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HOW TO RESTRUCTURE FAILED BANKING SYSTEMS: LESSONS FROM THE U.S. IN THE 1930'S AND JAPAN IN THE 1990'S

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ABSTRACT

The costs of government assistance to banks depend on the way rescues are managed. The central questions of policy reference do not revolve around whether to bail out banks, but rather around the choice of which banks to rescue and the means for doing so. If a rescue is handled skillfully, the cost can be greatly reduced. The history of assistance to U.S. banks during the Great Depression illustrates these themes well, and can provide useful lessons for Asia today. This paper reviews the history of bank distress and assistance in the United States during the 1930's and examines in detail the role of the Reconstruction Finance Corporation - how it targeted banks, the effect of its assistance, the cost of providing assistance, and the way that it tried to align bank incentives to protect against abuse of government protection. Then, the paper contrasts that experience with the recent government loans and preferred stock purchases for Japanese banks. We argue that combining subsidized preferred stock purchases with mandatory matching contributions of common stock, limits on bank dividend payments, and reforms on bank capital regulation that credibly incorporate market discipline into the regulatory process would increase the benefits and reduce the costs of government support for banks.

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I. Introduction

When banking systems are in distress, should they be rescued? If so, in what form and on what terms should resources be transferred to banks? Is it possible to derive lessons from relatively successful bank rescue efforts of the past that would be useful to Japanese and other would-be bank rescuers? These three questions motivate our attempt to come to grips with the lessons that U.S. bank rescue efforts during the Depression hold for banking policy in Asia today. The key challenge in any bank rescue policy is to design a balanced approach that accomplishes the main objectives of bank rescues – salvaging local information capital about borrowers in the long run and increasing credit flows to worthwhile investments in the short run – while minimizing the damage to market discipline and bank incentives toward risk that comes with government bailouts.

Should Banks Be Helped?

To the first question we posed – whether banks should be rescued – we offer a brief and informal reply. There is certainly a respectable argument in favor of rescuing banking systems from insolvency. Bank finance is crucial to the process of capital allocation, particularly for investment by small and medium-sized firms for which there are no alternative sources of funding. Smaller firms can be a key source of recovery from recession. That is especially true under current circumstances in Japan, Korea, and elsewhere in Asia. In Japan and Korea, the growth of small firms is needed as part of long-run structural adjustment away from excessive reliance on large firm conglomerates. Part of that adjustment requires that the financial sector finance the growth of small

firms. Thus, in Asia, there may be a particularly strong argument in favor of preserving a viable banking system that can act as a source of finance for smaller firms.

To a large extent the argument in favor of assisting banks relies on attendant reforms in bank lending practices that will ensure that bank credit is channeled to firms on the basis of the merit of their investments. Those incentives are part and parcel of a proper regulatory structure that encourages market discipline, which rewards value creation and prudent risk management by banks. Banks operating under skewed incentives will often make unwarranted, value-destroying loans to insiders or to politically influential borrowers. For example, Krueger and Yoo (2001) show that in Korea resources have been channeled in large part to value-destroying large firms. Thus, bank recapitalization must be combined with effective reforms of lending practices.

To what extent can one argue that bank assistance is unnecessary in a world of free foreign entry by banks? Foreign bank entry is a potential alternative source of funds for small firms, and one that is less likely to be diverted to value-destroying investments. And foreign entrants into distressed banking systems tend to enjoy a relatively low cost of capital, for two reasons: first, they have not suffered capital destroying loan losses, and second, they are better able to raise new capital because the absence of loan losses also means that markets will impose lower adverse-selection ("lemons") discounts on any new bank capital offerings (Calomiris and Wilson 2003).

While there is substantial evidence that foreign entry enhances the efficiency of banking systems (Demirguc-Kunt and Levine 1998, Kane 1998), it takes time for foreign entrants to establish information about borrowers and familiarity with local legal and institutional arrangements. Calomiris and Carey (1994) found that foreign bank entrants

into the United States during the U.S. bank "capital crunch" of the 1980s tended to lend disproportionately to lower-risk borrowers, tended to purchase rather than originate loans, and tended to act as syndicate participants rather than lead managers. Furthermore, despite their conservative loan purchases and originations, foreign banks tended to suffer worse loan losses than domestic U.S. banks in the early 1990s, which further suggests an information cost disadvantage. Although relaxing barriers to foreign entry is clearly a crucial part of resolving a credit crunch and reforming long-term lending practices, foreign bank lending may not be a perfect substitute for domestic bank lending in the short run. Thus, it is still potentially beneficial to provide some assistance to the most capable existing domestic banks.

There is, of course, another reason governments wish to protect banks – call it the "dark side" of bank bailouts. Banks are repositories of economic and political power – a source not only of funds but also of substantial discretionary power over the economy. In Asia, as elsewhere, banks have been used as tools of economic planning and also as a primary means of channeling favors to influential parties (so-called crony capitalism). The idea that the banking system should be turned into an efficient, competitive mechanism for attracting and distributing funds may make for a good speech, but it still cannot realistically be described as the sole or overriding purpose of banking policy in most countries. Never mind that the banking crises that gave rise to the losses that now plague virtually every economy in East Asia were the direct result of the perverse incentives of government protection (the so-called "moral hazard problem"); too many influential people simply have too much at stake to allow banking to be reorganized efficiently. Banks are only able to channel such favors if they themselves are recipients

of subsidies from the government, hence the need to preserve banks' (and their related firms') exclusive rights, and the need to offer banks subsidized deposit insurance, subsidized purchases of bad loans, or subsidized capital injections.

Crony capitalists will appeal for bank assistance on the basis of the "capital-crunch" motive, while in fact hoping to channel government assistance for banks into their own coffers (indeed, there is much anecdotal evidence that aid to Korean banks in 1997-1998 ended up being channeled to distressed chaebol). Thus, the central goal of bank bailout policy is to design bank assistance to meet the legitimate goals of mitigating credit supply contraction for value-creating bank-dependent borrowers, while minimizing the potential abuse of assistance.

In this paper, we take it for granted that domestic banking systems will be helped, even if, from the narrow economic standpoint, the likely costs of such assistance exceed the likely benefits. To emphasize the importance of combining aid with proper incentives for banks, however, it is worth pausing a moment to consider how costly assistance to banks can be.

