules versus discretion, where discretion allows for decisionmaking based on more subtle—potentially non-contractible—information. See, for example, Simon (1936) and Boot, Greenbaum and Thakor (1993). The work by Stein (2002) and Berger, Miller, Petersen, Rajan and Stein (2005) points at the value of "soft information" in lending. This could be an example of this more subtle and non-contractible information. On this issue, two dimensions can be identified. One dimension is related to the nature of the bank-borrower relationship, which is typically long-term, with accompanying reinforcing incentives for both the bank and the borrower to enhance the durability of the relationship. This allows for *implicit*—nonenforceable—long-term contracting. An optimal information flow is crucial for sustaining these "contracts." Information asymmetries in the financial market, and the non-contractibility of various pieces of information, would rule out long-term alternative capital market funding sources as well as *explicit* long-term commitments by banks. Therefore, both the bank and the borrower may realize the added value of their relationship, and have an incentive to foster the relationship.[2]

The other dimension is related to the structure of the explicit contracts that banks can write. Because banks write more discretionary contracts, bank loans are generally easier to renegotiate than bond issues or other public capital market funding vehicles (see Berlin and Mester (1992)). Such renegotiation ability may be a mixed blessing because banks may suffer from a "soft-budget constraint" problem: borrowers may realize that they can renegotiate *ex post*, which could give them perverse *ex ante* incentives (see Bolton and Scharfstein (1996) and Dewatripont and Maskin (1995)). The soft-budget-constraint problem is related to the potential lack of toughness in enforcing contracts due to the *ex post* distribution of "bargaining power" linked with relationship-banking proximity (see Boot (2000)). In practice, one way that banks can deal with this issue is through the priority structure of their loan contracts. If the bank has priority/seniority over other lenders, it could strengthen the bank's bargaining position and allow it to become tougher. (See Dewatripont and Maskin (1995) on the issue of soft-budget constraints. Diamond (1993), Berglöf and Von Thadden (1993) and Gorton and Kahn (1993) address loan seniority structure. Boot (2000) provides a survey of relationship banking.) The bank could then credibly intervene in the decision process of the borrower when it believes that its long-term interests are in jeopardy. For example,

[2] Mayer (1988) and Hellwig (1991) discuss the commitment nature of bank funding. Boot, Thakor and Udell (1991) address the *credibility* of commitments. Schmeits (2005) formally considers the impact of discretion (flexibility) in bank loan contracts on investment efficiency.

the bank might believe that the firm's strategy is flawed, or a restructuring is long overdue. Could the bank push for the restructuring? If the bank has no priority, the borrower may choose to ignore the bank's wishes. The bank could threaten to call the loan, but such a threat may lack credibility because the benefits of liquidating the borrower's assets are larger for higher-priority lenders, and the costs from the termination of the borrower's business are higher for lower-priority lenders. When the bank loan has sufficiently high priority, the bank could *credibly* threaten to call back the loan, and this may offset the deleterious effect of the soft-budget constraint. This identifies a potential advantage of bank financing: *timely intervention*. Of course, one could ask whether bondholders could be given priority and allocated the task of timely intervention. Note that bondholders are subject to more severe information asymmetries and are generally more dispersed (i.e. have smaller stakes). Both characteristics make them ill-suited for an "early intervention task."

2.2 Intermediation and Competition

Since relationship banking is an integral part of the economic services provided by banks and generates rents for banks, it also potentially invites multiple bank entry, which then generates interbank competition. An interesting question this raises is how competition might affect the *incentives* for relationship banking. While this may ultimately be an empirical question, two diametrically opposite points of view have emerged theoretically. One is that competition among financiers encourages borrowers to switch to other banks or to the financial market. The consequent shortening of the expected "life-span" of bank-borrower relationships may induce banks to reduce their relationship-specific investments, thereby inhibiting the reusability of information and diminishing the value of information (Chan, Greenbaum and Thakor (1986)). Banks may then experience weaker incentives to acquire (costly) proprietary information, and relationships may suffer. There is empirical evidence that an increase in relationship length benefits the borrower. Brick and Palia (2007) document a 21 basis point impact on the loan interest rate due to a one standard deviation increase in relationship length.

Moreover, increased credit market competition could also impose tighter constraints on the ability of borrowers and lenders to intertemporally share surpluses (see Petersen and Rajan (1995)). In particular, it becomes more difficult for banks to "subsidize" borrowers in earlier periods in return for a share of the rents in the future. Thus, the funding role for banks that Petersen and Rajan (1995) see in the case of young corporations (as we discussed) may no longer be sustainable in the face of sufficiently high competition. This implies that interbank competition may have an *ex post* effect of diminishing bank lending.[3]

[3] Berlin and Mester (1999) provide a related, albeit different, argument. Their analysis suggests that competition forces banks to pay market rates on deposits, which may impede their ability to engage in the potentially value-

An issue related to competition is the effect of consolidation. An extensive empirical literature focuses on the effect of consolidation in the banking sector on small business lending. This consolidation may in part be a response to competitive pressures. The effects on small business lending, however, are not clear-cut. Sapienza (2002) finds that bank mergers involving at least one large bank result in a lower supply of loans to small borrowers by the merged entity. This could be linked to the difficulty that larger organizations have in using "soft information" (Stein (2002) and Berger, Miller, Petersen, Rajan and Stein (2005)). However, Berger, Saunders, Scalise and Udell (1998) show that the actual supply of loans to small businesses may not go down after bank mergers, since they invite entry of *de novo* banks that specialize in small business lending. See also Strahan (2007).

