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## Supervising Bank Safety and Soundness: Some Open Issues

Prepared for the  
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Past, Present, and Future

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### ABSTRACT

Twenty years ago, *Safe and Soundness Banking* studied how the supervisory environment could be improved to enhance financial stability, primarily in the U.S. context. Some of the Report's recommendations were adopted, but not all. This paper identifies some topics that should be studied in a 21<sup>st</sup>-century version of *Safe and Soundness Banking*.

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“Banking is now, and has always been, a risk business. The key to success both in operating a bank and supervising a banking system is management of risk.” (Benston *et al.* [1986], page xiii)

In response to a relatively specific request from the American Bankers Association, Benston *et al.* (1986) examined the mid-1980s’ financial landscape. As Furlong and Kwan (2006) report, *Safe and Sound Banking* (1986) presented a wide-ranging and innovative discussion of policy issues related to government supervision of bank safety and soundness. Among other topics, the Report evaluated risk-based insurance premia, resolution methods for failed banks, capital against off-balance sheet positions, and prompt corrective action. For this conference event, I was asked to write a paper surveying the main issues affecting the contemporary financial system’s safety and soundness. I have sought to identify under-researched and/or under-appreciated issues that affect bank safety and soundness or financial system stability. It is a great luxury to write a paper that poses questions, but is not required to provide complete answers!

Obviously, the U.S. financial sector’s condition today is excellent. Capital ratios stand at levels we have not seen in 60 years, credit quality has been strong, and innovative financial instruments can spread risks more broadly than ever before. We have had 954 bank or thrift failures since 1990 (519 charged against the Bank Insurance Fund (BIF) and 435 by the Savings Association Insurance Fund (SAIF)). The combination of weak financial policies and macroeconomic shocks culminated in 834 bank or thrift failures between 1990 and 1992. (See Figure 1.) After 1992, only 120 institutions (101 BIF and 19 SAIF institutions) have failed, the largest having assets of only \$3.8 billion at the time it was closed. This record largely reflects

the economy's strong performance since the 1991 recession (as predicted by Schwartz (1988)). Supervisory reforms also deserve substantial credit, particularly those aimed at raising bank equity ratios.

Bank powers expanded substantially during the 1990s. The 100 largest BHCs mean asset volatility rose from 1.76% during 1986-89 to 6.09% in 1998-2001.<sup>1</sup> As shown in Figure 2, asset volatilities also became more cross-sectionally dispersed. *Ceteris paribus*, higher asset volatilities imply more bank default risk, but supervisors were simultaneously inducing banks to raise their equity capital ratios, as shown in Figure 3. The net effect is a broader range of asset risks and leverage ratios, which tend to complement one another and yield little net change in the typical institution's default probability. In addition to enforcing explicit capital standards, supervisors wielded a new threat well-known to readers of *Safe and Sound Banking*: prompt corrective action.

Bank safety further benefited from complex, new financial instruments for diversifying and hedging risks. Bank-related financial contracts are more refined and trade more actively than they did twenty years ago. At the same time, some of these market advances have added new potential exposures and (perhaps) have enhanced institutional opacity. Contracts traded over-the-counter (swaps and other derivatives) may bundle counterparty credit risks with the effects of the trade. As trading became concentrated in a small number of key institutions, the banking system acquired a new potential source of undiversified credit risk. Over time, contract terms have moved to mitigate this risk through collateralization, periodic mark-to-market settlements, and netting agreements. However, the process is far from complete (New

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<sup>1</sup> The idea that broader powers should reduce bank asset volatilities was popular in the 1980s. As things have worked out, however, Stiroh (2004, 2006) and DeYoung and Roland (2001) show that many of the new activities are high-risk on their own, with returns that are quite highly correlated with banks' traditional lines of business.

York Fed press release (March 16, 2006)) and many of the new contract arrangements have not been tested in a stressful environment.

This paper begins by discussing the goals of safety and soundness supervision. I then discuss seven imperfectly understood issues related to financial stability today. Some are closely related to one another; all deserve serious scholarly attention. These are:

1. Credit rating agencies
2. The combination of banking and commerce
3. Nationwide depositor preference and the distribution of liability-holders' risk exposures
4. Systemic risk
5. Capital adequacy
6. Market discipline
7. Credible resolution procedures for the failure of large financial firms

The paper concludes with a brief summary.

## **I. Safety and Soundness Supervision**

For a long time, banking has involved unusual contracting terms. Recall the unlimited liability of Scottish bank directors in the 18<sup>th</sup> and 19<sup>th</sup> centuries and national bank shareholders' liability before mid-1937. Financial firms have also been more highly regulated than (perhaps) any other industry. Existing controls over bank risk basically concern minimum capital requirements, although limitations on bank activities could also be viewed in the same context. Why are banks so highly regulated? The literature suggests several reasons, reflecting primarily efficient information production or distorted risk-taking incentives.

- a) It is less costly for a single credit analyst (the insurance fund) to evaluate a bank's condition than for each depositor to do it on her own.<sup>2</sup>
- b) Insurance provides a safe asset for unsophisticated investors, and will reduce the number of costly bank failures caused by irrational runs.<sup>3</sup>

Another justification for safety and soundness regulation derives from a distortion associated with deposit insurance.

- c) Given under-priced deposit insurance, bank owners face distorted incentives to increase asset risk and leverage.

Finally, there is a "systemic risk" justification for government control over financial firms:

- d) Bank failures impose external costs on uninvolved parties. Hence the social cost of a bank's failure exceeds its (internalized) private costs.

Safety and soundness regulation primarily addresses the last two of these issues, the deposit insurance distortion and systemic risk. Thus, the basis for safety and soundness supervision derives from some market failure. Left to themselves, banks would accept too large a default probability, so supervisors design constraints to increase bank safety. Unless those constraints are *binding*, the supervision is ineffectual. This is a crucial point to remember when discussing supervisory policies related to financial stability.