There have been over one hundred cases of banking system crises worldwide over the past two decades (where a crisis is defined as losses to insolvent banks that exceed one percent of GDP – see Beim and Calomiris 2001, Chapter 7). The direct costs of bank bailouts are often above 20% of GDP and above 30% of GDP in the recent Asian crises countries of Thailand, Korea, and Indonesia. Estimated resolution costs in Japan are harder to estimate, but likely will exceed 20% of GDP. While that cost represents a transfer of resources from taxpayers to bank claimants, rather than a loss to society as a whole, there are significant social losses associated with such an enormous transfer. First,

the fiscal consequences of having to finance that transfer are disastrous, and often result in substantial tax increases and severe currency depreciation, both of which are highly distortionary. Furthermore, there are additional economic costs from foregone output in the wake of the economic collapse that accompanies financial crises, and there are additional deadweight costs from continuing to support inefficient, value-destroying firms via the lifelines that distressed banks provide to distressed borrowers.

The magnitude of the transfers that accompany current day bailouts is staggering in comparison to historical experience. Waves of bank insolvency used to be far less frequent and far less costly to resolve. The cost of bailing out all the insolvent U.S. banks during the Great Depression would have been roughly 3% of GDP. From 1870-1913, there were seven major episodes of banking system insolvency worldwide (defining major episodes as producing negative bank net worth in excess of 1% of GDP), and only two of those produced situations where the negative net worth of insolvent banks exceeded 5% of GDP; in both of those cases, bank losses did not exceed 10% of GDP (Calomiris 2001).

The implication is clear: safety nets themselves, through their effects on bank behavior have been a significant contributor to the cost of resolving bank distress (Demirguc-Kunt and Detragiache 2000, Demirguc-Kunt and Huizinga 2000, Barth, Caprio, and Levine 2001). And it is worth reiterating that one of the supposed benefits of safety net assistance – limiting the reduction in bank credit supply in the wake of macroeconomic shocks – is usually illusory: Financial crises produce the worst credit crunches because "resurrection strategies" by banks magnify initial bank losses from macroeconomic shocks and ultimately reduce credit supply accordingly. Once banking

systems collapse under the weight of safety net-induced risk taking, the ultimate credit crunch is deeper and lasts longer (Caprio and Klingabiel 1996a, 1996b, Cull, Senbet and Sorge 2000, Honahan and Klingabiel 2000, Boyd, Gomis, Kwak, and Smith 2000).

Important Policy Choices

The costs of government assistance to banks depend on the way rescues are managed. The central questions of policy relevance do not revolve around whether to bail out banks, but rather around the choice of which banks to rescue and the means for doing so. If a rescue is handled skillfully, the cost can be much reduced.

First, bank rescues need not involve all banks. While new foreign entrants may not be a perfect substitute for existing domestic franchises from the standpoint of allocating loans to small and medium-sized businesses, that does not imply that all, or even most, domestic banks are worth saving. If government can find a way to identify and target relatively solvent banks with relatively high franchise values (a task made easier by the fact that relatively healthy banks also tend to be the ones with higher franchise values), and if it is politically feasible to limit assistance to those banks, then the costs of a partial bailout could be much less than that of a system-wide bailout.

Second, to the extent that the rescue mechanism chosen to assist the designated banks can be designed to minimize moral-hazard, the risk of continuing bank weakness (and future government expenses on bailouts) can also be reduced substantially. For example, conditions that limit the ability or incentive of banks to channel credit inefficiently or to take on high risk after receiving infusions of government capital can make assistance much more cost-effective.

The history of assistance to U.S. banks during the Great Depression illustrates these themes well, and can provide useful lessons for Asia today. Section II reviews the history of bank distress and assistance in the United States during the 1930s and examines in detail the role of the Reconstruction Finance Corporation – how it targeted banks, the effects of its assistance, the cost of providing assistance, and the way that it tried to align bank incentives to protect against abuse of government protection. Section III contrasts that experience with the recent government loans and preferred stock purchases for Japanese banks. Section IV concludes with some specific policy recommendations. We argue that combining subsidized preferred stock purchases with mandatory matching contributions of common stock, limits on bank dividend payments, and reforms of bank capital regulation that credibly incorporate market discipline into the regulatory process would increase the benefits and reduce the costs of government support for banks.

II. U.S. Bank Distress During the Great Depression

The banking crisis in the United States during the Great Depression provides a useful historical example of how policy makers can balance the opposing needs of protecting banks and maintaining market discipline over banks. The authorities managed to mitigate the loss of capital in the banking system and its effects on credit supply, while retaining market forces that continued to reward relatively prudent banks.

In this section, we begin with a review of the severity of the shocks banks faced and the extent of bank distress. We show how market discipline transformed the contraction in bank capital into a contraction in credit supply. At the same time, there

was an increase in the illiquidity of risky assets as the result of protracted bank asset liquidation.

We then consider the response of the Reconstruction Finance Corporation to banking system distress. Specifically, we present evidence on how the RFC combined assistance with conditions for receiving assistance in a way that preserved market discipline and protected the government from excessive exposure to loss.

The Severity of Bank Distress During the Depression

Measured by bank failure rates, depositor loss rates, or the extent of bank credit contraction, the Great Depression was, and remains, the largest and most persistent shock suffered by the U.S. banking system since (at least) the 1830s. Figure 1 presents data on bank suspensions, monthly, from 1921-1936, and Figure 2 reports corresponding data on the deposits of suspended banks. As these figures show, banking collapse during the Great Depression was not a single event, but rather several waves of bank distress. As Wicker (1996) and Calomiris and Mason (2003) show, these waves of bank failures reflected fundamental shocks that were often region- and bank-specific – reflecting region-specific shocks to income and bank-specific investment and risk management choices. Contrary to the view espoused by Friedman and Schwartz (1963), which saw the waves of bank failures as the result of autonomous waves of panic in the financial system unrelated to prior fundamental disturbances, Calomiris and Mason (2003) find that when one disaggregates by region and bank, it is possible to link prior local and national shocks to subsequent bank failures. Calomiris and Mason (2003) find that autonomous sources of bank failure (resulting either from "illiquidity crises" or failure "contagion")

were not important prior to January-March 1933 (at the trough of the Depression); thus, bank failures for most of the Depression period (1929-1932) reflected a similar process to that of bank failure during previous economic downturns.

As during previous periods of national depression or regional agricultural distress (e.g., the 1890s and the 1920s), the United States suffered larger numbers of bank failures than countries experiencing comparable shocks. For example, Canada experienced few bank failures in the 1930s (Haubrich 1990). The primary reason that the United States suffered unusual rates of bank failure in response to shocks was the peculiar U.S. "unit banking" system – that is, regulatory limits on bank branching that limited bank opportunities to diversify their loan portfolios across locations (Calomiris 2000).

The consequences of bank distress for credit supply were large and protracted, lasting several years beyond the March 1933 trough of the Depression, as noted by Fisher (1933) and Bernanke (1983). Figures 3 and 4 shows the synchronous contraction in bank capital and bank lending, expressed either as aggregates or as ratios to total assets.