The opposite point of view is that competition may actually *elevate* the importance of a relationship-orientation as a distinct competitive edge. The idea is that competition pressures profit margins on existing products and increases the importance of financier differentiation, and more intense relationship lending may be one way for the bank to achieve this. Boot and Thakor (2000) formalize this argument to show that a more competitive environment may encourage banks to become more client-driven and customize services, thus focusing *more* on relationship banking.[4] The way this argument works in Boot and Thakor (2000) is as follows. Banks choose between "passive" transaction lending and more intensive relationship lending. Transaction lending competes head-on with funding in the financial market. Competition from the financial market (as well as interbank competition) will lead to more resource-intensive relationship lending, and reduce transaction lending, since this mitigates the margin-reducing effects of price competition. The *absolute* level of relationship lending is, however, non-monotonic in the level of competition: initially competition increases relationship lending, but when competition heats up "too much," investments in bank lending capacity will suffer and that may start to constrain relationship lending. Song and Thakor (2007) also analyze the effect of competition on the mix between relationship and transaction lending. Berger, Klapper, Martinez Peria and Zaidi (2008) find empirically that bank ownership type (foreign, state-owned or private domestic) affects the bank's choice between transaction and relationship lending.

Relationships may foster the exchange of information, but may simultaneously give lenders an information monopoly and undermine competitive pricing. (As discussed in Section 2.1, the informational monopoly on the "inside" lender's side may be smaller if a borrower engages in multiple banking relationships. This would mitigate the possibilities for rent extraction by informed lenders and induce more

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enhancing smoothing of lending rates.

[4] In related work, Hauswald and Marquez (forthcoming) focus on a bank's incentives to acquire borrower-specific information in order to gain market share, and Dinç (2000) examines a bank's reputational incentives to honor commitments to finance higher quality firms.

competitive pricing. See Sharpe (1990) and also Petersen and Rajan (1995).) Transaction-oriented finance, however, may give banks little incentive to acquire information but is potentially subject to more competition. This suggests that markets for transaction-oriented finance may fail when problems of asymmetric information are insurmountable without explicit information acquisition and information-processing intervention by banks. This argument is used by some to highlight the virtues of (relationship-oriented) bank-dominated systems (e.g., Germany and Japan) *vis-à-vis* market-oriented systems. This is part of the literature on the design of financial systems; see Allen (1993), Allen and Gale (1995), Boot and Thakor (1997), and Song and Thakor (2008). One objective of this literature is to evaluate the pros and cons of bank-dominated versus financial market-dominated systems.

What this discussion indicates is that the impact of competition on relationship banking is complex; several effects need to be disentangled. However, recent empirical evidence (see Degryse and Ongena (2007)) seems to support the Boot and Thakor (2000) prediction that the orientation of relationship banking *adapts* to increasing interbank competition, so higher competition does not drive out relationship lending. Despite this adaptation, there is also evidence that in recent years the geographic distance between borrowers and lenders has increased, and that this has been accompanied by higher loan defaults (see DeYoung, Glennon and Nigro (2008)).

3 BANK LENDING, SECURITIZATION AND CAPITAL MARKET FUNDING

Much of our focus in the previous section was on *interbank* competition. Nonetheless, banks also face competition from the capital market. The standard view is that banks and markets compete, so that growth in one is at the expense of the other (e.g. Allen and Gale (1995) and Boot and Thakor (1997)). Why do we care whether banks and markets compete? The reason is that the dynamics of the interaction between banks and markets can have *real* effects. Recently Deidda and Fattouh (2008) analyze the interaction between banks and markets in a model where banks gather information through monitoring and screening. They show theoretically that both bank and stock market development have a positive effect on growth, but the growth impact of bank development is lower when there is a higher level of stock market development. They also present supporting empirical evidence. How banks and markets interact is therefore of great interest.

In contrast to the standard view that they compete, the observations in the previous section suggest that there are also potential complementarities between bank lending and capital market funding. We argued that prioritized bank debt may facilitate timely intervention. This feature of bank lending is valuable to the firm's bondholders as well. They might find it optimal to have bank debt take priority over their own claims, because this efficiently delegates the timely intervention task to the bank. The bondholders will

obviously ask to be compensated for their subordinated status. This—ignoring the timely intervention effect—is a "wash." In other words, the priority (seniority) and subordination features can be priced. That is, as much as senior debt may *appear* to be "cheaper" (it is less risky), junior or subordinated debt will appear to be more expensive, and there should be no preference for bank seniority, other than through the timely-bank-intervention channel. Consequently, the borrower may reduce its total funding cost by accessing both the bank-credit market and the financial market.[5]

Another manifestation of potential complementarities between bank lending and capital market activities is the increasing importance of securitization. Securitization is an example of unbundling of financial services. It is a process whereby assets are removed from a bank's balance sheet, so banks no longer permanently fund assets when they are securitized; instead, the investors buying asset-backed securities provide the funding. Asset-backed securities rather than deposits thus end up funding dedicated pools of bank-originated assets. More specifically, the lending function can be decomposed into four more primal activities: origination, funding, servicing and risk processing. Origination subsumes screening prospective borrowers and designing and pricing financial contracts. Funding relates to the provision of financial resources. Servicing involves the collection and remission of payments as well as the monitoring of credits. Risk processing alludes to hedging, diversification and absorption of credit, interest rate, liquidity and exchange-rate risks. Securitization decomposes the lending function such that banks no longer fund the assets, but continue to be involved in other primal lending activities. Bhattacharya and Thakor (1993) discuss this decomposition. Gorton and Pennacchi (1995) provide an economic rationale for bank loan sales and securitization.