The next question is whether "financial stability" -- a public good -- requires more than sound individual banks. Many observers feel that a financial crisis begins when a "systemically important" bank's creditworthiness is questioned. Regardless of whether the

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<sup>2</sup> For example, Merton [1977] reasons that deposit insurance reflects a social cost savings: for the small depositor particularly, there are large information and surveillance costs to be saved if the institutional structure of the bank were such that the safety of the deposits was assured ... A sensible alternative choice would be to have third-party guarantees where the capability and willingness of that party to meet its obligations are beyond question. For the scale of the banking system, this almost certainly means that the third-party would be the government or one of its agencies. (Merton (1977), pages 3-4)

<sup>3</sup> The "runs" argument for deposit insurance resembles the case for Chapter 11 bankruptcy, which prevents creditors from "running" on the firm's assets and destroying some of its synergies in the process.

bank fails, the initial problem somehow threatens other institutions.<sup>4</sup> Perhaps (as in Continental Illinois) other banks hold large, undiversified exposures in on-book liabilities. More likely today, the undiversified exposures occur in the FX or derivatives trading market, where a few firms dominate OTC trading. The failure of one such firm would therefore affect the trading ability (and hence the hedging ability) of other agents. The concept of a financial crisis goes beyond sound individual banks, even if “sound” is defined as operating with a socially-appropriate default probability. *Ex ante*, the bank’s risk exposure could be socially appropriate, but *ex post* bad luck can still cause a failure that would have worrisome knock-on effects.

Supervisory and private actions have reduced the risks posed by OTC settlement over time. In the early 1980s, banks recognized that payment system risks were not simply operational issues. The Federal Reserve subsequently took steps to reduce daylight overdrafts on Fedwire, and banks began to manage their payments more carefully. Herstatt (settlement) risk was addressed through the privately-owned, but publicly encouraged, CLS Bank. Recently, the Fed commissioned an industry group to develop a new mechanism for limiting the OTC trading system’s spillover effects. “NewBank” is proposed to handle settlements and to wind up a large trading book when its owner becomes financially questioned (Working Group on NewBank Implementation (December 2005)). In March 2006, the largest credit default swap traders promised the NY Fed that they would increase the reliability of their delivery and settlement systems (New York Fed press release (March 16, 2006)).

Many central banks have established “financial stability institutes” to monitor the extent to which market shocks might require central bank intervention to stabilize the

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<sup>4</sup> The “domino effect” is a frequent analogy, although it does not seem to make the definition of systemic risk more tangible or specific.

economy. So long as such interventions do not take the form of “bailing out” bank creditors or shareholders, they will not interfere with *ex ante* safety and soundness. The danger is that bailouts will be the most expeditious choice, which reduces counterparties’ incentives to monitor large, “systemically important” institutions. Because these institutions are extremely difficult for a supervisor to control and evaluate (I will argue below), this is a problem. A related concern is that the staff of a financial stability institute may develop a tendency to see systemic risks in too many places, and hence the central bank may “over treat” the problem of systemic risk by over-reacting to “false positive” indicators.

During the 1990s, U.S. supervisors appeared to become more comfortable with the notion that even relatively large bank failures could be resolved without systemic implications. This is a good development, but it has not been tested under stress. However, European supervisors appear more likely to view even moderately large institutions as systemically important. In Japan, supervisors have given the clear impression that they consider a large bank failure to be inconsistent with financial system stability.

## **II. Open Issues Concerning Financial Stability**

I will now discuss specific issues related to financial stability, beginning with the relatively easy ones.

### **1) RATING AGENCIES**

“Nationally Recognised Statistical Rating Organizations” (NRSROs) are recognized (created) by the SEC, which relies on their opinions for controlling brokers’ risk-taking. Beginning in 1975, the SEC set haircuts for margin requirements on the basis of bond ratings. In the 1980s, MMMF were required to hold at least 80% of their assets in top-rated paper if they wanted to use dollar-rounding. (This requirement was changed to 95% in 1991.)

Investment-grade bonds are eligible for short form registration statements. Other regulators have also come to rely on rating agency opinions. The National Association of Insurance Commissioners (NAIC) sets insurance companies' required capital levels according to their bond investments' credit ratings. FIRREA required that thrift institutions divest all their "junk" bonds by July 1, 1994.<sup>5</sup> Aside from government regulations, many mutual funds establish their investment strategies in terms of minimum bond ratings they will hold in portfolio. As the asset-backed securitization market has evolved, the rating agencies have acquired a new task: designing securities to meet specific rating goals. Rating considerations largely determine the structure of asset-backed securitization issues, which have grown immensely over the past two decades. In short, NRSROs importantly affect portfolio allocations within the private sector.

This influence is due to increase (White (2002)). The Basel II framework for capital adequacy bases risk-weights on NRSRO bond ratings under the Standardized Approach (to be used abroad), and for securitization tranches under the IRB rules. The current FDIC proposal for risk-based insurance premia also incorporates large insured institutions' public debt ratings (FDIC, July 11, 2006, e.g. page 36). Delegating credit evaluation to a private firm amounts to supervisory out-sourcing, apparently based on the idea that the rating agencies provide better default risk assessments than examiners could. (Basel II does a lot of out-sourcing.)

What do we know about the credit rating industry? Historically, the bond-rating business was a duopoly, and some observers have identified abuses of market power, including:<sup>6</sup>

- Requesting payment for unsolicited ratings.

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<sup>5</sup> The Comptroller of the Currency had issued a similar rule for national banks in February, 1936 (Partnoy (1999), page 688).

<sup>6</sup> Kupiec (2006a, page 6).



- Tying ratings to the purchase of other services from the rating agency (e.g. consulting).
- Reducing a rating or refusing to rate a pool of assets (e.g. in a CDO) unless a substantial proportion of the pool's individual securities are already rated by the same agency.

Recently, Congress has taken an interest in the ratings industry. The House of Representatives passed HR 2990 on July 12, 2006, and the Senate Banking Committee approved a similar “bipartisan credit rating agency reform bill” on August 2, 2006. The SEC has also eased rules for recognizing new NRSROs.

