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HOW BIG A PROBLEM IS TOO BIG TO FAIL?

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How Big a Problem is Too Big to Fail?
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ABSTRACT

This review essay examines whether too-big-to-fail is as serious a problem as Gary Stern and Ron Feldman contend. This essay argues that Stern and Feldman overstate the importance of the too-big-to-fail problem and do not give enough credit to the FDICIA legislation of 1991 for improving bank regulation and supervision. However, this criticism of the Stern and Feldman book does not detract from many of its messages. Even if the too-big-to-fail problem is not as serious as they contend, the policies they outline can make it less likely that a banking crisis will occur even if driven by other factors.

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Banking institutions are especially well suited to minimizing transaction costs and adverse selection and moral hazard problems. This is why banks are “special” and play such an important role in the financial system. When banks fail, the information capital they have developed may disappear, and as a result, many borrowers will not have access to funds to pursue productive investment opportunities.² Indeed, if a large enough number of banks fail at the same time, in other words a banking panic occurs, the economy’s ability to channel funds to those with productive investment opportunities may be severely hampered, leading to a full-scale financial crisis and a large decline in investment and output. Indeed, the worst economic downturns are almost always associated with bank panics and financial crises, and not only has this been true in the United States when the Great Depression was triggered by banking panics (Friedman and Schwartz, 1963, Bernanke, 1983, and Mishkin, 1991), but it has been true in recent years in emerging market countries (Mishkin, 1996, Bordo and Eichengreen, 2002).

Concerns about bank panics have led most governments throughout the world to provide a safety net for the banking system. Federal government deposit insurance, a guarantee of repayment for depositors, was established in the United States when the FDIC (Federal Deposit Insurance Corporation) started operations in 1934. Deposit insurance can short circuit bank panics by providing protection for depositors. When a depositor has fully insured deposits, up to \$100,000 of deposits in the United States, the depositor doesn’t need to run to the bank to make a withdrawal when she is worried about the bank’s health because her deposits will be worth 100 cents on the dollar no matter what. Hence, deposit insurance can short circuit runs on banks and bank panics and can overcome reluctance by depositors to put their funds into the banking system.

For the first thirty years after the FDIC was created, only six countries emulated the United States and adopted deposit insurance. However, this began to change in the late 1960s, with the trend accelerating in the 1990s when the number of countries adopting deposit insurance doubled to over seventy and now is close to 90 (Demirguc-Kunt and Kane, 2002, and Demirguc-Kunt, Kane and Laeven, 2005) . Deposit insurance is now the norm in much of the world.

Deposit insurance is not the only way in which governments provide a safety net for depositors. Even without explicit deposit insurance, many countries provide a safety net by providing direct support to domestic banks. This support is sometimes provided by lending from the central bank to troubled institutions as part of the central bank’s lender of last resort role or by direct government infusion of cash into these institutions.

The good news of having a government safety net is that it can prevent bank panics, as it has since the establishment of the FDIC in the 1930s. The bad news is that creates moral hazard incentives for banks to take on greater risk. When a depositor is fully protected, she knows that she will not suffer losses if a bank fails, and thus has little incentive to monitor the bank’s

activities and withdraw funds if the bank is taking on too much risk. Without this discipline from depositors, banks know that they can engage in risky activities with impunity, and this can increase the probability of bank failures.

The moral hazard created by a government safety net is even more severe for large banking institutions because when they fail, it can lead to systemic risk in which the whole banking system is threatened. The failure of a large institution not only can cause immediate failures of its counterparties in both the banking and the rest of the financial system, but can also lead to a crisis of confidence that may spill over to other banks and financial institutions, leading to a cascade of failures and a financial crisis. Given the potential costs to the economy from a large bank failure, governments are very reluctant to let large banking institutions fail, or if they do, impose any costs on depositors, even if deposit insurance is limited to a fixed amount, say \$100,000. A particular manifestation of this phenomenon occurred when Continental Illinois, then one of the ten largest banks in the United States became insolvent in May 1984. Not only did the FDIC guarantee depositors up to the \$100,000 insurance limit, but it also guaranteed all accounts exceeding \$100,000 and even prevented losses for Continental Illinois bondholders. Shortly thereafter, the Comptroller of the Currency (the regulator of U.S. national banks) testified to Congress that eleven of the largest banks would receive a similar treatment to that of Continental Illinois. Although the Comptroller did not use the term “too-big-to-fail” (which was actually used by Congressman McKinney in those hearings), this term now is applied to a policy in which the government provides guarantees of repayment of large uninsured creditors of the largest banks, so that no depositor or creditor suffers a loss, even when they are not automatically entitled to this guarantee. (The “too-big-to-fail” characterization is somewhat of a misnomer because under the too-big-to-fail policy, banks are often closed or merged into another bank, and then the managers are often fired and the equityholders in the bank lose much of their investment.)

The too-big-to fail policy increases the moral hazard problem for big banks. If a deposit insurance agency like the FDIC were willing to close a bank and pay off depositors only up to the \$100,000 insurance limit, large depositors would suffer losses if the bank failed. Thus they would have incentives to monitor the bank’s activities closely and pull their money out if the bank is taking on too much risk. To prevent such a loss of deposits, the bank would be less likely to engage in risky activities. However, once large depositors know that a bank is too-big-to-fail, they have no incentive to monitor the bank because no matter what the bank does, large depositors will not suffer any losses. The result of the too-big-to-fail policy is that large banks are likely to take on greater risks, thereby making bank failures more likely. Indeed, this is exactly what we saw happen in the United States in the 1980s when large banks took on riskier loans than smaller commercial banks which led to higher loan losses for big banks (Boyd and Gertler, 1993).

Many analysts have argued that the the landmark legislation in 1991, the Federal Deposit Insurance Corporation Improvement Act (FDICIA), improved banking regulation substantially and has made the too-big-to-fail problem less severe. Gary Stern, the president of the Federal Reserve Bank of Minneapolis, and Ron Feldman, a vice president of the Bank, both insiders in the world of bank regulation and supervision, have written a book that argues that not only was the too-big-to-fail policy a serious problem in the past, but that it was not fixed by FDICIA. Furthermore, it has even gotten worse in recent years because of the increasing size and complexity of banking organizations. Given the severity of the problem, Stern and Feldman believe that it is imperative that policymakers adopt policy measures to deal with it.

In this review essay, I examine whether too-big-to-fail is as serious a problem as Stern and Feldman believe it is. My view is that they overstate the importance of the too-big-to-fail problem and do not give enough credit to FDICIA for improving bank regulation and supervision. However, this criticism of the book should not detract from many of its messages. Too-big-to-fail is still a problem of great concern to bank regulators.