Table 1 measures the extent of depositor losses during the period 1921-1942. During the pre-Depression era, losses to depositors in failed banks during the pre-Depression era averaged roughly 5%. In contrast, losses suffered by depositors during the Depression were several times larger. Since the 1860s (the period for which data are available), the ratio of negative net worth of banks relative to GDP never exceeded one tenth of one percent of GDP (which it reached in 1893). The combination of the high failure rate and high depositor loss rate during the Depression produced a loss rate on total deposits in excess of 2% in 1933, and a loss rate relative to GDP of roughly 3% for

the period 1929-1933 (measured as the ratio of total depositor losses relative to average GDP, for the period 1930-1933).

The Role of Market Discipline in Limiting Bank Distress

Although these losses were large relative to previous U.S. experience, as we noted above, they are quite small relative to the experiences of many countries today, including many cases of countries experiencing much milder shocks than the economic collapse of the Great Depression. The low loss rates of historical banking systems, including that of the United States in the 1930s, reflected the presence of market discipline. Calomiris and Wilson (2003) show that depositors of banks (and to a lesser extent, their minority stockholders) required banks to hold capital commensurate with their portfolio risk, effectively requiring banks to target low levels of default risk. Banks that suffered losses on their investments were required to find ways to either curtail their asset risk (cut credit) or increase capital (cut dividends) to restore their prior low risk of default. Those that failed to do so suffered deposit withdrawals, as funds flowed to lower risk banks and postal savings. When losses on investments were sufficiently sudden or large, banks that failed to restore market confidence were forced to close.

The existence of deposit market discipline does not imply that all or even most depositors were capable of judging bank balance sheet condition. Rather, as Calomiris and Kahn (1991) suggest, discipline was concentrated in the hands of a few depositors (often large depositors or interbank depositors) who had the wherewithal and the incentive to monitor bank condition and react to deterioration in that condition. Passive depositors could, of course, magnify the effects of withdrawals from monitoring

depositors by reacting with a lag to monitors' withdrawals or other publicly available signals of bank weakness (e.g., stock price declines, or newspaper accounts of bank condition, which were widely available).

This process of market discipline is visible in a variety of facts about bank failure and risk management. Table 2 reports the results of the "basic" bank survival model from Calomiris and Mason (2003). The coefficients in Table 2 – derived from a model of bank survival during the period 1930-1932 – show the effects of variation in bank or county characteristics (which are observed periodically) on the predicted survival duration of banks. As Table 2 shows, banks with lower net worth relative to assets, or with higher portfolio risk tended to be less likely to survive, ceteris paribus. Portfolio risk is measured here by bank size (smaller banks tend to be less diversified), and by asset composition (riskier banks have higher proportions of non-cash assets, higher proportions of risky "ineligible" loans, and higher holdings of dispossessed real estate). Other variables related to the location of the bank (including county unemployment or reliance on crop income) are also important determinants of bank distress.

Interestingly, Table 2 shows that liability mix is also important for predicting bank survival, a result that echoes similar findings from many other studies of U.S. bank failures in the 1920s and 1930s (Calomiris and Mason 1997). Calomiris and Mason (2003) interpret the predictive power of liability mix as reflecting the fact that banks that relied heavily on interbank deposits and bills payable for their funding had been rationed from the consumer deposit market because of their higher than average probability of default.

Calomiris and Wilson (2003) model the "capital crunch" phenomenon – the tendency of falling bank capital (due to loan losses) to produce declines in subsequent bank loan supply – and connect that phenomenon to market discipline by depositors. They argue that a bank credit crunch requires two key assumptions: "risk-intolerant" deposits and adverse-selection costs of raising new equity, both of which are the natural result of bank specialization in creating private information about borrowers. Depositor risk intolerance (a form of credit rationing in which depositors withdraw funds in reaction to increased default risk) depends on asymmetric information about the quality of the bank loan portfolio. Asymmetric information can motivate deposit rationing for two reasons: agency costs, as in Calomiris and Kahn 1991, or depositors' preferences for claims that are easily accepted in secondary markets, as in Gorton and Pennacchi 1990. Adverse-selection costs of raising equity are also a necessary ingredient to any market-driven capital crunch; without adverse-selection costs of raising equity, banks would typically prefer to respond to capital losses with new stock issues rather than with shrinking credit supply.

Tables 3-5 provide more direct evidence on the relationships among bank capital, loan losses, depositor discipline, and credit contraction from Calomiris and Wilson (2003) using a sample of publicly traded New York City banks for the period 1920-1940. As Table 3 shows, during the 1920s, as lending opportunities expanded and the economy remained relatively healthy, bank asset risk expanded alongside the market capital ratio. The growth in asset risk and capital ratios reflected substantial increases in banks' loan-to-asset ratios, and frequent bank stock offerings. With the exception of the post-recession year (1922), banks maintained constant and very low default risk during the

1920s, as measured by implied default premia on bank debt (derived from equity returns and balance sheet data, using the Black-Scholes model). In the wake of the loan losses of 1929-1933, bank default risk rose substantially. In order to reestablish low default risk in the face of declining capital, banks cut loans and accumulated cash to keep asset risk from rising. They also cut dividends to mitigate the decline in their capital ratios. As Table 3 shows, even as late as 1936 banks had not fully returned to their pre-1929 level of default risk. The recession of 1937-1938 again produced loan losses and further encouraged cuts in lending and dividends.

Table 4 reports the findings from an annual panel regression that examines the role of deposit rationing in encouraging banks to adopt this strategy. The dependent variable is individual bank deposit growth. Table 4 shows that banks with high default premia lost more deposits than other banks. Table 5 in an annual panel regression shows how banks cut dividends in response to capital scarcity. Banks with higher default risk tended to cut dividends more. Banks with higher bid-ask spreads (where the bid-ask spread is expressed as a percentage of stock value) also tended to cut dividends by more. Calomiris and Wilson (2003) use the bid-ask spread as a proxy for high adverse-selection costs of raising capital. They interpret the negative coefficient on the bid-ask spread in Table 5 as indicating a precautionary demand for preserving capital by banks that knew they faced high costs of raising capital if they were forced to do so.

The evidence in Tables 2-5 indicates that during the Great Depression U.S. banks were subject to market discipline, which required them to respond to loan losses with reduced lending and dividends. Market discipline was able to operate on banks in the 1930s because government assistance to banks was limited, and thus insolvent banks

were not protected from market discipline by the various forms of government assistance that banks received. Assistance during the 1930s included loans from the Fed, loans and preferred stock purchases from the Reconstruction Finance Corporation (RFC), and federal deposit insurance on small deposits. Deposit insurance was limited to small deposits (see Calomiris and White 1994), and banks that were insolvent in 1933 were not permitted to qualify for deposit insurance in 1934. And, as we will discuss in detail below, loans and preferred stock were supplied in a way that limited the potential abuse of such assistance.