The conventional wisdom on Wall Street is that the rating agencies are generally slow to downgrade firms. (E.g. Washington State Municipal Power Authority, Executive Life Insurance, Enron, or Worldcom.<sup>7</sup>) For many years, the academic literature could detect no significant valuation effect of a rating change. An analysis of daily data (Hand *et al.* (1992)) indicated that rating downgrades affect share prices, but upgrades do not. In other words, ratings convey new negative information about firms, but the information reflected in a rating upgrade was already impounded in equity prices. (Probably because managers publicize good news more widely on their own.) Jorion *et al.* (2005) observe that regulation FD limited the availability of “inside information” to investors but *not* to NRSROs. They find that rating changes cause larger stock price movements after Reg FD than before.

Supervisors should base their decisions on the rating agencies' credit opinions only if those opinions are unbiased and relatively accurate. However, the rating agencies were not initially designed to play a role in supervising firms. In 1995, one industry observer told the SEC that by

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<sup>7</sup> Moody's chairman, Clifford Alexander, sat on the Worldcom board until June 2001. The Company's bankruptcy occurred in July 2002. Worldcom was rated investment grade three months before it filed for bankruptcy.

using securities ratings as a tool of regulation, governments *fundamentally change the nature of the product* agencies sell. Issuers pay ratings fees to purchase...a license from the government. ...if present trends of regulatory use of ratings are not arrested, the *credibility and integrity of the ratings system itself will inevitably be eroded*. (McGuire (1995), as quoted in an Investment Company Institute (1998), my emphasis).

It seems naive to assert simply that credit rating agencies can be trusted because they have a valuable reputation to protect. Remember how the auditing and stock analyst industries have collapsed upon themselves in recent years.

So my first topic for further study is the credit rating agencies. If the first two debt ratings disagree, Basel II specifies lower capital standards for securities with a higher, third ratings. How accurate are these third assessments in the context of risk supervision? How will the SEC's recently-liberalized rules for certifying NRSROs affect the operation of old and new rating agencies? Third ratings are generally higher than the first two, perhaps due to sample self-selection. Will ratings shopping importantly impair the accuracy of Basel II capital standards? Does a supervisory focus on default probabilities (ratings) draw attention away from the stability effects of asset default correlations?

## **2) BANKING AND COMMERCE**

Wal-Mart's recent application for an industrial loan company (ILC) charter raises many "hot button" issues, only some of which follow from economic principles. But the most important facet of this application has received insufficient public attention from policymakers: should banking and commerce be permitted to operate out of the same firm? This is not a new policy question; nor will it disappear during the FDIC's 6-month moratorium on granting ILC insurance certificates. Today's relatively broad powers for bank holding companies were

granted piecemeal, in response to specific applications from individual firms. And so will it evolve in the future.

The Gramm-Leach-Bliley (GLB) Act increased the potential for firms to combine banking and commerce. Governor Meyer (2001) testified before Congress on the permissibility of real estate brokerage and property management.<sup>8</sup> He explained that GLB provides “a significant expansion of the Board’s capacity to consider the competitive realities of the U.S. financial marketplace in determining the permissibility of activities for FHCs.” (FRB-OCC “Notice of Proposed Rulemaking,” December 27, 2000). While the Bank Holding Company Act had permitted activities “closely related to banking” GLB allows the Fed and the Treasury to approve activities that are “financial in nature or incidental to a financial activity.” (Meyer [2001]).<sup>9</sup> Specifically approved activities in GLB include “lending; insurance underwriting and agency; providing financial advice; securities brokerage, underwriting, and dealing; and merchant banking activities.” (Meyer (2001))

Instead of dealing sequentially with each piecemeal application for a new permissible activity, the banking agencies (and Congress) should get out ahead of the trend by developing a sound understanding of how various connections between commerce and banking likely affect social welfare. From the 1980s and early 1990s, we all know the arguments about insulating the commercial bank from non-bank subsidiaries within a holding company (e.g. firewalls or Sections 23A and B). This is probably the wrong way to proceed. Kaufman *et al.* [1986] maintained that risk cannot be contained within a holding company subsidiary. Holding

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<sup>8</sup> In late 2000, several organizations requested that the Federal Reserve and the Secretary of the Treasury determine that real estate brokerage and property management are financial activities.<sup>8</sup> If so classified, these two business lines would be open to financial services holding companies or subsidiaries of national banks. The agencies requested public comments between January 3 and May 1 of 2001.

<sup>9</sup> It appears that the Fed was inclined to permit brokerage, but extraordinary opposition from the real estate lobby prevented a final decision from being made.

companies clearly act to manage total profitability *across* all their product lines, regardless of which subsidiary is providing the product. We need a fresh way to think about the competitive and stability implications of combining banking and commerce.

### **3) RISK-BASED INSURANCE PREMIA AND DEPOSITOR PREFERENCE**

Horvitz *et al.* [1986] argued that deposit insurance premia should be based on risk to the insurance fund, and FDIC staff have long been sympathetic to this notion. The first system of risk-based insurance premia emerged in 1995, just in time for insurance fund's size to preclude explicit premia for the majority of U.S. banks. The Federal Deposit Insurance (FDI) Reform Act of 2005 substantially broadens the FDIC's discretion about structuring deposit insurance premia and the insurance fund. On July 11, 2006, the agency sought comments on their proposed new system for setting individual banks' premia. The FDI Act required a new pricing system within 270 days, and observers will surely criticize the proposed plan. FDIC views the proposal as a first step, which will be revised as new information becomes available.

The FDIC's proposed method for pricing deposit insurance would replace its current system of nine insurance risk classes with the four Risk Categories (numbered I through IV) in Table 1. These proposed Categories are based on a weighted average of the six CAMELS rating components (across the columns) and the bank's capital ratio (down the rows).

	<b>Weighted CAMELS Rating<sup>10</sup></b>		
	<b>1 - 2</b>	<b>3</b>	<b>4 - 5</b>
<b>Well capitalized</b>	I (2-4 bps)	II (7 bps)	III (25 bps)
<b>Well capitalized</b>	II (7 bps)	II (7 bps)	III (25 bps)
<b>Undercapitalized</b>	III (25 bps)	III (25 bps)	IV (40 bps)

**Table 1: Proposed FDIC risk categories for pricing deposit insurance**

(Source: Table 4 of July 11 and page 62)

All banks within Risk Category II will pay 7 bps, all banks in Category III will pay 25 bps, and all banks in Category IV will pay 40 bps. About 95% of all banks are presently in Risk Category I, for which the FDIC proposes to vary the premium (between 2 and 4 bps) according to the bank's apparent risk.