I. How Big a Problem Was Too-Big-To-Fail

After an initial introductory chapter which lays out the basic messages of their book, chapter two provides an insightful discussion of what the problem is all about. Stern and Feldman stress, quite rightly, that the too-big-to-fail problem is due to a lack of credibility of policymakers' commitment to not bail out large banks. This lack of credibility is just another manifestation of the time-inconsistency problem first discussed by Kydland and Prescott (1977) and Calvo (1978). Policymakers' pledge not to engage in a bailout of large bank is not time consistent: when a large bank is about to fail, policymakers will want to renege on their pledge because they want to avoid the systemic risk that the failure of the bank would entail. Uninsured creditors knowing that policymakers have incentives to renege will assume that the bailout will occur and thus will not monitor large banks sufficiently, leading to the too-big-to-fail problem. Stern and Friedman also point out that lower caps on deposit insurance or elimination of deposit insurance altogether are also not credible and are subject to the same time-inconsistency problem.

This innovative way of thinking about too-big-to-fail leads to an important implication for the policy debate. In order to reduce the too-big-to-fail problem, the incentives for policymakers to renege on a no bailout commitment has to be reduced, which requires policy measures that reduce the costs of a failure of a large bank to the financial system by reducing

the spillovers from such a failure. With less of an incentive for policymakers to renege on no bailout pledges, uninsured creditors will worry that large risk-taking banks will expose the creditors to losses and so creditors will pull funds from these banks, thereby imposing market discipline that will reduce moral hazard risk-taking by these banks.

Chapter three contains an excellent discussion of why a too-big-to-fail policy is costly. Stern and Feldman point out that not only does too-big-to-fail increase risk-taking by banks which increases the likelihood of banking crises, but it also leads to resource misallocation. The possibility of a bank bailout makes it more likely that banks will not operate in a cost-efficient manner and also may innovate less. One important misallocation that they do not mention is that the presence of too-big-to-fail encourages banks to grow in size to take advantage of the too-big-to-fail subsidy, so that banks will be larger than is socially optimal and there will be too many bank mergers.

Chapter four discusses the evidence on whether too-big-to-fail is a pervasive problem. The key to the severity of the too-big-to-fail being a problem is that the market expects that government bailouts occur. The chapter contains a very clear review of the evidence that the market reflects too-big-to-fail. Event studies have shown that the testimony by the Comptroller of the Currency in the aftermath of the Continental Illinois bailout that the eleven largest banks would be subject to the too-big-to-fail policy did experience higher returns than other banks after this announcement.³ Furthermore, there is evidence in market reactions that too-big-to-fail coverage spread to other banking institutions not on the Comptroller's original list. Mergers undertaken by the largest banks result in an increase in market value for shareholders, while this is not the case for smaller banks, suggesting that the market has priced in the subsidy to larger banks from too-big-to-fail. Costs of deposits also appear to be lower for larger banks that benefit from too-big-to-fail. Credit ratings also appear to reflect too-big-to-fail, with larger banks having higher credit ratings when they take account of possible government support. Yields on bonds issued by banks (which are typically quite large) in the early to mid 1980s did not seem to reflect much risk.

Stern and Feldman also argue that too-big-to-fail has played an important role in the numerous banking crises throughout the world that have occurred in the last two decades. I find this argument more suspect. They cite statements like that by Honohan and Klingebiel (2000) that “‘Unlimited deposit guarantees, open-ended liquidity support, repeated capitalization, debtor bailouts, and regulatory forbearance’ are associated with a tenfold increase in the fiscal cost of banking crises,” (Stern and Feldman, 2004, p. 40) as supporting their position. Although I agree with Honohan and Klingebiel's characterization of banking crises, it is more accurate to attribute banking crises not to too-big-to-fail, but rather to “too-politically-important-to-fail”

which includes almost all banks. This is certainly true for emerging market countries, where bankers are particularly powerful, leading governments to bail out almost all banks. It was also true in the United States. The savings and loan crisis was not caused by too-big-to-fail: none of these thrift institutions were sufficiently large to pose systemic risk from one of their failures. Rather it was the willingness of the Federal Home Loan Bank Board (FHLBBB) and its deposit insurance agency, the Federal Savings and Loan Insurance Corporation (FSLIC) to prop up the entire savings and loan industry, including almost all small S&Ls (Kane, 1989). Stern and Feldman even note on page 12 that “between 1979 and 1989, when roughly 1,100 commercial banks failed, 99.7% of *all* deposit liabilities were fully protected through the discretionary actions of U.S. policymakers.” It was not just the large banks whose uninsured creditors received guarantees on their deposits. Additional evidence that too-big-to-fail has not played the key role in producing banking crises is provided in Beck, Demirguc-Kunt and Levine (2005) who do not find a positive relationship between banking system concentration and the likelihood of a banking crisis.

Stern and Feldman demonstrate convincingly that too-big-to-fail was a serious problem, but there is a tendency in their book to argue that it was *the* problem. Although bank bailouts have been the source of serious moral hazard risk taking on the part of banks that has led to the very costly banking crises throughout the world, too-big-to-fail has not played a dominant role in most banking crises. It was not dominant in most banking crises in developed countries, with the U.S.’s S&L crisis being one notable example, but it has been even less dominant in emerging market countries where it has been the political process which bails out almost *all* banking institutions that has been the driving force behind banking crises.⁴ This disagreement with Stern and Feldman is not trivial because it has important implications for evaluating bank regulatory and supervisory policies such as those in the Federal Deposit Insurance Corporation Improvement Act (FDICIA) of 1991.

II. What is the Source of Too-Big-to-Fail?

In Chapter Five, one of the most fascinating chapters in the book, Stern and Feldman dig into what motivates policymakers to engage in too-big-to-fail policies. They see three motivations for policymakers to adopt too-big-to-fail: 1) they worry about the economy-wide consequences of large bank failures, 2) they are motivated by personal rewards, and 3) they want to direct credit.

The first motivation is based on the view that policymakers have a desire to act in the

public interest. Policymakers bail out uninsured creditors because of their concerns that losses to creditors at a large bank will spill over to other banks, thus leading to a systemic shock to the banking system that could be very costly. Stern and Feldman acknowledge that there is an alternative view that the threat of spillovers is greatly overstated and so does not provide a motivation for too-big-to-fail. However, Stern and Feldman (p. 47) conclude: “In the end, however, we think that the alternative view does not present a persuasive enough case to convince policymakers to give up their concern about spillovers. Thus simply articulating the alternative view is unlikely to reduce the likelihood of TBTF bailouts.” Given their insider experience in bank supervision and regulation, Stern and Feldman’s judgement here is telling. They also provide evidence in Chapter 7 that policymakers concerns about spillovers are central in their decisions whether to engage in a bail out or not. Their views are also consistent with what I saw when I was an official in the Federal Reserve System. Although not said outright, I suspect that Stern and Feldman agree with policymakers’ concerns. Even if there is a small chance that spillovers may cause serious damage to the financial system, policymakers will be reluctant to risk letting these spillovers occur because the consequences could be so dire. Indeed, this is consistent with Alan Greenspan’s (2003) “risk management” approach to monetary policymaking.