In today's world of expanded safety nets and generous bailouts – as, for example, in Japan – credit crunches can (and should) still occur, but typically depend on regulatory, rather than market, discipline to link bank losses to contractions in risk. The creation of a bank safety net makes it necessary to impose risk-based capital regulation to protect against abuse of government protection. Risk-based capital regulation seeks to mimic market discipline by measuring asset risk (e.g., loan default risk and interest rate risk) and linking capital requirements to the level of bank risk.

Although this approach is generally not fully effective, and has been the subject of much critical examination (Calomiris 1997, Shadow Financial Regulatory Committee 2000, Barth, Caprio and Levine 2001), it can serve to limit at least some means of bank risk taking. For example, Baer and McElravey (1993) examined U.S. bank asset growth in the 1980s (under the new regime of capital regulation and enforcement that was enacted following the loan losses of the post-1986 period). They and others have found that bank asset growth was closely related to the adequacy of regulatory capital. Banks with low capital tended to grow the slowest.

Asset or loan growth, however, do not measure overall bank risk. Others have found substantial evidence that true default risk may be high even when banks reduce their loans to comply with risk-based capital standards. Thus, unlike market discipline (which evaluates the overall riskiness of the bank), regulatory discipline based on rules of thumb that measure bank risk will tend to invite "risk arbitrage" by regulated banks (the search for asset positions whose risks are underestimated by regulatory capital standards). We return to this problem in our discussion of Japan in Section III below, and in Section IV's discussion of policy options.

The Cumulative Effects of Banking Distress on Illiquid Asset Markets

Although market discipline was present in the 1930s, and insolvent banks were allowed to fail, the removal of bank assets from bankers' control did not imply the speedy resolution of borrowers' distress. Non-performing loans of insolvent banks were not liquidated quickly during the Depression. As in many Asian countries today, as the stock of failed banks' loans accumulated, the speed of loan resolution slowed. This loan resolution backlog effect is analyzed by Anari, Kolari, and Mason (2002). They find that this measure of financial sector distress is a better forecaster of economic activity, and a better explanatory variable for the persistence of output decline during the Depression, than previously used measures of financial sector distress.

Figure 5 plots the cumulative "stock" of outstanding (unpaid) deposits in failed national banks over time, their measure of the stock of unresolved bank assets. The authors estimate this quantity using data on the speed of liquidations by receivers and conservators of failed banks. Uninsured depositors were paid on a pro rata basis as the

asset liquidation of their failed bank proceeded. The average liquidation time for national banks ran a little more than six years.

Anari, Kolari, and Mason cite numerous qualitative sources that saw the slow pace of asset liquidation as a source of depositor illiquidity and reduced consumption. Mason (2002) suggests that low liquidation speed was the result of concerns about the real option forgone by selling into a liquidity-depressed market. Observers saw the backlog of unsold assets as depressing investment; the vast supply of property put up for sale depressed property values – which contributed to the unprecedented losses suffered by depositors – and produced a form of gridlock in local markets. Buyers lacked liquidity and sellers trying to realize the full value of assets were reluctant to sell at prices that were perceived as containing a hefty illiquidity discount.

The important implication of this research is that system-wide bank failures pose special costs to society, not just because of the loss of lending capacity by banks that have lost capital, but additionally, because of the effects of bank asset liquidation on consumer liquidity and the accentuated liquidity premium in property markets. It follows that an additional benefit of assistance to banks, and counter-cyclical macroeconomic policy, during a Depression is their positive effect on the liquidity of bank assets and liabilities.

The Policy Response to Financial Sector Distress During the Depression

To understand the way central bankers and government officials responded to the Depression one must be familiar with the histories of previous business cycles, which had produced certain policy rules, and with the ways in which the shocks of the 1930s

differed from those of earlier business cycles. Of central relevance was the fact that, prior to the interwar period, the price process under the classical gold standard tended to be mean-reverting. As Eichengreen (1992) and Temin (1989) have noted, the establishment of the interwar gold exchange standard suffered from a long-run deflationary bias which was aggravated by the failure of coordination among central banks in response to shocks to global liquidity.

As more and more countries began to return to gold in the mid-1920s, and as income growth further increased the demand for gold, international imbalances produced contractionary monetary policy in some countries (in keeping with the so-called "rules of the game" for central banks under the gold standard), but that contraction was not offset by appropriate expansion in other countries. World War I had undermined the ability of the major countries to coordinate policy in response to this global deflationary shock. Instead of working together to expand the global supply of money, central banks scrambled for gold and shrank the world money supply, thus driving the price level down and producing a global debt deflation.

The Fed was a relatively new institution as of 1929. It developed an approach to counter-cyclical monetary policy during the 1920s that reacted to interest rates, free reserves, and gold flows. Those policy reaction rules of thumb worked reasonably well in the 1920s, but aggravated the contraction in monetary policy in the 1930s (Wheelock 1991, Calomiris and Wheelock 1998). In that deflationary environment, contrary to the Fed's interpretation, low nominal interest rates and high reserve holdings did not imply loose monetary conditions.

The Fed's role as a lender of last resort was ill-defined. The Federal Reserve Act contemplated the role of the Fed as primarily influencing the seasonal availability of reserves, not giving assistance to improve individual banks' chances of survival, and certainly not bailing out insolvent banks. And because the previous macroeconomic environment had never witnessed the like of the monetary policy-induced collapse of the 1930s, the American experience with banking crises had never provided any motive for interventionist policies to prop up banks. Banking panics in 1857, 1873, 1884, 1890, 1893, 1896, and 1907 were short-lived moments of confusion about the incidence of loss, and resulted in few bank failures (Calomiris and Gorton 1991). They were very mild affairs compared to the bank failure waves of the 1930s. Moreover, bank failures in agricultural areas and nationwide bank panics were understood to be closely linked to the fragmented unit banking system; rapid bank industry consolidation during the 1920s seemed to point toward a more stable future.

The bank failures of the 1920s were severe in some agricultural areas, but were directly linked to the post-World War I collapse of prices. That, along with the fact that agricultural states that had enacted deposit insurance in the 1910s and 1920s experienced the worst bank failure waves in the 1920s, led policy makers to view efforts to prop up banks as counter-productive. Deposit insurance had been a disastrous policy when tried at the state level, and the experience was fresh in the minds of policy makers in the late 1920s. The eight state deposit insurance systems lay in ruins at that time, and were clearly and properly understood by observers (including President Roosevelt, who opposed deposit insurance) as examples of what happens to banking systems that relax the discipline of the marketplace (Calomiris 1989, 1990, Calomiris and White 1994).