What this implies is that securitization leads to a *reconfiguration* of banking. Banks continue to originate and service assets, while also processing the attendant risks in order to sustain these activities. Banks also still screen and monitor borrowers, design and price financial claims, and provide risk management services. As such, securitization preserves those functions that are at the core of the *raison d'être* for banks. See also Boyd and Gertler (1994). They argue that banks have not lost importance due to

[5] The complementarity between bank lending and capital market funding is further highlighted in Diamond (1991), Hoshi, Kashyap and Scharfstein (1993), and Song and Thakor (2008). Diamond (1991) shows that borrower may want to borrow first from banks in order to establish sufficient credibility *before* accessing the capital markets. Again, banks provide certification and monitoring. Once the borrower is "established," it switches to capital market funding. Song and Thakor (2008) develop a dynamic model of financial system architecture in which banks and market co-evolve in a synergistic manner. Hoshi, Kashyap and Scharfstein (1993) show that bank lending exposes borrowers to monitoring, which may serve as a certification device that facilitates simultaneous capital market funding. In this explanation, there is a *sequential* complementarity between bank and capital market funding. In related theoretical work, Chemmanur and Fulghieri (1994) show that the quality of the bank is of critical importance for its certification role. This suggests a positive correlation between the value of relationship banking and the quality of the lender. See Petersen and Rajan (1994) and Houston and James (1996) for empirical evidence.

securitization. Their argument is that a substitution from on-balance sheet to off-balance sheet banking may have (falsely) suggested a shrinking role for banks, but despite this substitution, much of the banks' value added in the primal activities would be preserved.

For an increasing array of moderately information-sensitive assets, securitization has grown explosively. In fact, over the last few years several successful examples of transactions involving the securitization of business credits have emerged. Including synthetic transactions (default swaps; CDS), the European volume of outstanding securitization of business credits, called CDO's (Collateralized Debt Obligations), has grown from €40 billion in 1999 to hundreds of billions by the end of 2006.[6] Also, a rather new market for securitization involving asset-backed commercial paper (ABCP conduits) has emerged as a significant force. As the sub-prime crisis in the summer of 2007 has shown, these developments are not without problems. In particular, it is important to note that much of this type of securitization involves the financing of long-term assets with short term funding, which induces substantial liquidity risk. Recent events may cast doubt on the optimality of such strategies. Also, because the originating institutions appeared to have retained minimal residual risk, monitoring incentives may have been compromised (see Mian and Sufi (2007)).[7] Apparently, the eagerness of banks to securitize claims—and keep the repackaging "machine" rolling—may have also adversely impacted the quality of loans that were originated through a dilution of banks' screening incentives due to lower retained residual risks (e.g. sub-prime lending). However, the risk-diversifying (e.g. spreading) nature of securitization seems to have more than just ephemeral importance. (A caveat is that some of this activity in securitization may be induced merely by capital arbitrage; the new Basel II capital requirements may mitigate this somewhat.) The maturity and liquidity mismatches that have become common to the real-world practice of securitization and thus created additional liquidity risks is an issue that is quite distinct from securitization *per se* and should be examined separately. The same applies to the laxity in loan underwriting standards.

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[6] The Bond Market Association reports that US$489 billion worth of CDOs were issued worldwide in 2006. Some of these consisted of structuring (i.e. repackaging) of existing CDOs (see *The Economist*, Risk and reward, special report on international banking, May 19, 2007, page 8). However, this market came to a grinding halt in the summer of 2007 and has actually shrunk. The long-term implications of this are unclear.

[7] Securitization is facilitated in part by credit enhancement, including partial guarantees by the arranger of a securitization transaction (and/or he holds on to the most risky layer of the transaction). In the recent credit crisis, this disciplining mechanism broke down; residual risk with the arranger was minimal or framed as liquidity guarantees to off-balance street vehicles without appropriately realizing the inherent risks. That is, banks have also been underwriting the liquidity risk in securitization transactions by, for example, guaranteeing the refinancing of commercial paper in ABCP transactions via standby letters of credit. Such guarantees have generated profits for banks, but also created risks, as illustrated by the losses incurred by banks in the recent sub-prime crisis. The marketability of securitized claims has also been facilitated by accreditation by credit rating agencies (see Boot, Milbourn and Schmeits (2006)). However, even the role of rating agencies has been called into question during the subprime lending crisis

Song and Thakor (2008) provide a formal analysis of the complementarities between banks and markets. They show theoretically that when banks engage in securitization, an exogenous shock that improves bank screening will also result in an improvement in the quality and transparency of credits securitized in the capital market, which in turn facilitates the evolution of the capital market. Moreover, (endogenously-arising) risk-based bank capital requirements mean that banks must go to the capital market to raise equity, so if the evolution of the market lowers the cost of bank equity capital, then banks optimally raise more capital. This induces banks to extend riskier loans that require more bank capital, so that the evolution of the capital market helps banks to evolve by reaching a broader credit-risk spectrum of borrowers.