The second motivation is that policymakers pursue too-big-to-fail because of personal gain, which might be characterized as “too personally important to fail”. This is a classic case of the principal-agent problem at work and has been emphasized by Edward Kane (1989, 1991). Bank supervisors are ultimately agents for the public because the public bears the cost of any losses as a result of supervisory failures. Regulators and supervisors, however, may have incentives that differ from the public and might prop up banks in order not to have failures on their watch that would make them look bad or because they accede to pressures from powerful bankers they supervise in order to acquire better jobs in the private sector. Although less prevalent in the United States, where there have been very few scandals involving bank supervisors, corruption can also be a source of favorable treatment of powerful banks.

The third motivation is that policymakers may want to bail out banks because it makes it easier for the government to direct credit. Protecting large banks which are often government-controlled institutions either through government influence or outright control, helps encourage the public to put their funds in these institutions, thereby giving them the resources to lend to whomever the government wants them too.

Stern and Feldman acknowledge that all three motivations are important in promoting too-big-to-fail, but take the view that the most important is policymakers’ concerns about spillovers. The third motivation is clearly unimportant in the United States, because the U.S. government generally stays out of directing bank credit. However, it has been important elsewhere, where

governments are often active in directing credit. Stern and Feldman put less weight on personal gain being a factor in promoting bank bailouts. They may be taking this view because the supervisors they have been most exposed to have been those in the Federal Reserve System. The Fed is unique as a supervisory agency because it is so independent and respected. The level of professionalism of Fed supervisors is very high, in part because they are insulated from political pressure. My interaction with supervisors in the Federal Reserve System convinces me that Stern and Feldman's are right that for this group of supervisors personal gain is not a key motivating factor and the most important motivation promoting too-big-to-fail is concerns about spillovers. Although currently supervisors in other agencies probably have just as high standards of professionalism, this has not always been the case. Indeed, the S&L debacle and the Keating savings and loan scandal described in Mishkin (2003) provides a counterexample where personal gain was an important motivation for supervisory failure. The supervisory agencies for the savings and loan industry, the Federal Home Loan Bank Board and Federal Savings and Loan Insurance Fund (FSLIC), engaged in regulatory forbearance in which they swept things under the rug by allowing insolvent S&Ls to stay in business. Even more outrageous was the unprecedented step taken by the head of the Federal Home Loan Bank Board, M. Danny Wall, in September 1987 who reassigned the examiners who discovered that Keating's Lincoln Savings and Loan had violated numerous regulations. He then took the supervision of Lincoln Savings and Loan away from the San Francisco Federal Home Loan Bank, where it belonged, and moved it to the Federal Home Loan Bank Board in Washington where Lincoln was not examined for the next ten months, so that Lincoln dropped into a "regulatory black hole."

Whether personal gain could now be an important motivation for supervisory failure and bank bailouts is debatable in the United States, but concerns about personal gain are almost surely a more important driving force behind supervisory failures in emerging market countries. In contrast to the U.S. where an educated public and a free press open up the supervisory process to scrutiny, thereby removing some of the asymmetric information that leads to the principal-agent problem, bank regulators and supervisors in poorer countries are often a "grabbing hand" rather than a "helping hand".⁵

III. Has the Too-Big-To-Fail Problem Gotten Worse?

In chapter six, Stern and Feldman argue that the too-big-to-fail problem is getting worse and that despite views to the contrary, the FDICIA legislation of 1991 has not fixed the problem. The chapter does a nice job of outlining the forces that may be increasing too-big-to-fail coverage and hence the too-big-to-fail problem. First, banking consolidation has led to the largest banks getting larger, so that a failure of one of these mega banks would pose even greater systemic risk. Second, bank consolidation has led to a greater number of banks that have reached a sufficient scale that their failure would have costly spillovers. Third technology has allowed institutions that are not among the largest to play a more important role in the payments system, and so a failure of one of these institutions could disrupt the payments system and lead to systemic effects. Fourth, technology which has improved the quality of information has encouraged the development of capital markets which have enabled banks to increase their use of uninsured deposits and other credit to fund their operations. The increased dependence on these sources of funding may make banks more vulnerable.⁶ Fifth, banking operations have been growing in complexity which can make the resolution of failed banking organizations more difficult to resolve, thereby making them, as Herring (2002) has put it, “too complex to fail”.⁷ Sixth, legislation like the Gramm-Leach-Bliley Financial Services Modernization Act of 1999, which repealed the Glass-Steagall Act, has enabled banks to engage in a wider range of activities and has allowed the merger of banks with other financial institutions, thus possibly expanding the government safety net to non-bank activities of these financial conglomerates.

Stern and Feldman make a convincing case that the above forces have the potential to strengthen the too-big-to-fail commitment to fully protect all depositors at large banks, thereby increasing the incentives for large banks to take on excessive risk and worsening the too-big-to-fail problem. Making this case, however, does not mean that the too-big-to-fail problem is now worse than it was. In 1991, the landmark FDICIA legislation was passed, with a number of provisions to reduce the too-big-to-fail problem. Most importantly, FDICIA required the FDIC to close banks with a “least-cost” resolution procedure, making it more likely that uninsured depositors and creditors will suffer losses when a bank fails. In addition, FDICIA promoted measures to reduce the likelihood that a bank failure would lead to systemic risk. It directed the Board of Governors to develop a regulation which would limit interbank credit exposure, and the Board responded with Regulation F, which restricts the interday exposure to a not adequately capitalized correspondent to less than 25% of the bank’s capital. To prevent a systemic liquidity problem from developing because other financial institutions might not have immediate access to their funds at a failed bank, FDICIA also authorized the FDIC to make a final settlement with creditors (based on the FDIC’s average recovery experience) when it assumes receivership of a failed bank. In addition, FDICIA explicitly recognized contractual

netting agreements (that allow payments to be offset against each other) and held them legally binding, thereby reducing short-term credit exposure and making the clean up after a bank substantially easier.

Stern and Feldman take a more jaundiced view of FDICIA, arguing that it has not done much to fix the too-big-to-fail problem. I have had a more positive view of FDICIA (Mishkin, 1997) and continue to do so.⁸ Stern and Feldman believe that FDICIA's least cost resolution provision has no bite because FDICIA has a systemic risk exception. A bank can in effect be declared too-big-to-fail so that all depositors, both insured and uninsured, would be fully protected if not doing so would "have serious adverse effects on economic conditions or financial stability". To invoke the systemic risk exception, a two-third's majority of both the Board of Governors of the Federal Reserve System and the directors of the FDIC, as well as the approval of the secretary of the Treasury, is required. The Secretary of the Treasury must also document evidence that a systemic-risk exception was necessary, and the General Accounting Office must review the actions taken to comment whether they appeared to be necessary. Furthermore, the banking industry has to pay the cost of a too-big-to-fail bailout through an emergency assessment to the FDIC as a proportion of each bank's tangible assets.