It is surprising that FDIC's Risk Categories are based on equity capital and not on the sum of all the bank claims junior to insured deposits. The National Depositor Preference Act of 1993 makes both uninsured (nondeposit) liabilities and equity claims junior to deposits.<sup>11</sup> For some firms, nondeposit liabilities are quite substantial. The top line in Figure 4 illustrates that aggregate uninsured (nondeposit) liabilities expanded over the past three decades, from about 8 per cent of total deposits at large U.S. domestic banks in 1973 to about 30 percent at

<sup>10</sup> The six CAMELS ratings would be weighted as follows: 25% C, 20% A, 25% M, 10% E, 10% L, and 10% S (NPR July 11, page 34)

<sup>11</sup> The National Depositor Preference Act was passed as Section 3001 of the Omnibus Budget Reconciliation Act of 1993.

mid-year 2006. Subordinating nondeposit liabilities has the apparent effect of making deposit claims more secure (low LGD, whatever the PD). However, collateralizing these liabilities can more than offset the LGD effect on deposit claims. The net effect of these uninsured liabilities on fair deposit insurance premia depends importantly on the collateral pledged against uninsured liabilities. The FDIC proposal almost entirely ignores this issue.<sup>12</sup>

The Call Reports and monthly Schedule 2416 provide little detail about the nature of domestic bank “borrowings,” which are divided simply into those

- a. From commercial banks in the U.S. (including U.S. branches and agencies of foreign banks)
- b. From others (including FRBs and FHLBs borrowings)

The lower two lines in Figure 4 describes the components of banks’ nondeposit borrowing. The solid blue line plots interbank borrowings, which have not changed much over the period. Most of these borrowings are probably unsecured.<sup>13</sup> Rapid liability growth has come from “other” (non-bank) borrowings, which include loans from the Fed, the FHLBs, and all other lenders. In 1973, these borrowings constituted roughly 3% of total domestic deposits; by 2006 this proportion stood at nearly 25%. Advances from the Federal Reserve and the Home Loan Banks are fully collateralized. (Indeed, the FHLBs require a blanket lien on a borrowing institution’s assets in addition to a specific lien on pledged assets.<sup>14</sup>) The quantity of FHLB advances is explicitly reported on Call Reports, but we don’t know whether the remainder is

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<sup>12</sup> The FDIC’s proposal asks whether it should treat FHLB advances as “volatile liabilities,” which would tend to raise a bank’s insurance premium. Advances should probably raise insurance premia, but because of their effect on LGD – not because they are a volatile source of funds.

<sup>13</sup> For the first time, the September 30, 2006 Call Report includes a new item asking specifically what amount of fed fund liabilities and “other” (non-FHLB) borrowings are explicitly collateralized. (Draft of 9/30/06 Form FFIEC031, Memorandum RC-M, items 10.a and 10.b.)

<sup>14</sup> This blanket lien is senior to all other claimants, including those of the FDIC.

secured – and therefore *de facto* senior to deposit claims – or unsecured – and therefore *de facto* junior.<sup>15</sup>

This issue requires further study and additional information gathering, since FDIC cannot assess appropriate deposit insurance premia without understanding the true seniority of the deposits they are guarantee.<sup>16</sup>

FDIC is insuring two very different sets of institution: a large number of small firms, to which normal insurance principles roughly apply, and a small number of very large banks whose failure could tie up the entire insurance fund. Financial system stability may also depend more on the solvency of large banks than of small ones. The FDI Reform Act explicitly permits, for the first time, separate methods for determining the risks of small vs. large banks. Because a sufficiently large bank’s failure might also pose systemic risks to the financial system, setting accurate premia for the larger banks is much more important.

Weights under the Proposed Approach

Asset Size Category*	Weights Applied to the:		
	Weighted average CAMELS component rating	Converted Long-term debt issuer ratings	Financial Ratio Factor
>= \$30 billion	50%	50%	0%
>= \$25 billion, < \$30 billion	50%	40%	10%
>= \$20 billion, < \$25 billion	50%	30%	20%
>= \$15 billion, < \$20 billion	50%	20%	30%
>= \$10 billion, < \$15 billion	50%	10%	40%
No long-term debt issuer rating	50%	0%	50%

\*Applicable when a current (within last 12 months) long-term debt issuer rating is available for the insured institution. If no current rating is available, the last row of the table applies.

**Table 2: Weights under the proposed approach**

(Source: Table 14 of FDIC (2006), page 39)

<sup>15</sup> Recall further that some bank assets may be pledged in connection with OTC derivatives transactions.

<sup>16</sup> On page 67 of its 152-page Notice of Proposed Rulemaking (July 11, 2006), “the FDIC asked whether Home Loan Bank advances should be treated as ‘volatile liabilities,’ or whether it should charge ‘higher assessment rates to institutions that have significant amounts of secured liabilities.’ Both ideas would effectively raise premium rates for banks with Home Loan bank advances.” (Adler (2006). Small banks were substantially upset at this possibility.

For Risk Category I institutions with assets below \$10 billion, “the FDIC proposes to combine CAMELS component ratings with current financial ratios to determine an institution’s assessment rate.” (FDIC (2006), page 6) For larger institutions in Risk Category 1, “the FDIC proposes to combine CAMELS component ratings with long-term debt issuer ratings, and, for some large institutions, financial ratios.” (ibid.) Table 2 shows how the weighting scheme for various information varies with bank asset size. Beyond the items in Table 2, the FDIC’s NPR expresses the possibility that a wide range of relevant market information might also affect the premium paid by large, Risk Category I institutions:

In addition to long-term debt issuer ratings, the FDIC proposes to consider other market information, such as subordinated debt prices, spreads observed on credit default swaps related to an institution’s non-deposit obligations, equity price volatility observed on an institution’s parent company stock, and debt rating agency “watch list” notices. These additional market indicators would be especially beneficial in assessing whether the insurance score accurately reflected the relative level of risk posed by an institution. (FDIC (2006), pages 46-7)

Although this language permits analysts to use a broad range of information in setting insurance premia, its generality may also shield FDIC analysts from transparent accountability. (This is a difficult balance to establish throughout the field of financial regulation.)