Another effect of the interaction between banks and markets is that as markets evolve and entice bank borrowers away, banks have an incentive to create new products and services that combine services provided by markets with those provided by banks. This allows banks to "follow their customers" to the market rather than losing them. There are numerous examples. For instance, when a borrower goes to the market to issue commercial paper, its bank can provide a back-up line of credit. Securitization of various sorts is another example in that banks not only originate the loans that are pooled and securitized, but they also buy various securitized tranches as investment securities. The impetus for such market-based activities grows stronger as interbank competition puts pressure on profit margins from traditional banking products and the capital market provides access to greater liquidity and lower cost of capital for the bank's traditional borrowers. As a consequence, there is a natural propensity for banks to become increasingly *integrated* with markets, and a sort of unprecedented "co-dependence" emerges. This means that banking and capital market risks become increasingly intertwined, a topic we will return to later.

4 BANK, EQUITY AND PRIVATE EQUITY FIRMS

The arguments in Section 2.1 about the need for banks to have seniority suggest a natural economic inhibiting of investments by banks in the equity of corporations. Equity "softens" a bank's incentive to intervene for much the same reasons as does junior debt. So while the emphasis of corporate finance theory on agency problems would suggest that it might be efficient for the bank to have both debt and equity claims on a corporation, this seems to not be advisable from a timely-intervention point of view. This might explain why equity intermediation is largely in the hands of private equity (PE) firms and/or bulge-bracket global investment banks that typically engage much less in relationship banking and focus more on transactions and the associated capital market activities.

Some more observations can be made about PE firms. Their activities could be viewed as intermediation driven from the equity side. That is, PE firms attract funding from a group of investors

("partners") and invest the funds as equity in businesses. They are extensively involved in monitoring and advising these businesses. How different is this from the role banks play as debt intermediaries? To address this question, note first that banks do occasionally take equity positions in their role as venture capitalists, particularly for later stage financing where there is a prospect for developing a valuable relationship on the lending side. Thus, banks participate in venture capital financing with higher probability if there is a greater likelihood of subsequent lucrative lending activity (Hellmann, Lindsey and Puri (forthcoming)). Banks may also have (participations in) PE-subsidiaries that operate independently from the other businesses of the bank. However, this somewhat limited role as an equity financier does not mean that it would be efficient for the bank to permanently become an integrated provider of debt and equity finance, a "one-stop" financier of sorts; see our earlier discussion of the value of having senior claims. In particular, equity as a junior security may undermine a bank's bargaining power, and thus compromise its role in timely intervention. Also soft-budget constraint problems may then (re)emerge.

At a more general level, one could ask whether the monitoring role of PE firms substitutes for the lending-related monitoring of banks. It might. Note, however, that equity and debt are fundamentally different securities. The type of monitoring needed will differ significantly potentially across debt and equity. What will be true, however, is that the increasing involvement of PE investors induces banks to partner with these investors. In a sense, banks start building relationships with PE firms rather than the firms that the PE investors take equity positions in. This is not without risks since it may affect the added value of banks in timely intervention *vis-à-vis* the (underlying) borrower (and the banks' incentives to be involved in this).[8] However, to the extent that PE firms and hedge funds are an integral part of the capital market, this development too makes the involvement of banks in the capital market deeper and more intricate, particularly because of the growing importance of hedge funds as direct lenders. See Brophy, Ouimet and Sialm (forthcoming) who point out that hedge funds have emerged as "lenders of last resort," providing

[8] This suggests potential conflicts of interest. Much of the literature has focused on potential concerns related to banks combining lending and capital market activities. A lot of research has been done on potential conflicts of interest in universal banking. This literature is motivated by the Glass-Steagall regulation in the U.S. (see Kroszner and Rajan (1994), Puri (1996), and Ramirez (2002)). In similar spirit, Drucker (2005) shows that junk-rated firms and companies in local lending relationships are more likely to select an integrated (universal) commercial-investment bank when they expect to issue public debt in the future. This revealed preference for commercial-investment bank relationships by firms that issue informationally sensitive securities suggests that there are benefits for banks to use private information from lending in investment banking.
A similar rather positive picture emerges if one looks at U.S. banking following the 1999 Financial Services Modernization Act. It appears that information collected through the banks' commercial lending businesses may have reduced the costs of underwriting debt and equity (see Drucker and Puri (2004), and Schenone (2004)). Gande (2007) concludes that commercial banks have distinct benefits in underwriting leading to lower issuer costs. He also concludes that "the value of banking relationships appears to be largest for non-investment grade, small and IPO firms for whom one would ex ante expect the benefit of bank monitoring to be the highest".

finance to firms that banks do not typically lend to.

5 ROLE OF CREDIT RATING AGENCIES

Credit ratings are a fascinating part of today's financial markets. Their importance is evident from the behavior of market participants. However, academic researchers have generally been skeptical about their incremental value, largely because of the absence of a theory of rating agencies. In the literature on financial intermediary existence, bank debt offers monitoring advantages which would not be available in the financial market. The typical argument for the lack of monitoring in the capital market is that free-rider problems among investors prevent effective monitoring. Boot, Milbourn and Schmeits (2006) have shown that credit rating agencies (CRAs) add a monitoring-type element to the financial market, and thereby play a role as a "focal point" to resolve coordination failures among multiple dispersed investors (creditors). The CRA's ability to resolve such coordination failure arises from the effect of its actions—the assigned rating and the "credit watch" process—on firm behavior via the conditioning of investors' investment decisions on the assigned rating. (In earlier work, Da Rin and Hellmann (2002) showed that banks could also resolve a multiple-equilibria problem among borrowers by helping coordinate the investment decisions of these borrowers.) This role of CRAs in the financial market qualifies the distinction between public debt and bank financing. The mechanism is, however, less "direct" than in the case of bank financing: the credit rating (and particularly the threat of a downgrade) *induces* good firm behavior rather than preventing bad behavior through direct intervention. Apart from bank loans, the non-bank private debt market also offers a potentially more direct alternative than credit rating agencies in the public debt market. In fact, private debtors often impose more discipline than banks and hence serve even riskier borrowers (Carey, Post and Sharpe (1998)).