Stern and Feldman take the view that the systemic-risk exception is a loophole which can be used in cases where no systemic risk is present and so there will be no "significant change in the incentives that policymakers face when confronted with the bailout decision" (p.79). I strongly disagree.

The debate here is quite similar to the rules versus discretion debate that has been prominent in macroeconomics. Advocates of rules argue that discretion leads to the time-inconsistency problem in which optimal discretionary policies at a given point in time lead to a sequence of policies that are suboptimal. Discretionary policies lead to expectations that they will continue to be used in the future, which leads to undesirable behavior on the part of economic agents. This is exactly the same argument used by those who criticize the use of discretion in exercising the systematic risk exception. If the systemic risk exception can be exercised in some cases, banks and markets will expect that will be exercised in the future, thus leaving too-big-to-fail in place.

Advocates of discretion counter that rules are often too rigid because there are often circumstances which could not be predicted, requiring the exercise of discretion. Thus they oppose rules because strict adherence to them has the potential for disaster. Financial crises and systemic risk stem from events which are highly unpredictable and which have highly unpredictable consequences. Because the history of financial crises shows that systemic risk situations which are unexpected can be very damaging to the economy (Kindleberger, 1978,

Bernanke, 1983, and Mishkin, 1991, 1996), there is a strong case for discretionary actions to contain them.

As discussed in Bernanke and Mishkin (1997), the dichotomy between rules and discretion may be misleading. Time inconsistency can be avoided even if rules are not rigid, as long as the exceptions to them are infrequent because they are not easy to implement, and policymakers are accountable to credibly explain why an exception has been necessary. This is exactly what FDICIA does. FDICIA makes it hard to invoke the systemic-risk exception because the FDIC, the Federal Reserve and the U.S. Treasury must all agree to do so. Furthermore, the provisions in FDICIA which require documentation of evidence to support the view that a failure of a large bank would lead to systemic risk makes the regulatory authorities accountable when they invoke the systemic-risk exception. In addition, the emergency assessment produces incentives for the industry to question the abandonment of least-cost resolution, thus encouraging them to monitor the regulators to make sure that they do not invoke the systemic-risk exception too often.

Stern and Feldman think that these provisions will not make much of a difference because before FDICIA was enacted, the Federal Reserve, the Treasury and the FDIC consulted with each other when there were bail outs of large banks and there were active public discussions of these bailouts. FDICIA, however, does set up clearer rules for making the decision process more transparent when a too-big-to-fail bailout occurs. This institutionalization of transparency is one of the key arguments for inflation targeting (Bernanke et al, 1999) and institutionalization of transparency for too-big-to-fail policies should have similar benefits.

FDICIA sensibly allows for discretion with the systemic risk exception because of the potential for unforeseen circumstances and the potential high cost of a financial crisis. However, FDICIA allows discretion in a clever way so that there are strong incentives for the regulators to follow the least-cost resolution rule, except under highly unusual circumstances. Thus I disagree with Stern and Feldman that the provisions in FDICIA do not limit too-big-to-fail coverage. The balance between rules and discretion provided by FDICIA seems to me to be both reasonable and desirable and does substantially limit the too-big-to-fail problem.

Another important development that also could have reduced the too-big-to-fail problem was that bank capital requirements were substantially strengthened in the late 1980s, especially after the 1988 Basel Accord which standardized bank capital requirements internationally. The 1988 Basel Accord has been praised for increasing the focus on risk when it put in place risk-weights for calculating capital requirements. However, another important success, that is often less recognized, is that it forced banks, particularly large ones, to increase their capital substantially. With more capital, a large bank has more to lose if it goes under and thus has less incentives to take on risk. Higher capital requirements thus also make the too-big-to-fail

problem less severe.

What does the evidence tell us about whether the too-big-to-fail is a bigger problem now than in the 1980s? My reading is quite different than Stern and Feldman's. The evidence does not support a worsening of the too-big-to-fail problem. To the contrary, the evidence seems to support that there has been substantial improvement on this score.

One way of assessing whether the too-big-to-fail problem has gotten worse is to examine whether yields on bonds issued by banks reflect the riskiness of large bank's activities. As noted by Stern and Feldman, in the early 1980s, bank bond yields did not reflect much risk, which is consistent with too-big-to-fail because bondholders would not price in riskiness of the bank if the bank was expected to get government support if it were too-big-to-fail. During the late 1980s and 1990s, however, the relationship between bank bond yields and bank riskiness became much stronger (Flannery and Sorescu, 1996 and Flannery and Nikolova, 2004). Stern and Feldman correctly point out that the fact that bond yields at large banks reflect the bank's riskiness does not imply that too-big-to-fail is not having an impact. Even if the market expects bank bailouts, there is some probability that the bailout will not occur, so that bank risk should still be priced. Indeed, more recent work such as Morgan and Stiroh (2005), do find that the spread-rating relationship was flatter for large banks in the 1990s, suggesting that the market still sees that large banks are more likely to receive bailouts. Nevertheless, the fact that bond yields now do reflect a bank's riskiness suggests that the too-big-to-fail problem is not as bad as it once was.

Even more persuasive evidence that the too-big-to-fail problem has not gotten worse is provided using the methodology in Boyd and Gertler (1993). Boyd and Gertler argued that when banks take on more risk, they are likely to have riskier returns and are thus more likely to face difficulties later. Boyd and Gertler found that in the mid to late 1980s, the largest banks performed worse than smaller banks and were the source of the overall poor performance of the industry in that period. They concluded that large banks were taking on more risk, exactly as would be expected because of the too-big-to-fail policy. In addition, large banks had lower capital ratios than smaller banks, also indicating that they were bearing more risk. Boyd and Gertler's evidence thus provides strong support for Stern and Feldman's view that too-big-to-fail was a serious problem in the United States.