The banking collapse of the 1930s, however, was simply too severe and too widespread to be ignored, and politicians found in the severity of banking collapse new opportunities. For Henry Steagall, the Depression offered the chance to pass a long-dormant proposal for federal deposit insurance (which had been understood for fifty years to be special interest legislation for small agricultural banks). For Carter Glass, the Depression provided the opportunity to push through his decades-long quest to separate commercial banks from capital markets by fostering the now discredited view that the mixing of commercial and investment banking had caused banks to collapse during the Depression (White 1986, Calomiris and White 1994).

Political opportunism was not the only reason for intervention in the landmark Banking Act of 1933. Banks were collapsing as never before, and even surviving banks were slashing credit. President Hoover's initial reaction to bank collapse in 1930-1932 was understandably reluctant and cautious about federal assistance to distressed banks. By January 1933, however, the financial system was in free fall. February and March saw most states declaring banking holidays to avoid the runs that were bringing so many banks down so quickly. The Fed, and the RFC, both of which had been making collateralized loans to banks, were criticized for failing to provide adequate assistance.

And so, in March 1933, there was a sudden shift: a national bank holiday was enacted, federal deposit insurance (for small deposit accounts) was passed, and the RFC was authorized to purchase preferred stock in banks and other enterprises. Suspended banks would be examined; those that were solvent would be permitted to reopen and join the FDIC. Some would be nudged to solvency by the RFC, if necessary. Deeply insolvent banks would be shut down. Perhaps even more importantly, President Roosevelt took the

country off of the gold standard. Deflation, and deflationary expectations, came to a halt. Industrial production immediately began to recover. That same pattern of immediate recovery was enjoyed by other countries that abandoned the gold standard in 1931, as Eichengreen and Sachs (1985) show.

The Operation of the RFC

Initially (from its founding in February 1932 until July 21, 1932) the RFC operated under the same conservative lending rules as the Fed. After the ouster of its Chairman (who also served as Chairman of the Federal Reserve Board) in July, RFC collateral standards were relaxed. Lending to banks and other firms grew thereafter. Beginning in March 1933, the RFC's preferred stock purchase program dominated its assistance to banks, as shown in Table 6, and Figures 6 and 7.

Part of the shift to preferred stock reflected the widespread view that secured loans did not stabilize weak banks (James 1938, p. 1044). Secured loans represented a senior claim on bank assets relative to deposits, and thus effectively worsened the default risk faced by junior depositors. Olson (1977, p. 154) writes that: "High collateral requirements forced [banks] to isolate their most liquid assets as security for RFC loans. In April 1932, for example, the Reconstruction Finance Corporation loaned the Reno National Bank over $1,100,000, but in the process took as collateral over $3,000,000 of the bank's best securities. This in itself left the bank unable to meet any future emergency demands for funds by depositors." In Olson's (1972, p. 177) view, loans from "…the RFC helped only those basically sound enterprises which needed temporary liquidity." It

was not a means of reducing default risk for a capital-impaired bank; thus, it provided little relief to banks from default risk-intolerant market discipline.

Preferred stock, in contrast, was junior to bank deposits, and was not secured by high-quality bank assets. Thus, it offered a means of lowering deposit default risk and thus insulating risky banks from the threat of deposit withdrawal. By March 1934 the RFC had purchased preferred stock in nearly half the commercial banks in the United States. By June 1935, these RFC investments made up more than one third of the outstanding capital of the banking system (Olson 1988, p. 82).

Mason (1996, 2001a) examines the relative effectiveness of loans and preferred stock purchases by the RFC, after controlling for differences in the characteristics of banks receiving both kinds of assistance. As Table 7 and Figure 8 show, using a model of bank failure risk to compute *exogenous* probabilities of default, Mason found little difference in the exogenous default risk of banks receiving loans vs. those receiving preferred stock assistance. Table 8 examines the effects of the two types of assistance on the probability of bank failure, after controlling for differences in exogenous characteristics using a Heckman correction. According to these results, receiving a loan from the RFC actually raised the probability of bank failure, while receiving preferred stock assistance reduced the probability of failure.

Although this evidence indicates that preferred stock purchases were effective in insulating banks from deposit withdrawal, it is important to emphasize that the RFC preferred stock program was successful because it was neither too conservative nor too liberal with its assistance. The RFC would have made little difference if it had only targeted the lowest risk banks for its subsidies. As Figure 8 and Table 7 show, that was

not the case. At the same time, the RFC did not provide assistance to deeply insolvent banks, nor would its assistance have been a sufficient subsidy to bail out such banks. Moreover, the conditions attached to RFC preferred stock purchases served to limit bank risk transference to the RFC, which ensured that preferred stock issuers had incentives to limit risk. Thus capital-impaired (but not deeply insolvent) banks were offered protection from market discipline essentially on condition that they did not abuse such protection by transferring too much risk to the government.

How did RFC conditionality ensure this "happy medium" of controlled risk? First, it offered limited subsidies to banks, and avoided trying to save "basket cases" (see RFC Circular #1, 1932). The RFC required banks to submit their regulatory examinations for RFC inspection, and banks that were judged as hopelessly insolvent were rejected. Further evidence of the selective nature of assistance is provided in Table 9, which shows that dividend rates on RFC preferred stock were typically less than one percent below those earned in the marketplace, and were above market rates on short-term business loans.

In part, the limited subsidy offered by the RFC reflected its independent corporate status. The RFC was a separately capitalized institution – essentially, a government-sponsored enterprise, not a budget line for the executive branch. Table 10 reviews the financing structure of the RFC from its inception through the end of 1937. Its financial independence led its chief executive, Jesse Jones, to see a need to make the RFC profitable on a cash flow basis, and he proudly proclaimed that it never saw a year of negative profit under his direction. That constraint, obviously, also limited the potential size of the subsidy the RFC could offer. For this very limited subsidy to have made a

difference for bank failure risk (as Table 8 shows it did), recipients could not have been deeply insolvent.

Second, many restrictions on recipients of RFC assistance ensured that banks would not take advantage of RFC aid by increasing their default risk. The RFC was intended to protect banks from a dramatic decline in their capital, but not to encourage capital-impaired banks from imprudently expanding their portfolio risk. Indeed, the RFC went to great pains to impose conditions that substituted for depositor discipline on bank risk taking.

Those conditions included seniority of RFC dividends to all other stock dividends and voting rights that effectively gave the RFC the ability to direct institutions toward solvency and profitability and limit excessive risk. In many instances, the RFC used its control rights to replace bank officers and significantly alter business practices (Upham and Lamke 1934, p. 234, Cho 1953, pp. 29-34, Commercial and Financial Chronicle 1933, pp. 1625-6.).