The FDI Reform Act required that risk-based insurance pricing be implemented within 270 days and this is the FDIC’s first attempt at a broad reform. Despite FIRREA’s treatment of bank equity within a holding company, FDIC evaluates its risk exposure at the bank level. For the first time, U.S. banks prospectively operate under both risk-based capital requirements and risk-based insurance premia. A careful evaluation of this proposed pricing scheme would surely be among my requests for another *Safe and Sound Banking* study. In this sense, little



has changed since 1986, except that we have moved from academic arguments for risk-based insurance to a specific proposal from the deposit insurance agency.

#### **4) *DEFINING SYSTEMIC RISK***

As the number of “financial stability institutes” has grown around the world, so have the number of articles and policy papers evaluating the government task of preserving financial stability. Early research viewed instability as resulting primarily from un-diversified inter-bank credit exposures (as in the case of Continental Illinois’ extensive fed fund borrowings). More recently, concern about depositor runs has (appropriately) expanded to include the credit exposures of OTC trading counterparties, and a more general assertion that the failure of a large financial firm could have un-specified “systemic” effects. (Think of a large hedge fund, whose positions could not be unwound without substantially distorting asset market prices.) Large banking firms in particular are often identified as “systemically important,” although the mechanical processes for systemic effects are rarely explained (except see DeBandt and Hartmann (2000)). Everyone knows that “financial instability” would be bad, yet few people know what it is, or how important its effects on the real economy could be.

As I will emphasize again in Section 6, sound crisis-management policy requires a solid understanding of how (whether) one firm’s financial distress might spread across the financial system. It would be a valuable start simply to establish some definitions and examples that could inform research in this (potentially important) area.

#### **5) *CAPITAL ADEQUACY REGULATION***

Recall the economic basis for imposing minimum capital requirements on financial firms: some costs of risk-taking are external to the firm’s shareholders. Supervisors therefore require bankers to hold more equity capital than they would otherwise choose to hold.

The Basel Committee for Bank Supervision (BCBS) has recently completed a system intended to make each bank's equity account reflect its total risk-taking. The system includes three distinct approaches, designed for different sorts of banks. The target default probability is said to be 0.1% per year. The "Standard" approach most closely resembles the Basel I rules, except that credit ratings play a greater role in defining risk assets. The other two approaches rely on a bank's own internal ratings in a highly structured fashion. Many rules and cases are identified, in the effort to minimize the potential for regulatory arbitrage. Indeed, the Pillar 1 rules (for computing risk-based assets) take up 192 pages in the latest presentation of Basel II (Basel Committee on Bank Supervision (2006)), while Pillars 2 and 3 together get only 39 pages.

Some have questioned whether, even in theory, the VaR calculations underlying Pillar 1 are what they seem to be. Kupiec (2006b) points out that the Basel II formulae do not recognize the accrual of interest on a bank's liabilities. Consequently,

the AIRB approach will undercapitalize portfolio credit risk relative to the Basel II target of 99.9 percent bank solvency, and capital shortfalls can be substantial. In contrast, the Foundation Internal Ratings Based (FIRB) approach allocates significantly more capital than necessary to achieve the supervisory objective. (Kupiec (2006b), abstract).

Even if the Pillar 1 formulae did perfectly measure credit risks, BCBS did not address important questions about the efficacy and effects of supervisory capital standards. For example, Hancock *et al.* (2005) argue that capital requirements can never bind private firms.<sup>17</sup> Specifically, they claim that small U.S. banks' higher capital requirement for low-risk mortgages should not hamper their ability to compete with larger, AIRB banks. The small

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<sup>17</sup> Kahane (1977) presented a similar assertion. Using mean-variance analysis, he showed that imposing a higher capital standard would cause a firm to move along its efficient frontier toward higher risk. The net effect on the firm's default probability was therefore ambiguous.

banks simply need to raise their average credit risk exposures to the point where economic and regulatory capital coincide. At least for banks operating under the standard (or Basel I) rules, the implication is that banks can strategically make loans whose true risks exceed those implied by the asset's regulatory risk weight. Higher required capital ratios need not reduce default probabilities.

Basel II was designed with the primary goal of making capital requirements reflect bank risk exposures. More credit risk would require an appropriate amount of additional capital to keep the bank's default probability at approximately 0.1% per year. QIS 4 in the U.S. and QIS 5 in Europe indicated that the AIRB standard will be considerably lower than Basel I's 8% of risk assets. This is clearly unacceptable to (at least) the U.S. supervisors. The federal agencies' Advanced Notice of Proposed Rulemaking (68 FR 45900, 45902 (Aug. 4, 2003)) stated that "The Agencies do not expect the implementation of the New Accord to result in a significant decrease in aggregate capital requirements for the U.S. banking system." (page 45902) In the same Agencies' draft NPR (March 30, 2006) subsequent to QIS 4, we read:

Were the QIS-4 results just described produced under an up-and-running risk-based capital regime, the risk-based capital requirements generated under the framework would not meet the objectives described in the ANPR, and thus would be considered unacceptable. (page 83)

The proposed solution involves Pillar 2, under which national supervisors set additional required equity beyond the minimum computed in Pillar 1. By necessity, the justification for Pillar 2 add-ons will be qualitative and opaque – in stark contrast to scientific-looking justifications for Pillar I. Supervisors could quite reasonably require capital beyond the Pillar 1 formula for interest rate risk, FX risk, trading risk, granularity in the credit portfolio, etc.<sup>18</sup>

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<sup>18</sup> Pillar 1 includes a specific requirement for operational risk, and permits (but does not require) a supervisor to require capital against interest rate risk in the banking book.

However, an opaque policy of adding on further required capital to the Pillar 1 minimum, simply to maintain an arbitrary, historic 8% ratio, would be quite dubious public policy. It would also mute (eliminate?) the risk-sensitivity of required capital.