However, there has been a sea-change in the industry since 1991. As has been documented in Ennis, and Malek (2005), after FDICIA was enacted, the banking industry in the United States has returned to profitability, with return on assets that are even higher than in the 1970s. Even more telling is the change in the relative profitability of large and small banks. In the 1983-1991 period, the largest banks had a return on assets which was less than half that of mid-size banks. After 1991, the return on assets has been quite similar for the largest and

mid-size banks, with the largest banks having a slightly higher return on assets. This change could just reflect idiosyncratic features of the recent sample period relative to the earlier period, but an alternative explanation is that the passage of FDICIA has limited the too-big-to-fail problem.⁹

The second striking change in the characteristics of the banking industry is what has happened to capital ratios since 1991. Before 1991, the largest banks (greater than \$10 billion in asset size) had extremely low capital ratios, with average equity capital just a little over 5% of assets (whether relative to total assets or relative to a risk-weighted measure developed under the 1988 Basel Accord which required banks to hold 8% of risk-weighted capital). Consistent with too-big-to-fail incentives for large banks to take on excessive risk, before 1991 capital ratios fell as the size of banks grew (as shown in Table 1), with the smallest banks having capital ratios almost double those of the largest banks. After 1991, this pattern began to change dramatically (Table 1). By 2004, the largest banks have more than doubled their capital ratios and are now well capitalized, more than meeting the Basel requirements. Furthermore, they no longer have less capital than smaller banks, except for the smallest with less than \$100 million in assets. (The smallest banks, the so-called community banks, are often unable to diversify their loan portfolios that are dominated by local loans, and they need to have higher capital to offset the resulting higher risk.) The higher capital ratios for large banks suggest that they are no longer as willing to take on risk. This could reflect the fact that their counterparties perceive that the large banks are less likely to be bailed out and so the large banks must be safer in order to get counterparties' business. The higher capital ratio for large banks provides another reason why too-big-to-fail is likely to be less of a problem: higher capital means that large banks have more to lose if they get in trouble and this also mitigates any incentives to take on risk created by too-big-to-fail.

An additional feature of the current environment that suggests that the too-big-to-fail problem has lessened is the increase in large banks' franchise value, the present value of future profits that the bank is expected to earn if it stays in business. With the rise in large banks' profits in recent years which has also been reflected in a substantial rise in their stock prices, these banks now have an additional reason why they have a lot to lose if they get into trouble. Even if they are deemed too-big-to-fail and all depositors are bailed out if they are subject to closure, a closure still means that these banks lose their franchise value. Their high franchise value thus gives these banks strong incentives to manage risk in order to prevent failure, and high franchise value offsets the incentives to take on too much risk created by too-big-to-fail. Demsetz, Saidenberg and Strahan (1996) provide evidence that banks with higher franchise value take on less risk, one manifestation of which is higher capital ratios. Increased franchise

value of large banks can thus also help explain the dramatic shift to higher capital ratios for large banks we see in Table 1. We currently find ourselves in the opposite situation to that described by Keeley (1990) who documented the large decline in franchise value in the banking system that occurred before the 1980s, which he argues led to the increased risk-taking in the 1980s by banking institutions that led to the numerous bank failures of that period. High franchise values of large banks mean that incentives for large banks to exploit too-big-to-fail and take on excessive risk are unlikely to be strong at the present time.

What is the bottom line on the status of the too-big-to-fail problem? Stern and Feldman have not made the case that the too-big-to-fail problem has gotten more severe. Indeed, there is substantial evidence that the opposite is the case: the too-big-to-fail problem appears to be far less severe now than it was in the 1980s. Their criticisms of the FDICIA legislation's ability to lessen the too-big-to-fail problem also seem to me to be overstated. However, Stern and Feldman have made the case that the too-big-to-fail problem could get more severe in the future because of changes in the banking industry. It is therefore a problem of important concern to policymakers.

IV. Policies to Cope With Too-Big-to-Fail

The second part of Stern and Feldman's book outlines policies to deal with the too-big-to-fail problem. Their discussion of policy alternatives is both thoughtful and reasonable.

In chapter 8, they use the analogy to successes on the monetary policy front to advocate appointment of policymakers to head regulatory/supervisory agencies who take seriously the moral hazard costs of bank bailouts. Stern and Feldman discuss how appointment of a "conservative" central banker as suggested in Rogoff (1985) helps deal with the time-inconsistency problem. A conservative central banker who puts more weight on inflation control than output stabilization will be less likely to pursue short-run policies to stimulate aggregate demand and instead will take a longer run view to control inflation. Similarly, a "conservative" policymaker who puts greater weight on the moral hazard costs of bank bailouts will be less likely to implement too-big-to-fail bailouts. If this "conservative" regulator/supervisor makes it clear that he or she will be more reluctant to engage in bailouts, possibly by supporting reforms to make bailouts less likely as Stern and Feldman suggest, the market will have more incentives to monitor large banks and punish them if they take on too much risk. But note that appointment of a "conservative" regulator/supervisor does not need to be justified by too-big-to-fail being a serious problem. A "conservative" regulator/supervisor

makes bank bailouts less likely for small as well as large banking institutions and so can help reduce moral hazard created by the government safety net even if large banks are not treated differently from small banks.

Stern and Feldman's makes a good argument for appointment of "conservative" bank regulators/supervisors and ones who have expertise in dealing with financial disruptions so that they can make an appropriate judgement as to whether there needs to be intervention to deal with financial instability. Having "liberal" supervisors can lead to disasters as suggested by the earlier cited example of M. Danny Wall's intervention on behalf of Keating's Lincoln Savings and Loan. Lincoln finally failed in April 1989, with costs to the U.S. taxpayer of over \$2 billion. Here the cost of having a "liberal" supervisor was high, even though Lincoln Savings and Loan was not thought of as too-big-to-fail. (On the other hand Lincoln was certainly politically connected as is illustrated by the scandal of the "Keating Five" senators – Dennis De Concini, Alan Cranston, Donald Riegle, John Glenn and John McCain – who interceded on Keating's behalf with the Federal Home Loan Bank Board.)

Although dealing with time-inconsistency problems by appointing a "conservative" policymaker has attractive theoretical properties, it is not so easy to implement in practice. Mishkin and Westelius (2005) point out two difficulties with this approach to solving the time-inconsistency problem in monetary policy. First, it may be hard to find a central banker with the "right" preferences and it is hard to believe that politicians would naturally want to appoint central bankers with different preferences than theirs. Second, an opportunistic government would also be unlikely to appoint a "conservative" central banker, so that a regime based on having a "conservative" central banker is unlikely to be stable over time. Similar objections apply to appointment of a "conservative" regulator/supervisor. Stern and Feldman recognize that appointment of a "conservative" regulator/supervisor is not enough to deal with the too-big-to-fail problem and go on in the subsequent chapters to outline other reforms.

In chapter 9, Stern and Feldman discuss reforms that can improve the regulatory and supervisory process. These include reforms such as establishing strong property rights and bankruptcy laws. In addition, they advocate improved budgetary disclosure and accounting to reflect the implicit liabilities of the government arising from the government safety net. These reforms can help ensure that excessive risk taking does not occur in the banking system and that the tendency to bail out banking institutions will be reduced. These reforms can be important in reducing risk taking even if too-big-to-fail is not as big a problem as Stern and Feldman contend. They can help the reduce moral hazard incentives for excessive risk-taking created by the government safety net even if large banks are not treated differently from small banks.