The RFC preserved its seniority of claim on bank earnings by limiting common stock dividend payments. Common stock dividends were strictly limited to a specified maximum and remaining earnings were devoted to a preferred stock retirement fund. Some firms avoided applying for RFC preferred stock purchases out of reluctance to submit themselves to RFC authority.

Finally, although there were numerous attempts by politicians to influence RFC decisions, Mason (2001b) suggests that the budgetary structure of the RFC and its decentralized process of decision making insulated the RFC from political manipulation. Field offices were given a large degree of autonomy over valuation of collateral and other

judgmental decisions, but were held accountable to the central office for having made errors that impacted RFC earnings (Delaney 1954, pp. 47-8). Mason (1996) shows that objective characteristics of recipients, including their financial condition, their economic importance within their regions, and other reasonable economic criteria influenced the RFC's choice of recipients; purely political variables (e.g., locations connected to prominent politicians) did not add explanatory power to models explaining the allocation of RFC assistance.

As Figure 9 and Table 11 show, bank dividends fell dramatically from 1929 to 1934. To what extent was this decline in dividends, and other measures to limit bank default risk, the result of RFC conditionality? Tables 12 and 13 examine the extent to which the conditions attached to RFC assistance made a difference for the risk choices of recipient banks. Table 12 divides banks into those that received RFC preferred stock assistance between March 1933 and December 1934 and those that did not. Most of this assistance was provided in late 1933. Table 12 compares mean bank characteristics of recipients and non-recipients prior to, and subsequent to, preferred stock purchases. Clearly, preferred stock recipients (with average failure probabilities of 0.056) were much more at risk of failure as of 1933 than non-recipients (with average failure probabilities of 0.021). Recipients' probabilities of failure fell faster than non-recipients from 1933 to 1934, and that relative decline in risk reflected much greater reductions in dividend payout, much greater contraction of total assets in 1934, and less of a decline in capital-to-asset ratios.

Table 13 examines the role of preferred stock conditionality on bank choice of capital ratios and dividend payout more formally. Table 13A is a first-stage regression

predicting preferred stock assistance. Table 13B is the second-stage regression analyzing the effect of preferred stock assistance on banks' choices of dividends and capital ratios (using a Heckman correction to control for the endogeneity of the preferred stock assistance). The last two columns of Table 13B show that receiving preferred stock assistance significantly increases banks' capital ratios and reduces their dividend payout. These results confirm that banks that received preferred stock assistance were effectively constrained in the extent to which their stockholders could transfer risk to the RFC.

RFC preferred stock assistance was a way to help banks smooth the adjustment process toward low default risk. It insulated banks from the threat of sudden deposit withdrawal by reducing deposit default risk, but substituted RFC discipline for market discipline to ensure that banks adopted prudent long-run risk management and capital accumulation policies.

III. Recent Japanese Experience

The Japanese banking collapse of the 1990s occurred in a very different institutional context from that of the U.S. banking collapse of the Great Depression. The existence of implicit deposit insurance protection (which was made explicit in the 1990s) meant that Japanese bank depositors were little concerned about the potential loss of deposits placed in Japanese banks, and therefore, had scant incentive to exercise discipline on banks.

Additionally, Japanese banks have much closer relationships with affiliated firms than American banks have had traditionally, and Japanese banks own substantial equity positions in those firms. That complicates the valuation of Japanese bank loan holdings,

since banks may have special obligations or incentives to absorb loan losses in ways that are not transparent from an examination of balance sheet data. For example, Sheard (1989) argues that main banks provide implicit insurance to other creditors that participate in loans to their client firms. And there have been some recent claims that equity investments in Japanese banks by client firms may represent "fictitious capital" in the sense that bank borrowers may be encouraged to buy capital in exchange for continuing credit access (which amounts to banks lending money for the purpose of financing the purchase of bank stock).

Furthermore, reflecting the absence of market pressures on banks to provide informative signals to private debtholders, Japanese accounting practices today are quite different from American banks' accounting practices in the 1930s, and much less informative of actual bank condition. For all these reasons, the value of Japanese bank investments (loans, stocks, and other assets) reported on balance sheets provides a poorer indication of true value than do American bank accounts of the 1930s.

Indeed, the broad range of recent estimates of the amount of bad Japanese bank loans and the likely recovery rates on those loans illustrate how difficult it is to glean reality from reported statistics. As of the end of May 2001, the official estimate of outstanding financial sector non-performing loans was Y34,000bn, but Goldman Sachs calculates that in the "worst-case scenario" non-performing loans could be as high as Y63,000. Bank insolvency and the extent of negative bank net worth in the U.S. during the 1930s were relatively easy to observe because market discipline forced insolvent banks to fail. In Japan, however, "zombie" banks (to use the expression coined by Ed Kane) can continue almost indefinitely, and it is very hard to measure their insolvency.

Another important difference between the U.S. Depression experience and the current Japanese context is the duration of bank distress, the seemingly endless waves of increasing bank loan losses that plague Japanese banks. By most accounts, Japanese banks have been inadequately capitalized for a decade, and many have been insolvent for more than five years.

Japanese bank loan write downs totaled Y10 trillion a year in both 1997 and 1998, when Japanese banks began to write down loan losses in earnest. In 1999, two of the most informed authorities on Japanese bank accounts and solvency, Takeo Hoshi and Hugh Patrick (2000, p. 20), thought that Japanese banks had turned a corner: "Late 1998 and early 1999 was a significant turning point. The 'crisis' in the banking system is finally over, though most banks still have substantial restructuring problems. Japan is now in the process of building a new financial system." Yet loan write downs in 1999 and 2000 were roughly Y4.5 trillion in each year. And despite these formidable write downs, Japanese bank losses have continued to grow, as new non-performing loans replace those that were previously written down.

This continuing growth in non-performing loans reflects new deterioration in asset values and deflationary monetary policy, as well as previously unrecognized earlier losses. After a decade of flat growth and shrinking asset prices, Japan is now seen by many observers as poised at the precipice of economic collapse. Japan, like the U.S. in the early 1930s, has been caught in a deflationary trap, albeit a much longer-lived one. Deflation weakens firms' and banks' balance sheets, producing further weakening of aggregate demand, and further deflation (Irving Fisher's debt-deflation cycle).

The combination of government protection and a deflationary environment also affects bank strategies toward loan liquidation. In the current environment, the backlog of unresolved loans and weak corporate and bank balance sheets have created a massive liquidity premium in asset pricing. Ten-year bonds yield 1.2% while stock prices and real estate prices continue to slip. Banks, particularly in a regime of government deposit insurance, have little incentive to hurry to liquidate the assets of their distressed borrowers, especially since banks are shareholders in many of these firms. Making matters worse is the historical absence of bankruptcy or liquidation procedures, which makes orderly liquidation even more challenging. Thus the backlog continues alongside continuing deflation and deepening loan losses.