Another threat to the risk-sensitivity of the Basel II formulas comes from the U.S. insistence that a straight leverage requirement supplement the AIRB measures. This leverage ratio will be the binding constraint for firms holding low-credit-risk loans, leaving no risk-sensitivity at the margin.

Finally, most OECD banking systems presently maintain more capital than is required by Basel I. Basel II standards are expected to be no higher. In what sense, then, do supervisory capital standards “bind” or affect private firm’s capital choices? Perhaps banks maintain a cushion above current requirements, and their actual capital will move up or down with the required minimum.<sup>19</sup> Perhaps the capital surplus is intended to be cyclical: as the economy heads into recession, credit quality declines and more equity becomes required.<sup>20</sup> We have not previously confronted a situation in which large banks hold substantially more capital than the supervisors would require.

My questions for a second *Safe and Sound Banking* study would surely include numerous inquiries about capital adequacy.

1. How do risk-based capital and risk-based insurance premia complement one another?
2. Are capital ratios currently binding on the world’s major banks? If not, why?
3. Is it reasonable to establish PCA guidelines in *market value* terms for sufficiently large firms?

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<sup>19</sup> This cushion would be rational under some information asymmetries (Myers and Majluf (1984) or Stein (1998)) that make it expensive to sell new equity at some times.

<sup>20</sup> This view does not explain why it is cheaper to hold excess capital over the cycle than to raise new capital as credit conditions soften. More attention should be paid to this question for banking firms.

4. What does it mean for capital requirements to “bind”? Is this a probabilistic statement, or are they meant to constrain firm lending only during recessions?
5. How relevant is the Hancock *et al.* argument that capital ratios cannot be binding
  - a. for smaller, “Standard Approach” banks?
  - b. for larger, AIRB banks?
6. How should Pillar 2 be administered? Can supervisors be held accountable for their decisions in this area?
7. Is the leverage requirement a good idea
  - a. in theory?
  - b. in practice?
8. Would implementation of a bifurcated capital standard in the U.S. encourage otherwise-uneconomic mergers within the finance sector?
9. Should the U.S. abandon its proposed transition to an AIRB capital standard for large, internationally-active banking firms?

## **6) MARKET DISCIPLINE**

Dewatripont and Tirole (1994) approached bank regulation from the perspective that free-riding prevents a diverse group of depositors from controlling bank actions. In contrast, a regulatory agency can represent depositors to better effect. DeYoung *et al.* (2001) came to a similar conclusion after studying SND investors’ price reactions to news about their bank’s condition. Supervisors appear to have a comparative advantage in influencing banks, while market counterparties may have a comparative advantage in identifying changes in bank conditions. Financial firms are more complex than they were two decades ago. New products have permitted risks to be divided into ever-smaller portions. Derivative products and loan sales (syndications) have broken the link between credit underwriting and debt financing. Financial firms can use these products to take risks or to hedge them; outsiders probably find it more difficult to assess true risk exposures. As an example, consider credit default swaps.

Wishing to retain a customer relationship, a lending bank probably prefers not to admit that it has off-loaded its exposure to a long-time borrower. Lenders' portfolios are probably more opaque on account of these changes.

The transparency of large complex financial firms is not well established. Morgan (2002) finds that banking firms are more likely than other firms to receive split ratings on new bond issues. He concludes that banks are unusually opaque and hard to evaluate. Iannotta (2004) replicates Morgan's analysis for European bond issues during the period 1993-2003, with roughly similar results. Flannery, Kwan and Nimalendran (2004) examine other indirect evidence about bank opacity by comparing equity microstructure features of U.S. banks against similar-sized nonbanks.<sup>21</sup> They conclude that NYSE-traded banks differ insignificantly from their non-bank matched firms. NASDAQ banks trade significantly less often and analysts could predict their earnings more accurately, implying that smaller banks are less opaque than their non-bank matches.

The public policy implications of bank opacity depend on the comparative advantages of supervisors vs. market counterparties in evaluating complex firms. The AIRB is firmly rooted in the idea that bankers can make better risk-assessments than their supervisors. Capital adequacy should reflect sophisticated banks' state-of-the-art risk assessment and risk management systems. Arguably, this approach also brings some financial stability benefits: if supervisors don't specify how risk systems should be designed, banks will choose different methods for estimating PDs, EADs, etc., and the overall financial system will be diversified

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<sup>21</sup> Microstructure features like trading volume or bid-ask spread characteristics are thought to reflect information availability about the traded stock.

against model risk.<sup>22</sup> While this view of risk supervision offers some clear advantages, using an institution's own risk models to set its required capital creates an obvious moral hazard.

The private sector's risk assessments can alternatively be incorporated into supervisory policy via NRSRO credit ratings, as discussed above. We might also extract private information from a firm's security market prices and/or quantities. By understanding the terms on which counterparties are willing to deal with a particular firm, supervisors can benefit from state-of-the-art risk systems, diversified across numerous private actors. Pillar 3 attempts to encourage counterparty discipline through prescribed disclosure. The potential problem with prescribed disclosure is that supervisors may identify the wrong information or the wrong presentation format. In addition, the most relevant information could change over time, leaving Pillar 3 to catch up.

Assuming that counterparties can monitor financial firms relatively well, they need proper incentives to do so (Calomiris and Kahn (1991)). Counterparties must feel at risk in order for prices to reflect market assessment's of a firm's condition. Since 1986, supervisors and legislators have removed many obstacles to the prompt closure of firms with insufficient equity. Fewer banking firms are TBTF today than in 1986.<sup>23</sup> However, the supervisors' resolve has not been tested under stress. Furthermore, the extensive current study of financial stability and systemic risk within central banks raises the distinct possibility that future supervisors will react to a large firm's failure by supporting its creditors and/or equityholders. Such possibilities compromise market discipline. And such conjectures will be rational unless supervisors have a credible method for promptly closing large financial firms and apportioning losses to the various claimants. Furlong and Kwan (2006) note that Kane *et al.* (1986)

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<sup>22</sup> As Mao Zedong advised in 1956: "Let a hundred flowers bloom; let a hundred schools of thought contend." (*Wikipedia*, [http://en.wikipedia.org/wiki/Hundred\\_Flowers\\_Campaign](http://en.wikipedia.org/wiki/Hundred_Flowers_Campaign))

<sup>23</sup> "TBTF" here is meant to include financial firms that are too big to re-organize quickly.

recommended that “authorities [should] publicly announce (and follow) policies to deal with depository institution insolvencies and coverage of insured deposits.” Stern and Feldman (2006) have recently made the same argument: without credible, public plans for closing large firms, market disciplinary effects are seriously compromised.