Another mechanism that links banks and CRAs is the certification role of bank loans. Datta, Iskandar-Datta and Patel (1999) show that the monitoring associated with bank loans *facilitates* borrowers' access to the public debt market. This certification role of banks therefore complements what CRAs do. As rating agencies become more sophisticated and reliable, the certification role of banks diminishes in importance, causing bank borrowers to migrate to the capital market. In this sense, CRAs intensify the competition between banks and markets. But CRAs also pull banks into the capital market. For example, banks originate loans that they securitize, and then seek ratings for the securitized pools from CRAs. The ratings, in turn, facilitate the ability of banks to sell (securitized) asset-backed securities in the capital market.

This rather positive interpretation of CRAs is clouded somewhat by recent negative publicity. In the 2001 crisis surrounding Enron, CRAs were accused of being strategically sluggish in downgrading.[9] More recently, CRAs have been blamed (in part) for the sub-prime crisis in which they were allegedly too lenient in rating the senior tranches in securitization transactions. Allegations have been made about conflicts of interest for CRAs arising from the fact that structured finance is a source of over-increasing income for CRAs, which then corrupts their incentives for accurately rating the issuers involved in structured finance (Cantor (2004)).

Of particular concern are the so-called "rating triggers." For example, some debt contracts may dictate accelerated debt repayments when the rating falls. The consequences of such accelerated debt repayments might, however, be so severe as to cause rating agencies to become reluctant to lower the ratings of those borrowers in a timely manner. Complications also arise from the role played by the so-called "monoliners." These are insurers who traditionally guaranteed municipal bonds but now also guarantee the lowest-risk (best) tranches in securitization transactions. These insurers are virtually indispensible in the sense that the viability of many forms of securitization is predicated on this type of "reinsurance." However, the ability of the monoliners to issue credible guarantees (and hence their role in securitization) depends on these institutions themselves having AAA ratings. This potentially generates an indirect chain-reaction mechanism for CRAs. In rating (and monitoring) the monoliners, CRAs affect the viability of the securitization market. Thus, the impact of CRAs is both direct (rating securitization tranches) and indirect (rating the monoliners). The potential failure of such monoliners would have a significant effect on the value of various structured finance products and induce an additional chain reaction among players active in the structured finance market, including investors. This further underscores the increasing interlinkages in the financial markets. Other concerns are related to the oligopolistic nature of the industry, and the importance that ratings have due to regulation. The latter includes the exclusivity given to a few rating agencies via the "Nationally Recognized Statistical Rating Organization" (NRSRO) classification, recently weakened in the 2006 Credit Rating Agency Reform Act, but also the inclusion of external ratings in the new Basle II capital regulation framework.

6 REGULATION AND THE SECOND *RAISON D'ÊTRE* FOR BANKS: LIQUIDITY CREATION

In Section 2, we discussed the role of banks as information processors and delegated monitors.

[9] U.S. Senate Hearings (2002): "On March 20, 2002, the Senate Committee held a hearing – entitled "Rating the Raters: Enron and the Credit Rating Agencies" [. . .]. The hearing sought to elicit information on why the credit rating agencies continued to rate Enron a good credit risk until four days before the firm declared bankruptcy [. . .].", and U.S. Senate Staff Report (2002): "[. . .] in the case of Enron, credit rating agencies displayed a lack of diligence in their coverage and assessment of Enron." See also Cantor (2004) and Partnoy (1999).

That information processing and monitoring referred to credit risk primarily. But banks also perform another important function, which is the provision of liquidity. That is, banks invest in illiquid assets (loans) but finance themselves largely with highly liquid demand deposits, and through this intermediation process create liquidity in the economy. However, in the process of creating liquidity, banks expose themselves to withdrawal risk and become fragile. Our discussion of this issue in this section will focus on "institution-driven fragility," manifested in the classic run on an individual bank, as well as "market-driven fragility" that refers to risks that are more systemic. We will discuss how the increasing integration of banks into financial markets allows banks to shift some of their traditional risks to the markets, and what this implies for *financial system stability* and regulation. Issues related to the economics of bank regulation are covered in Bhattacharya, Boot and Thakor (1998, 2004).