In the next three chapters, Stern and Feldman focus on reforms that can reduce the cost of

a large bank failure and thereby make the commitment to not bail out a large bank more credible. One implication of their analysis in the first part of the book is that policymakers are less likely to suffer from the time-inconsistency problem and promote a too-big-to-fail policy when a large bank failure imposes lower costs on the economy. With lower costs of a large bank failure, policymakers have less incentives to renege on no bailout pledges. The importance in their analysis of reducing the time-inconsistency problem explains why the bulk of their policy recommendations focus on reducing costs of large bank failures.

Stern and Feldman discuss reforms to reduce supervisors' uncertainty about the impact of a failure of large banks in chapter ten. They first suggest that supervisors engage in scenario planning by conducting simulations of large bank failures and use this exercise to think about what should be done when such a failure occurs. Scenario planning is akin to what the military does when it engages in training exercises and the benefits are well known. However, as the recent episode of the devastation of New Orleans by hurricane Katrina makes clear, where there were training exercises to deal with exactly this kind of disaster, scenario planning is not a panacea: it will still fall short if the lessons from these exercises are not acted upon.

Stern and Feldman also suggest clarifying the legal and regulatory standing of bank creditors before a failure actually occurs, thereby enabling the markets to take steps to lower the costs of bank failures. They also advocate that supervisors target banking institutions that are important in the payment system and ensure that these institutions take steps that make the disruption of their payments activities less likely. Expediting payments to creditors when banks fail, a feature of FDICIA, makes it less likely that liquidity squeezes will occur after a large bank failure, thus also reducing the cost of a large bank failure.

Chapter eleven provides recommendations to limit creditor losses when there is a bank failure, another approach to reducing costs from a large bank failure. Shutting down insolvent banks before their losses become too large not only reduces costs to taxpayers when a bank fails but also results in lower losses for uninsured creditors. Prompt corrective action, in which bank supervisors intervene earlier when there is a deterioration in bank balance sheets and is a central element of the FDICIA legislation, has made substantial strides in this direction. Stern and Feldman point out, however, that the triggers for prompt corrective action may not work early enough when they are based on historical-cost accounting measures as they are in FDICIA. They suggest that this problem could be solved if the triggers were based on market valuations of bank balance sheets. Proposals for greater use of market valuations have received support from academic economists for a long time. Although there are objections to market-value-based accounting because it is not straightforward to obtain market-value estimates of bank capital, more supervisory focus on market valuation can help promote earlier interventions to close down weak

banking institutions. Again, a severe too-big-to-fail problem is not needed to justify improving the triggers for prompt corrective action: better triggers limit taxpayer and private creditor losses and reduce incentives for risk-taking for small as well as large banks.

Stern and Feldman discuss other possible reforms to lower costs to creditors. They mention the possible benefits of rapid recapitalization of banks in a weakened condition, but also worry that rapid recapitalization could make matters worse by giving banks more incentives to take on risk. Coinsurance for large creditors is another option but setting the rate to get the right balance between the tradeoff between moral hazard and financial instability is tricky. Stern and Feldman also discuss a proposal that I have outlined (Mishkin, 1999, and Mishkin and Strahan, 1999) in which the supervisory agencies announce that there is a strong presumption that the first large bank to fail will not be treated as too-big-to-fail, and costs will be imposed on uninsured depositors and creditors when the bank is closed. However, the authorities will stand ready to extend the safety net to the rest of the banking system if they perceive that there is a serious systemic risk problem. The advantage of this proposal is that it would encourage uninsured depositors and creditors to monitor large banks because they would have to worry that it might be the first one to fail and so would not be bailed out. Yet, the costs of the first bank failure would then be contained so that a banking crisis would be avoided. Stern and Feldman worry that this reform might not work because uninsured creditors of a bank could game the system by propping up the bank so that it does not fail first. However, the free-rider problem makes this unlikely because this gaming would require substantial cooperation among these creditors and yet individual creditors would have an incentive to free ride off of others. A more valid criticism of this reform raised by Stern and Feldman is that the commitment to not bail out the first large bank that fails might not be credible because it would impose high costs on the economy. However, Stern and Friedman point out that other reforms they suggest that would lower the costs of a large bank failure might make this “first one fails” reform more operational.

Chapter twelve outlines reforms to restrict spillovers to the payments system from a large bank failure. Stern and Feldman discuss reforms which reduce the amount banks owe each other through the payment system and make it easier for banks owed money by a failed bank to offset their losses with collateral. Stern and Feldman emphasize these reforms because fears that the payment system will be disrupted by a large bank failure are one of the key reasons why policymakers are likely to adopt a too-big-to-fail policy. In designing a successful payments system, the devil is in the details. Stern and Feldman’s discussion of this complex topic is quite clear and makes eminent sense to me although I am not an expert on payments systems.¹⁰

Stern and Feldman’s chapter thirteen (which has associated appendices) briefly examines alternative views from theirs on managing the too-big-to-fail problem. Stern and Feldman discount

the importance of penalizing policymakers whose actions result in more bank bailouts, and see personal motivation as of secondary importance in promoting banking crises. However, as my discussion of their chapter five suggests, personal motivation has played a more prominent role in banking crises than they give credit. Increasing costs for bank supervisors whose actions result in more bailouts can improve the incentives of supervisors to constrain banks from taking on too much risk and the best way to do this is by increasing transparency of their actions. Indeed, FDICIA goes down this route by establishing prompt corrective action which provides explicit standards on what supervisory actions should be taken as a bank's balance-sheet position deteriorates. In addition, FDICIA requires a mandatory review of any bank failure that imposes costs on the FDIC and this report is available to the public. Stern and Feldman discount the importance of these provisions because a member of Congress can request an investigation of supervisory actions for a failed bank at any time. My work on inflation targeting leads me to believe that setting explicit standards for policymakers behavior and institutionalizing transparency does result in better incentives for policymakers to do their job well. I believe that the same is true for bank supervision. There is a general perception that bank supervision in the United States has improved post FDICIA and I would attribute some of this improvement to the provisions in this legislation that focus on personal motivations of bank supervisors and increase transparency of the supervisory process.

Stern and Feldman also argue that supervision and regulation should not be the only, or primary, response to the too-big-to-fail problem. There is strong empirical support that supervision and regulation may not produce good outcomes in developing countries with weak institutional environments (Barth, Caprio and Levine, 2005). This research finds that supervision and regulation in such cases may reflect a "grabbing hand" of government rather than a "helping hand", and giving strong discretionary powers to supervisors may actually make things worse not better. However, supervisors in the rich countries with strong institutional environments might dispute Stern and Feldman's view. They might argue for a more prominent role for supervision and regulation to contain the moral hazard incentives for risk taking arising from too-big-to-fail. A more prominent role for supervision and regulation, however, does not weaken the case that many of the reforms suggested by Stern and Feldman would assist supervisors since these reforms help reduce moral hazard incentives in banks, thereby making the supervisors job easier.