Banks have received substantial assistance from the government. In addition to anemic early programs to purchase bad loans from banks – an initiative that has so far not produced much incentive for rational disposal of bad loans (see Packer 2000) – the government has offered financial assistance to banks twice, in March 1998 and March 1999. Table 14 summarizes the amounts and types of assistance, and the terms and conditions of that assistance. Like the RFC, the Japanese government began to offer assistance primarily in the form of loans and debt purchases, and subsequently came to rely almost exclusively on preferred stock purchases.

The new Prime Minister, Mr. Koizumi, promises painful structural reform of government expenditure policy, and talks of the need to accelerate bank loan write downs, which he says are the keys to rebuilding the Japanese economy. Some speculate that more preferred stock assistance will be forthcoming to help spur debt write downs. But nowhere in sight (given the current Bank of Japan leadership) is there a credible

commitment to ending deflationary monetary policy. Without that change, bank balance sheets will continue to deteriorate and banks will continue to postpone liquidation in the hope that they can profit from future improvements in macroeconomic circumstances (the "real option" incentive problem described in Mason 2002).

Regulatory Discipline a Substitute for Market Discipline?

Figures 10-11 provide a picture of bank capital and lending behavior that differs greatly from the patterns shown in Figures 3 and 4. The differences between Japanese lending behavior and that of the 1930s is even greater when one takes into account the understatement of Japanese capital losses during the early and mid-1990s. Japanese bank lending ratios grew substantially from 1995-1997 as Japanese bank capital ratios plummeted. The mid-1990s saw substantial increases in Japanese lending elsewhere in Asia, which some observers have characterized as a search for ways to increase loan risk in order to take full advantage of the implicit put option value of government protection. After 1997, bank losses were too large and too visible to continue the masquerade of denial, and international and domestic pressures came to bear on the Japanese government to recognize loan losses and to restrict bank lending accordingly.

Figure 12 tells a somewhat similar story through the window of the bank market-to-book value of equity ratio, weighted by bank asset size. The expansion of asset risk in 1996 boosted the value of bank capital (which incorporates the value of the implicit put option). Since 1997, the combination of loan losses and restrictions on bank lending have caused the ratio of the market-to-book value of equity to plummet.

That is not to say that banks have been effectively constrained by regulators in their pursuit of increased asset risk. In his forthcoming Columbia Business School dissertation, Nobu Hibara (2001) finds that regulatory capital standards have effectively linked bank loans to the total amount of book capital. Nevertheless, banks in the weakest condition (for whom the put option of government protection is most valuable) gravitate toward the lowest quality loans, and boost asset risk by increasing the riskiness of their loan portfolio (Cargill, Hutchison, and Ito 1998).

To what extent has government assistance in March 1998 and March 1999 been targeted to banks with the best franchises, and to what extent has it been linked to effective conditionality that limits banks' ability to transfer risk to the government? The evidence in Table 14 indicates that the Japanese government did not try to target assistance selectively. Virtually every bank of any significant size received preferred stock assistance. If anything, it appears that the weakest Japanese banks (Nippon Credit and LTCB) were the earliest (1998) recipients of preferred stock purchases. Due to the small sample of banks and the uncertain quality of the balance sheet data, we were not able to perform a satisfactory analysis of the differences in condition between banks that received preferred stock assistance and those that did not.

Figure 13 plots dividend payments by banks from 1993 to 2001. Interestingly, dividend payments fell dramatically in 1999, but then more than rebounded. Thus, as Japanese banks continued to experience rising loan losses and declines in capital, they kept sending much of the cash inflow that they received from the government in 1998 and 1999 to their shareholders. Clearly, this is at odds with the purpose of a preferred stock purchase program.

IV. Policy Implications

The essential point of our comparison of U.S. banks in the 1930s and Japanese banks in the 1990s is that, in the historical case, assistance to banks occurred within a context of market discipline, and the conditions attached to government assistance helped to strengthen market discipline. In the current Japanese case, in contrast, assistance was offered within the context of an absence of market discipline, and there is little evidence that conditions attached to assistance have encouraged banks to move toward effective long-run risk management. In part that failure reflects the relative extremity of Japanese bank distress, and in part, the lack of incentives of Japanese banks to limit the transference of risk to the government.

Is it possible, in the current protected environment, for government to find a way of providing a credible combination of financial assistance to banks and conditionality that limits the abuse of that assistance? We think it is possible to apply the lessons of the RFC to contemporary assistance programs.

Doing so requires the adoption of three related and mutually reinforcing means of limiting bank abuse of protection: (1) designing programs of assistance that are selective, and thus able to target financial assistance to banks that are worth preserving, (2) specifying clear quantifiable rules that limit access to preferred stock assistance, and tie assistance to effective risk management by recipient banks, and (3) enacting new ongoing capital regulation that establishes meaningful standards for risk-based capital.

With respect to selectivity, Calomiris (1998, 1999) suggests using a common stock issuance matching requirement to encourage the best banks to "self-select" to

participate in subsidized preferred stock purchases. That approach would attract capital-impaired but relatively healthy banks with high franchise values, but discourage deeply insolvent banks from applying for government subsidies. Those banks' stockholders would be unable to qualify for subsidized preferred stock purchases because they would be unable to find willing purchasers of new matching common stock offerings. The beauty of this self-selection mechanism is that it brings market judgements to bear on the allocation of scarce government funds. It does not require the government to pick and choose; the same preferred stock purchase program would be available to all banks, but not all would be able to participate.

Limits on common stock dividend payments, among other conditions attached to preferred stock purchases, are an obvious way to encourage banks to use the new lease on life granted by government protection to rebuild their capital, rather than to engage in strategies that maximize the option value of deposit insurance.

Emergency assistance to banks should be linked to a phasing in of credible capital regulation. Effective risk-based capital regulation would protect taxpayers' investments in bank preferred stock and limit taxpayer liability for insured deposits in rescued banks. It would also restore effective discipline on bank risk management in the future by eliminating incentives for risk arbitrage.

Effective capital regulation must provide a credible and flexible means to measure the riskiness of bank positions and the adequacy of bank capital. Thus, bank capital regulation must focus on ways to incorporate market signals about underlying bank risk into the regulatory process. Calomiris (1997, 1999) and Shadow Financial Regulatory Committee (2000) have argued that a subordinated debt requirement (which can be

structured to take account of the particular types of debt instruments that are available in each country) is an essential part of an effective capital requirement (see also Calomiris and Powell 2000). A minimum ratio of subordinated debt relative to bank assets would ensure that, on the margin, someone bears the default risk of bank debt. That would make banks care about limiting their default risk in order to maintain the requisite outstanding issues of subordinated debt. Furthermore, the observed market yield on subordinated debt would be of great value to regulators for measuring and enforcing capital adequacy standards. A visible public signal of bank health would provide supervisors with new information. Even more important, by making bank weakness publicly observable, it would promote greater accountability of supervisors and regulators and undermine the destructive phenomenon of regulatory "forbearance."