6.1 Fragile Banks as Liquidity Providers

In the classical interpretation, a financial crisis is directly linked to the notion of bank runs. In a fractional reserve system with long-term illiquid loans financed by (liquid) demandable deposits, runs may come about due to a coordination failure among depositors (Diamond and Dybvig (1983)). Even an adequately capitalized bank could be subject to a run if the deadweight liquidation costs of assets are substantial. Regulatory intervention via lender of last resort (LOLR) support, deposit insurance and/or suspension of convertibility could all help, and perhaps even eliminate the inefficiency. In fact, such intervention can be justified because of its potential to expunge the negative social externalities arising from the possible contagion effects associated with an individual bank failure. While these implications arise theoretically in a rather simple and stylized setting, many have generalized this simple setting by allowing for asymmetric information and incomplete contracts; see Rochet (2004) for a review. The general conclusion is that fragility is real, and information-based runs are plausible. In particular, Gorton's (1988) empirical evidence suggests that bank runs are *not* sunspot phenomena (as in Diamond and Dybvig (1983)), but are triggered by adverse information about banks. More importantly, the banking crises stemming from such runs have *independent* negative real effects (see Dell'Ariccia, Detragiache and Rajan (2008)). Also relevant to these issues is the large literature that has now developed on banks and liquidity. See, for example, Acharya, Gromb and Yorulmazer (2007a, 2007b) and Acharya and Schaefer (2006).

Given that bank runs are triggered by adverse information that depositors have about the financial health of banks, one might think that a simple solution would be to make banks safer by, for example, imposing higher capital requirements. Calomiris and Kahn (1991) first argued that the threat of bank runs may be a valuable disciplining device to keep bank managers honest, since a greater diversion of bank

resources for personal consumption can increase the likelihood of a bank run. Building on this argument, Diamond and Rajan (2001) have recently suggested that financial fragility may play an important role in inducing banks to create liquidity, and thus a reduction in fragility through higher capital requirements may inhibit liquidity creation. Until recently, there has been no empirical work done on this issue, in part because of a paucity of empirical measures of liquidity creation. This issue has been addressed by Berger and Bouwman (2007) who have developed measures of liquidity creation and provided empirical evidence on the relationship between bank capital and liquidity creation. They show that higher capital leads to higher liquidity creation in the case of large banks, and lower liquidity creation in the case of small banks. Mehran and Thakor (2008) show that higher amounts of bank capital lead to higher bank values.

Complicating this issue further is that the liquidity provision function of banks is also affected by the financial markets. Two observations are germane in this regard. First, access to financial markets weakens the liquidity insurance feature of demand deposit contracts. To see this, note that the root cause of the fragility in the Diamond and Dybvig (1983) world is the underlying demand deposit contract. The rationale for this contract—as modeled by Diamond and Dybvig (1983)—is the desire for liquidity insurance on the part of risk-averse depositors with uncertainty about future liquidity needs. However, as shown by Von Thadden (1998), the very presence of financial markets allows depositors to withdraw early and invest in the financial market, which puts a limit on the degree of liquidity insurance. In fact, when the market investment opportunity is completely reversible, deposit contracts cannot provide any liquidity insurance. This is related to the earlier work of Jacklin (1987) who shows that deposit contracts have beneficial liquidity insurance features provided that restricted trading of deposit contracts can be enforced.[10] In any case, these arguments suggest that the proliferation of financial markets weakens the liquidity-provision rationale for demand deposits, which may help explain the market-based proliferation of close substitutes for deposits.

A second observation is that the development of financial markets may also diminish the LOLR role of the Central Bank in providing liquidity. What we mean is that in the Bagehot tradition one could ask whether the LOLR has a role to play in providing liquidity to liquidity-constrained yet solvent institutions when capital markets and interbank markets are well developed. Goodfriend and King (1988) argue that solvent institutions then cannot be illiquid since informed parties in the repo and interbank market would step in. In this spirit, former ECB board member Tommaso Padoa-Schioppa suggested that

[10] Actually, Jacklin (1987) shows that with the "extreme" Diamond-Dybvig preferences, a dividend-paying equity contract can achieve the same allocations without the possibility of bank runs. However, for basically all other preferences, a demand deposit contract does better provided that trading opportunities are limited.

the classical bank run may only happen in text books since the "width and depth of today's interbank market is such that other institutions would probably replace those which withdraw their funds" (as quoted in Rochet and Vives (2004)).

While these remarks correctly suggest that the development and deepening of financial markets could reduce the need for a LOLR in providing liquidity support, we are hesitant to conclude that there is no role for a LOLR, particularly when information asymmetries are considered. For example, Rochet and Vives (2004) show that a coordination failure in the interbank market may occur, particularly when fundamentals are weak, and that this may lead to a need for liquidity support by the LOLR for a solvent institution.[11]

This discussion suggests two somewhat tentative conclusions. First, the development of financial markets (including interbank markets) has improved the risk-sharing opportunities available to banks and probably decreased the likelihood of a run on an individual bank. Whether the total insolvency risk of individual institutions has declined depends on the actual risk taking and capitalization. Evidence in De Nicolo and Tieman (2005) suggests that the insolvency risk of European institutions has more or less remained the same over the last 15 years despite increases in capital over time and a wider geographic range of operations. Second, because these improved risk-sharing opportunities have arisen from a greater degree of integration between banks and markets, they may also have contributed to an *increase* in *systemic* risk. In other words, while the likelihood of an individual bank failing due to an idiosyncratic shock may have declined, there may be a concomitant increase in the probability that localized liquidity and solvency problems may propagate quickly through the financial system as a whole, leading to higher systemic risk. This raises thorny regulatory issues, which we turn to next.

6.2 Regulatory Implications

The preceding discussion has focused the spotlight on one fact: banks and markets are becoming increasingly integrated. This is happening in part because of greater competition is inducing banks to follow their borrowers to the capital market and offer products that *combine* features of bank-based and market-based financing. It is also happening because banks themselves are using the capital market increasingly for their own risk management purposes. There is thus a multitude of factors that are contributing to an astonishingly rapid melding process.