### **7) Credible Procedures for Closing Large Financial Firms**

FDIC has recently issued a call for comments on its proposal that approximately 145 large banks maintain depositor records identifying insured balances (*70 Federal Register* 73652, December 13, 2005). Most banks do not maintain records this way, and hence FDIC cannot quickly determine which depositors are eligible for payout when it takes over a failed bank. Without such a system in place, FDIC cannot promptly pay out insured depositors without taking at least some “uninsured” depositors into the safety net. This is a problem for the FDIC, but it pales in comparison with the problem of closing – for liquidation or for recapitalization – a large firm with offices or branches in several countries.

Some authors have lamented the ambiguity associated with various sorts of cross-border legal agreements. Although I don’t (personally) know much about the practical difficulties, it seems that they might be quite large. Can an integrated, worldwide institution’s liabilities be separated from its assets held in the same jurisdiction? What sort of netting or offset rights exist? Are they reliable? Which ones have been tested? How might ring-fencing affect settlements, and therefore customers’ incentives to run at the first sign of a problem? Do U.S. firms enter foreign markets using subsidiaries or branches? Why? What legal entities do foreign banks use to enter the U.S.? If a holding company satisfies capital requirements on a consolidated basis, does that mean that the U.S. *subsidiaries* necessarily have sufficient capital



on-shore? or could that capital be held abroad, beyond the reach of U.S. supervisors in the event of a problem?

There may be excellent answers to all these questions. But given the importance of credible closure policies in policing large, complex financial firms, these issues should probably have a prominent place in the next *Safe and Sound Banking* study.

### **III. Summary and Conclusion**

When all is said and done, the open issues related to financial safety and soundness are surprisingly similar to those discussed by Kane *et al.* in 1986: we still need to work on resolution procedures, deposit insurance pricing, and capital adequacy. Supervisors have incorporated private information into their regulations by pattern Basel II capital standards after large banks' internal risk management systems. Market information further affects assessments of bank risk exposures because some capital requirements are determined by credit ratings. We need to know more about how these incentives work. We also need an unbiased understanding of "systemic risk," which was not such a prominent idea in 1986.

The financial system is presently strong, in part because supervisors have improved their techniques. But the target is moving, as the world's largest financial institutions grow more complex and more sophisticated. Here is a very brief summary of some questions to be addressed in the next edition of *Safe and Sound Banking*:

1. How can credit rating agencies best be used in the supervisory process? What are the dangers associated with their use?
2. How much can we say in general about the combination of banking and commerce in the U.S.?
3. How do insured and uninsured liabilities affect fair deposit insurance premia?
4. Exactly what is "systemic risk" and how dangerous is it?

5. What have we agreed to, with Basel II?
6. Counterparty risk assessments seem necessary as financial firms become more complex. How can we translate a firm's price and quantity changes into appropriate supervisory action?
7. What more (if anything) needs to be done before supervisors can credibly close a large, international financial institution in a quick and orderly fashion, without bailing out the initial claimants?

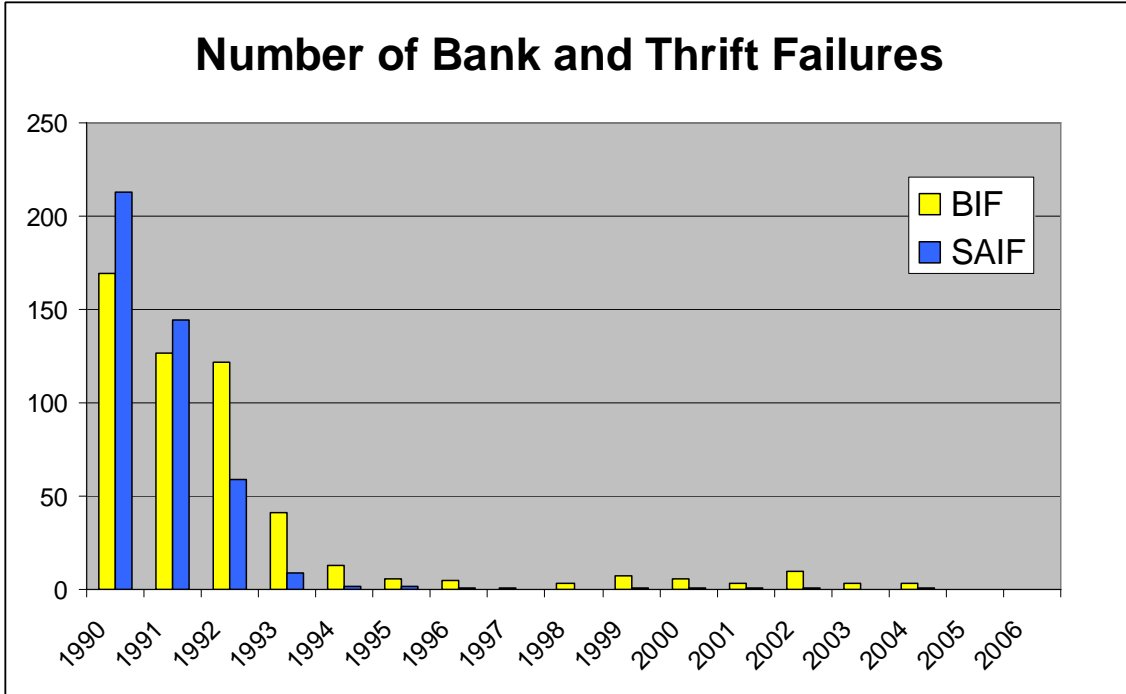
Fortunately for us all, there remains a lot to study.