Stern and Feldman are supportive of reforms that would increase market discipline, but they correctly point out that market discipline only works for large banks if the market expects that they will not be bailed out. If a too-big-to-fail policy is in place, the market will not price in the riskiness of a large bank into its securities prices because bank creditors will only suffer losses if the too-big-to-fail policy is limited. Stern and Feldman advocate reforms to increase market

discipline, but as a complement to their proposals.

The book ends with a final chapter that provides a clear recap of Stern and Feldman's argument. Because they recognize that they may bore the reader with a traditional summary, Stern and Feldman provide the recap with a series of very brief "talking points".

IV. Conclusion

Stern and Feldman have written an important book on the too-big-to-fail problem. Although I think that they have overstated their case that too-big-to-fail is *the* central problem for bank regulation and supervision, the too-big-to-fail problem has the potential to get more serious over time. Furthermore, even if the too-big-to-fail problem is not as serious as they contend the policies they outline can make it less likely that a banking crisis will occur even if driven by other factors. This book deserves to be widely read in the banking regulation and supervisory world.

Endnotes

1. Gary H. Stern, and Ron J. Feldman, *Too Big to Fail: The Hazards of Bank Bailouts* (Wash. D.C.: Brookings Institution Press, 2004).
2. For recent evidence that bank failures lead to a loss of information capital that leads to a decline in loans and economic activity, see Ashcraft (2004). Interestingly, this paper finds that while larger bank failures are ten times larger than small bank failures, the effect on local area income is only twice as large. This result suggests that it is small business lending that makes banks special given that small banks concentrate on lending to small businesses.
3. References to these studies can be found in Stern and Feldman (2004).
4. I discuss these issues more extensively in my forthcoming book, Mishkin (2005).
5. See Barth, Caprio and Levine (2004)
6. Note however, that the increased use of uninsured deposits can imply that large banks are more subject to market discipline because larger depositors are more likely to impose discipline on a bank.
7. In addition, there are tricky issues in supervisors assessing risk management for these complex financial conglomerates (Kuritzkes, Schuerman and Weiner, 2003).
8. Also see Bentson and Kaufman (1997) and Kaufman (1997) for more favorable views on FDICIA.
9. Another possible factor for improved performance of large banks is that they have adopted better risk management tools. Schuermann (2005) provides evidence that better risk management explains the substantially improved performance of the banking industry in the 2001 recession relative to the previous 1990-91 recession.
10. I did consult an expert in this area who was impressed by this chapter and felt that Stern and Feldman present a nicely balanced picture.

References

- Ashcraft, Adam B. (2004), "Are Banks Really Special? New Evidence from the FDIC-Induced Failure of Healthy Banks," Federal Reserve Bank of New York, mimeo (February 28), forthcoming in the *American Economic Review*.
- Barth, James R., Gerard Caprio and Ross Levine (2004), *Rethinking Bank Regulation and Supervision: Till Angels Govern*, World Bank, mimeo. (November).
- Beck, Thorsten, Demirguc-Kunt and Ross Levine (2005). "Bank Concentration and Fragility: Impact and Mechanics," NBER Working Paper No.11500 (July).
- Benston, George J. and George J. Kaufman (1997), "FDICIA After Five Years," *Journal of Economic Perspectives*, 11 (Summer): 139-58.
- Bernanke, Ben S. (1983). "Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression," *American Economic Review* 73: 257-76.
- Bernanke, Ben S. Thomas Laubach, Frederic S. Mishkin and Adam S.Posen (1999) *Inflation Targeting: Lessons from the International Experience* (Princeton University Press: Princeton).
- Bernanke, Ben S. and Frederic S. Mishkin (1997). "Inflation Targeting: A New Framework for Monetary Policy?" (with Ben Bernanke) *Journal of Economic Perspectives* 11, 2 (Spring): 97-116.
- Bordo, Michael D. and Barry Eichengreen (2002), "Crises Now and Then: What Lessons From the Last Era of Globalization," NBER Working Paper No. 8716 (January).
- Boyd, John and Marg Gertler (1993), "U.S. Commercial Banking: Trends, Cycles and Policy," *NBER Macroeconomics Annual*, 1993: 319-368.
- Calvo, Guillermo, (1978). "On the Time Consistency of Optimal Policy in the Monetary Economy." *Econometrica* 46, no. 6 (November): 1411-28.

Demirguc-Kunt, Asli and Edward J. Kane (2002), "Deposit Insurance Around the World: Where Does it Work?" *Journal of Economic Perspectives*, 16 (Spring): 175-95.

Demirguc-Kunt, Asli, Edward J. Kane and Luc Laeven (2005), "Determinants of Deposit-Insurance Adoption and Design" World Bank mimeo., April 7, 2005.

Demsetz, Rebecca S., Marc R. Saldenberg, and Philip E. Strahan (1996), "Banks with Something to Lose: The Disciplinary Role of Franchise Value," Federal Reserve Bank of New York *Economic Policy Review* (October): 1-14.

Ennis, Huberto M and H.S. Malek (2005), "Bank Risk of Failure and the Too-Big-to-Fail Policy," Federal Reserve Bank of Richmond *Economic Quarterly Review*, vol. 91/2 (Spring): 21-44.

Flannery, Mark J. and Sorin M. Sorescu (1996), "Evidence of Bank Market Discipline in Subordinated Debenture Yields: 1983-1991," *Journal of Finance* vol. 51 (September): 1347-77.

Flannery, Mark J. And Stansilava, Nikolava (2004), "Market Discipline of U.S. Financial Firms: Recent Evidence and Research Issues," in *Market Discipline Across Countries and Industries*, ed. William C. Hunter, George G. Kaufman, Claudio Borio, and Kostas Tsatsaronis (Cambridge: MIT Press): 87-100.

Friedman, Milton, and Anna J. Schwartz (1963), *A Monetary History of the United States, 1867-1960* (Princeton: Princeton University Press).

Greenspan, Alan (2003) "Opening Remarks" in Federal Reserve Bank of Kansas City *Monetary Policy under Uncertainty: Adapting to a Changing Economy*, Symposium sponsored by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming August 28-30, 2003, pp 1-7.

Kane, Edward J. (1977) "Good Intentions and Unintended Evil: The Case Against Selective Credit Allocation," *Journal of Money, Credit and Banking*, vol. 9, no. 1: 55-69.

Keeley, Michael (1990), "Deposit Insurance, Risk, and Market Power in Banking," *American Economic Review* vol. 80, no. 5: 1183-2000.

Kydland, Finn, and Edward Prescott (1977). "Rules Rather than Discretion: The Inconsistency of Optimal Plans." *Journal of Political Economy* 85, no. 3 (June): 473-92.