An important implication of this integration is that it is becoming more and more difficult to isolate banking risks from capital market risks. A capital market crisis inevitably cascades through the

[11] Another line of research studies the impact of liquidity on asset pricing (e.g. Acharya and Pedersen (2005)) and the possible role of asset price bubbles as a source of fragility and contagion (see Allen (2005) and De Bandt and

banking system, and what happens in the banking system does not take long to reverberate through the capital market. So if the main task of bank regulators is the safety and soundness of the banking system, they must now also worry about the capital market whose participants are outside the bank regulator's domain.

Moreover, even though the explicit insurance guarantee applies only to bank deposits, the temptation for government regulators to bail out various uninsured participants, including investment banks and capital market investors, in the event of a crisis in the capital market seems increasingly difficult to resist on *ex post* efficiency grounds, particularly because of the implications for *bank safety*.[12] It will be interesting to examine the connotations of this for *ex ante* incentives and the magnitude of the *implicit* "soft" safety net provided by the government. What is possible to conjecture is that a perception of a greater regulatory concern with *ex post* efficiency and hence a greater desire to intervene will elevate the importance of moral hazard. And this will happen in an environment in which regulatory issues are becoming increasingly international both due to the cross-border proliferation of financial institutions and the increasing integration of banks with financial markets, which are typically international in scope.

6.3 Need for Cross-Border Coordination in Regulation and Supervision: The EU Example

The regulatory task across national boundaries is rather complex. Consider the European Union (EU) as an example. (For a more extensive discussion, see Boot (2007)). The patchwork of national supervision and European-wide coordination in the EU has so far held itself up reasonably well. The key questions, however, are how this system will work in crisis situations, and to what extent it accomplishes the efficiency objectives of regulation and supervision in general. In crisis situations, important concerns can be raised about the adequacy of information sharing and cooperation between the various supervisors, the European Central Bank (ECB) and the national central banks. In particular, in such situations the question about who will be in charge might become paramount. Potential tensions can easily be envisioned between supervisory agencies, national central banks and the ECB.

Policymakers are aware of these issues. For example, the new Directive on Financial Conglomerates gives the home country supervisor the single coordinating responsibility in all member states for group-wide supervision of the financial conglomerate. Issues of financial stability, however, remain the responsibility of the host countries.

The question is how to coordinate these potentially diverse interests, particularly in crisis situations. The core message of the second Brouwer-report (Economic and Finance Committee (2001))

Hartmann (2002) for surveys on contagion).

[12] The recent guarantee provided to a collapsing Bear Stearns by the government to facilitate its possible sale to J.P.

was that *no* mechanism was in place to coordinate in case of a crisis.[13] For that reason a Memorandum of Understanding between virtually all European national central banks and supervisors was formulated that specifies principles and procedures for cooperation in crisis management situations (European Central Bank (2003)). However, the fiscal side, in particular the budgetary obligations imposed on member states in the case of bail-outs, also requires the approval of national finance ministries that have to incur the potential financial obligations. In a follow-up Memorandum of Understanding, these finance ministries were also included (European Central Bank (2005)).

Several questions can be raised about the efficiency of the arrangements in general. The decentralized structure may give rise to potential conflicts of interest between the national authorities and "outsiders." For example, national authorities might be prone to TBTF (too-big-to-fail) rescues. One could replace too-big-to-fail with to-big-to-close to emphasize that replacing management, wiping out equity holders, etc. could still be done to mitigate moral hazard. There are also issues of "too many to fail"; see Acharya and Yorulmazer (2007). Alternatively, national authorities may not sufficiently internalize the disruptive consequences that a domestic bank failure could have in other countries. Efficiency might be hampered in other ways as well. For example, the national scope of supervision may help encourage the emergence of "national champions." More fundamentally, the decentralized structure could give rise to an uneven playing field and regulatory arbitrage issues.

Casual observation would seem to suggest that integration and further coordination (if not centralization of authority) of both regulation and supervision might yield substantial efficiency gains not only for the supervisory authorities but also, and perhaps more importantly, for the supervised financial institutions themselves. There are currently more than 35 supervisory authorities responsible for prudential supervision in the EU, and a typical large financial institution might have to report to more than 20 supervisors (Pearson (2003))!

Yet, practical considerations suggest that a full integration of all regulatory and supervisory functions at the European level may not (yet) be feasible. While it is clear that regulatory and supervisory integration needs to keep pace with the development of the size and the cross-border footprint of the covered banks, the heterogeneity of underlying supervisory systems and the implied costs of integration should not be underestimated. An interesting illustration is the evidence reported by Barth, Caprio and Levine (2004) on the variation across the European Union countries in supervisory institutions and practices. Their conclusion is that supervisory arrangements within the EU are as diverse as in the rest of the world. Also, illustrating this point further, the EU countries are current or former standard bearers of

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Morgan-Chase is an example.

all major legal origins. A vast literature now documents how legal origin matters for the shape and functioning of the financial system (see La Porta, Lopez DeSilanes, Schleifer and Vishny (1998)). Bank regulation and supervisory practices differ also considerably between civil and common law countries, typically with a more flexible and responsive approach in the latter.