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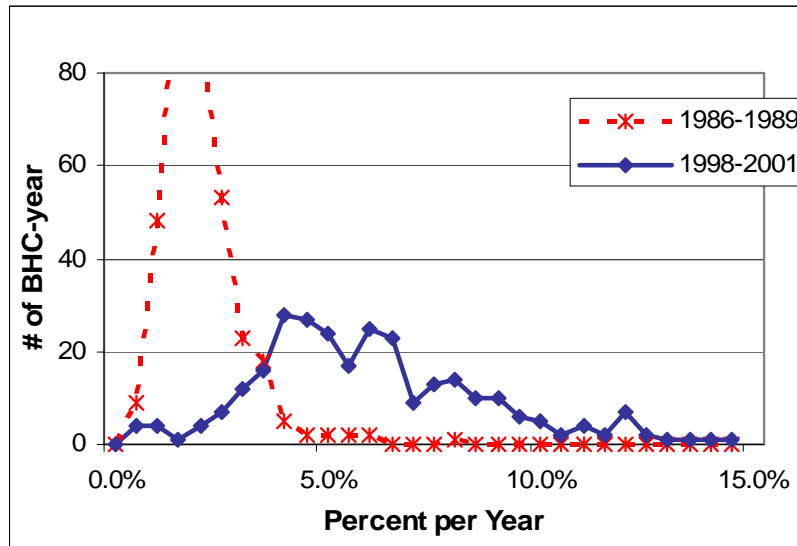
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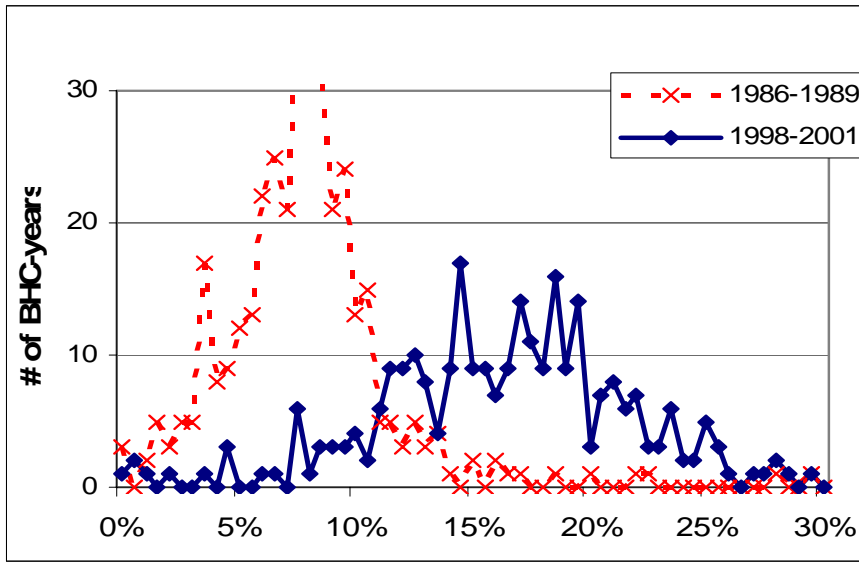
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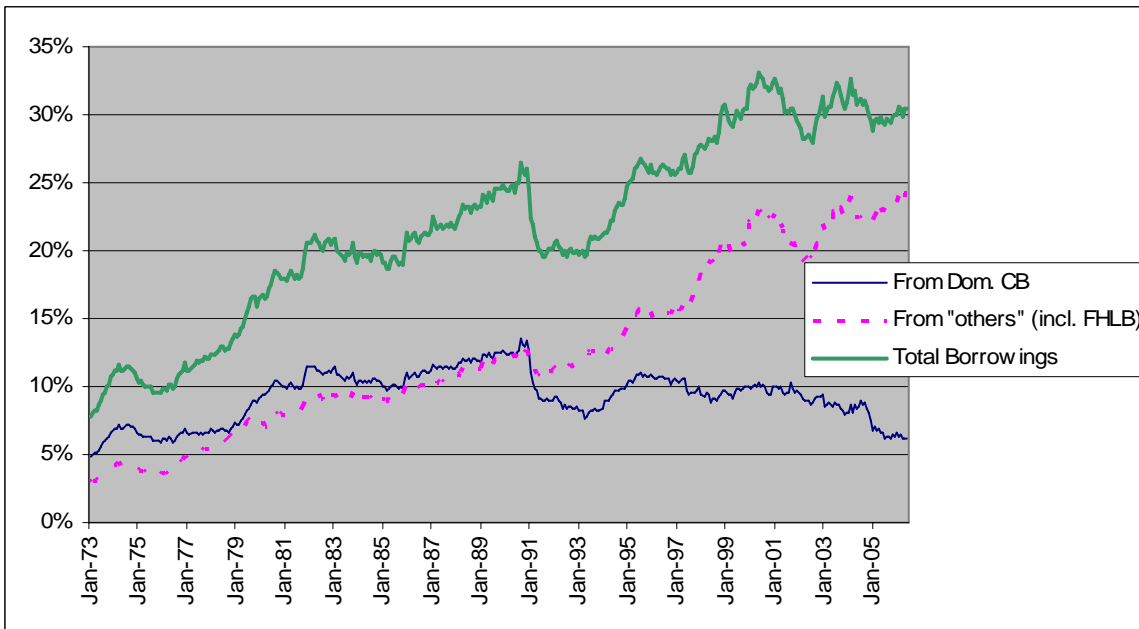
**Figure 1: Number of bank and thrift failures, 1990-2006**  
 (Source: [www.FDIC.gov](http://www.FDIC.gov), Table BF01)



**Figure 2: Histograms of 100 largest BHCs' asset volatilities**  
 Source: Flannery and Rangan (2004, Figure 7)



**Figure 3: Histograms of 100 largest BHCs' (market valued) equity ratios**  
 Source: Flannery and Rangan (2004, Figure 5)



**Figure 4: Uninsured liabilities as a proportion of domestic deposits**