Herring, Richard J. (2002), "International Financial Conglomerates: Implications for Bank Solvency Regimes," presented at the World Bank Second Annual International Seminar on Policy Challenges for the Financial Sector in the Context of Globalization (June).

Honohan, Patrick and Daniela Klingebiel (2000). "Controlling Fiscal Costs of Banking Crises," Washington, World Bank, mimeo.

Kane, Edward J. (1989). *The S&L Insurance Mess: How Did It Happen?* (Wash. D.C: Urban Institute Press)

Kane, Edward J. (1991). "Repairing Defects in Regulatory Accountability," Serial no. 102-23, pp. 993-1015. U.S. Congress, House of Representatives, Committee on Banking, Finance and Urban Affairs, Subcommittee on Financial Institution Supervision, Regulation and Insurance, Hearings on Restructuring the Banking Industry, April 16, 18 and 25.

Kaufman, George G. ed (1997) *FDICIA: Bank Reform Five Years Later and Five Years Ahead* (Greenwich, Conn: JAI Press)

Kindleberger, Charles P. (1978) *Mania, Panics and Crashes* (London; MacMillan).

Kurizkes, Andrew, Schuerman, Til and Scott M. Weiner (2003), "Risk Measurement, Risk Management and Capital Adequacy in Financial Conglomerates," Federal Reserve Bank of New York mimeo. (April 22).

Mishkin, Frederic S. (1991), "Asymmetric Information and Financial Crises: A Historical Perspective," in R. Glenn Hubbard, ed., *Financial Markets and Financial Crises* (University of Chicago Press: Chicago): 69-108.

Mishkin, Frederic S. (1996) "Understanding Financial Crises: A Developing Country Perspective," in Michael Bruno and Boris Pleskovic, eds., *Annual World Bank Conference on Development Economics 1996* (World Bank: Washington D.C.).

Mishkin, Frederic S. (1997) "Evaluating FDICIA," in George Kaufman, ed., *Research in Financial Services: Private and Public Policy*, Vol. 9 (1997) *FDICIA: Bank Reform Five Years Later and Five Years Ahead* (JAI Press: Greenwich, Conn): 17-33.

Mishkin, Frederic S. (2004) *The Economics of Money, Banking, and Financial Markets*, 6th Edition (Addison-Wesley: Boston 2001).

Mishkin, Frederic S. (2005) *The Next Great Globalization: How Disadvantaged Nations Can Harness Their Financial Systems to Get Rich*, Columbia University mimeo.

Mishkin, Frederic S. and Philip Strahan (1999) "What Will Technology Do to Financial Structure?" *Brookings-Wharton Papers on Financial Services*: 249-277.

Mishkin, Frederic S. and Niklas Westelius (2005), "Inflation Band Targeting and Optimal Inflation Contracts," Columbia University mimeo. October 2005.

Morgan, Donald P. and Kevin J. Stiroh, "Too Big to Fail After All These Years," Federal Reserve Bank of New York mimeo., July 2005.

Rogoff, Kenneth (1985). "The Optimal Degree of Commitment to an Intermediate Target," *Quarterly Journal of Economics*, 100(4):1169-89.

Schuermann, Til (2004). "Why Were Banks Better Off in the 2001 Recession?" Federal Reserve Bank of New York *Current Issues in Economics and Finance*, vol 10, no. 1 (January): 1-7.

Stern, Gary H and Ron J. Feldman (2004) *Too Big to Fail: The Hazards of Bank Bailouts* (Wash. D.C.: Brookings Institution Press)

World Bank, *Finance for Growth: Policy Choices in a Volatile World* (World Bank and Oxford University Press: Oxford, 2001).

Table 1: Average Equity Capital Ratios for U.S. Commercial Banks,

Year	1983-2004 by Asset Size									
	Less Than \$100		\$100m to \$250m		\$250m to \$1b		\$1b to \$10b		Greater Than \$10b	
	Average Equity Capital Ratio	Weighted- average Equity Capital Ratio	Average Equity Capital Ratio	Weighted- average Equity Capital Ratio	Average Equity Capital Ratio	Weighted- average Equity Capital Ratio	Average Equity Capital Ratio	Weighted- average Equity Capital Ratio	Average Equity Capital Ratio	Weighted- average Equity Capital Ratio
1983	10.3	9.0	7.9	7.8	7.1	7.0	6.2	6.0	5.0	4.6
1984	10.1	9.0	7.8	7.8	7.1	7.0	6.3	6.0	5.2	5.0
1985	10.0	8.9	7.8	7.8	7.1	7.0	6.5	6.2	5.3	5.1
1986	9.7	8.7	7.7	7.7	7.0	6.9	6.6	6.3	5.3	5.2
1987	9.9	8.9	8.0	8.0	7.3	7.1	6.7	6.4	5.1	4.6
1988	10.0	9.0	8.1	8.0	7.3	7.2	6.6	6.4	5.3	5.2
1989	10.2	9.2	8.3	8.2	7.5	7.4	6.6	6.4	5.3	5.0
1990	10.2	9.2	8.3	8.3	7.6	7.5	6.9	6.5	5.7	5.4
1991	10.3	9.3	8.5	8.4	7.8	7.7	7.2	6.9	6.3	5.7
1992	10.5	9.5	8.9	8.9	8.1	8.1	7.8	7.7	7.0	6.7
1993	10.8	10.0	9.4	9.4	8.7	8.6	8.3	8.1	7.7	7.4
1994	10.9	10.0	9.4	9.3	8.8	8.8	8.1	8.0	7.5	7.1
1995	11.8	10.6	10.1	10.0	9.4	9.3	8.6	8.5	7.8	7.3
1996	12.2	10.8	10.1	10.0	9.4	9.3	8.7	8.7	7.9	7.5
1997	13.1	11.1	10.3	10.2	9.6	9.5	9.5	9.8	8.1	7.6
1998	13.5	11.3	10.2	10.1	9.7	9.6	9.3	9.5	8.3	7.9
1999	13.5	11.1	9.7	9.7	9.4	9.4	8.8	9.1	8.3	7.9
2000	13.9	11.4	10.1	10.0	9.7	9.7	9.2	9.1	8.7	8.1
2001	13.5	11.2	10.2	10.0	9.8	9.8	9.7	9.9	9.3	8.7
2002	13.7	11.4	10.3	10.2	9.9	9.9	10.4	10.5	9.3	8.8
2003	14.1	11.6	10.3	10.2	9.9	9.9	10.6	10.7	9.7	8.7
2004	14.3	11.8	10.4	10.3	10.1	10.2	10.9	11.0	11.1	10.0

Source: Call Report data available on the Chicago Fed's website: http://www.chicagofed.org/economic_research_and_data/commercial_bank_data.cfm