While common sense suggests that ultimately a more integrated regulatory and supervisory structure is desirable[14], the way we should get there is far from clear. Indeed, practical considerations, including political concerns, dictate for now a fragmented structure on which a coordination layer needs to be superimposed; assigning single coordinating responsibility to the home country supervisor is one example of that.[15]

However, the struggle for efficient pan-European coordination and integration of regulation and supervision, and eventually a globally-harmonized regulatory system, is more than just a practical issue that will be sorted out over time. Two things stand out. The first is that the scope of regulation and supervision needs to be clearly identified. Effective supervision and regulation—given the mushrooming cross-sector and cross-border footprint of financial institutions—requires a better delineation of safety and systemic risk concerns. (The earlier discussion on the precise propagation mechanism as it relates to systemic risk is actually pointing at the same issue. Another relevant question is whether market discipline could help in containing systemic risks, or whether market responses merely amplify such risks; see Boot (2007) and Flannery (1998)). The cross-sector integration of financial institutions and the increasingly more seamless integration of financial markets and institutions have considerably broadened the scope of regulation and the potential sources of systemic risk.

This also brings up the issue of introducing fire-walls in the financial sector. For example, does a subsidiary structure reduce systemic risk concerns? We do not think that an answer is readily available.[16] More generally, what type of constraints, if any, should be put on the corporate structure of financial

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[13] See Economic and Finance Committee (2002) for further recommendations.

[14] Actually, some theoretical work suggests the potential value of competition between regulators, see also Kane (1988).

[15] An important distinction needs to be made between business conduct regulation and prudential regulation. We have focused on the latter. The former is closer to the functioning of financial markets and lends itself more readily for centralization at the European level. But even in context of these financial markets, the Lamfalussy report (Committee of Wise Men (2001)) that is the blueprint for financial market supervision in the European Union (EU) does not directly propose authority at the EU level but introduces a collaboration model that induces regulatory and supervisory convergence. It states that if its proposed approach is not successful, the creation of a single EU regulatory authority should be considered.

[16] Another example of a firewall is the minimum leverage ratio that the FDIC wants to impose on banks in the Basel II environment. The FDIC has argued that requiring a minimum level of capital—regardless of risk—is essential for timely regulatory intervention in the event of problems. Such timely intervention is clearly more complicated in cross-border situations (see Eisenbeis and Kaufman (2005)).

institutions? While we tend to think of further deregulation in the financial sector possibly leading to even bigger and broader financial institutions, it is far from clear what the future will bring. In any case, changes in the industrial structure of the financial sector are of paramount importance for the design and effectiveness of regulation and supervision.[17] If these issues cannot be satisfactorily addressed, we are not very optimistic about the possibilities for effective and efficient pan-European regulation, let alone globally-coordinated regulation, even in the long run.

The second issue is that very little is known about the efficiency and effectiveness of various regulatory and supervisory structures. As Barth, Nolle, Phumiwasana and Yago (2003) put it, "there is very little empirical evidence on how, or indeed whether, the structure, scope or independence of bank supervision affects the banking industry." Their own research suggests that the effect is at best marginal, but measurement problems are vexing. They conclude from this that we may thus choose to focus only on the effect that regulation has on systemic risk issues. But here too little is known about the regulatory structures that are most efficient in dealing with systemic risk. What this means is that we need considerable additional research to sharpen our identification of the costs and benefits of different regulatory and supervisory arrangements. Given the strikingly different national supervisory arrangements that exist today, our lack of knowledge on this issue is a significant barrier to progress toward a harmonized "superior" model.

7 CONCLUSION

We have reviewed some of the literature on why banks exist, the risks these create, and how interbank competition as well as that from markets affects the economic roles served by banks as well as the attendant risks. In turn, this induces banks to become increasingly integrated with markets. This integration generates two effects that work in opposite directions. On the one hand, individual banks become better equipped to manage their own risks because it becomes easier and less costly to hedge these risks using the market. This reduces the risk of an individual bank failing due to an idiosyncratic shock. On the other hand, there is an increase in the probability that a shock to a small subset of banks could generate systemic effects that ripple through the financial market, so that this banks-markets integration may be causing an elevation of systemic risk.

It is easy to see that this substantially complicates the task of prudential regulation of banks and raises the specter of a widening of the "implicit" governmental safety net as *ex post* efficiency concerns

[17] Earlier we referred to the concentration in the credit rating business and the importance of ratings for the markets for structured finance (securitization). It is interesting to ask what impact a meltdown of one of the main credit rating agencies would have on these markets, and what this in turn would imply for participants in these markets.

tempt the government to bail out even uninsured players. We believe that these are important issues that deserve greater theoretical and empirical attention. It does seem to us, however, that individual banks are unlikely to sufficiently internalize the systemic-risk externalities of their actions. This immediately suggests that the *discretionary* elements of Basel II—which give banks quite a bit of latitude in using internal risk-assessment models to determine appropriate capital levels—may end up being ill-advised. We hope that future research addresses this in a serious way.

To conclude, we believe the most important, yet only partially answered, research questions raised by our discussion are the following:

- How do banks and private equity firms interact and what implications does this have for the regulation of banks and financial markets?
- What role do credit rating agencies play in financial markets, how does this affect banks, and what implications does this have for systemic risks that *bank* regulators care about?
- What are the implications of the ever-increasing integration of banks and markets for *systemic* risk and the design of regulation?
- What issues should we consider in the optimal design of globally-harmonized regulation that transcends national boundaries to respond to the growing cross-border footprints of major financial institutions and the increasing integration of banks and financial markets?

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