Of course, effective bank regulatory policy by itself cannot make a healthy banking system (see Cargill, Hutchison, and Ito 1997). Stable monetary and fiscal policy are necessary preconditions for healthy banks. In some countries, a lack of fiscal discipline makes banks prey to attacks on currency pegs. In other cases, including the United States in the early 1930s and Japan today, banking system recovery is dependent on bringing deflationary monetary policy to an end.

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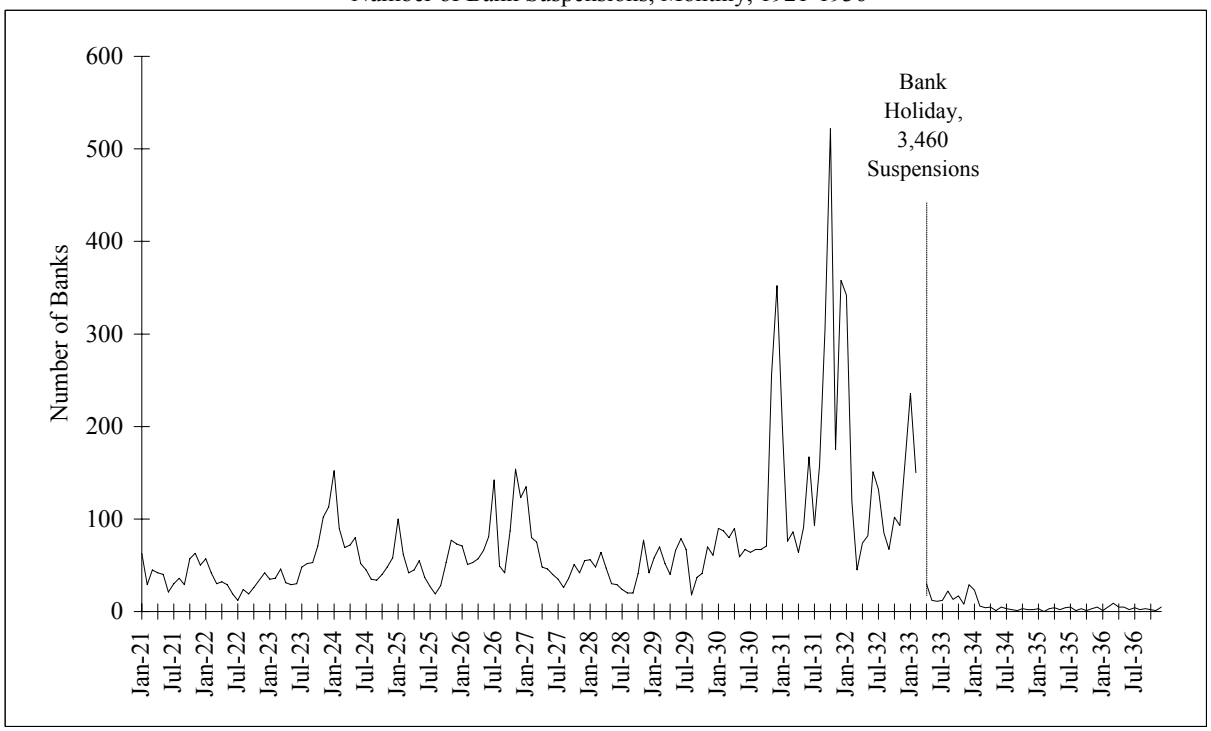
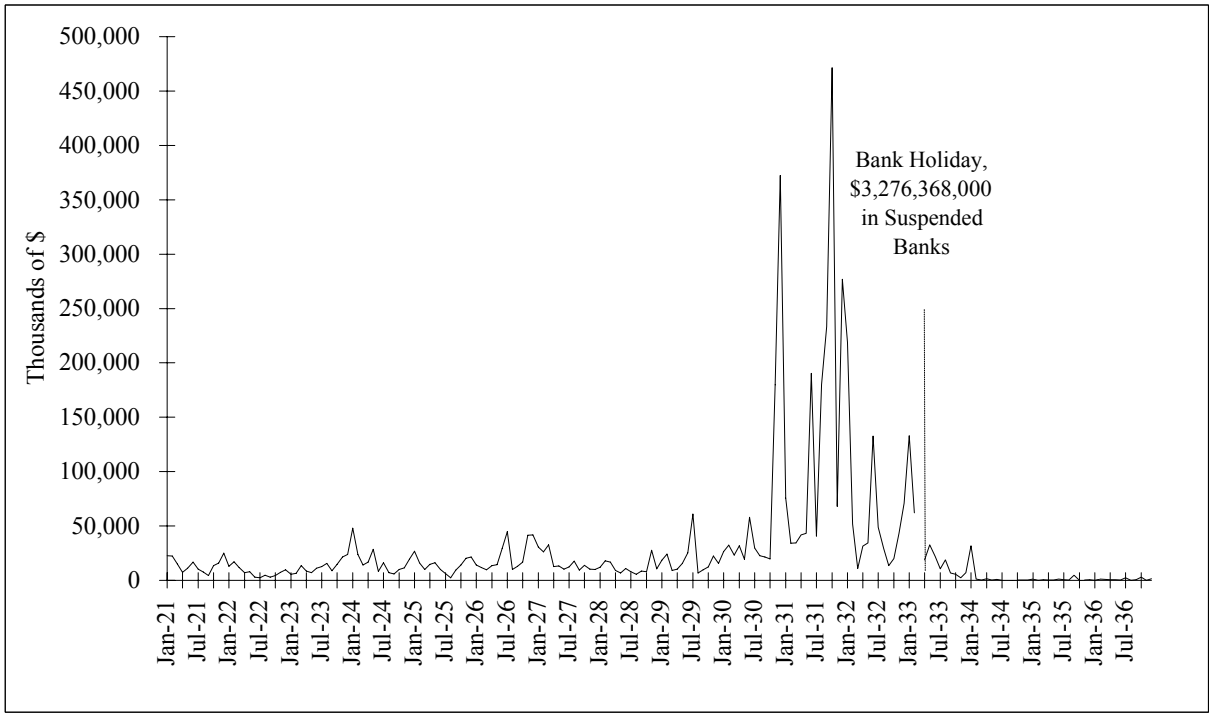
Figure 1
Number of Bank Suspensions, Monthly, 1921-1936



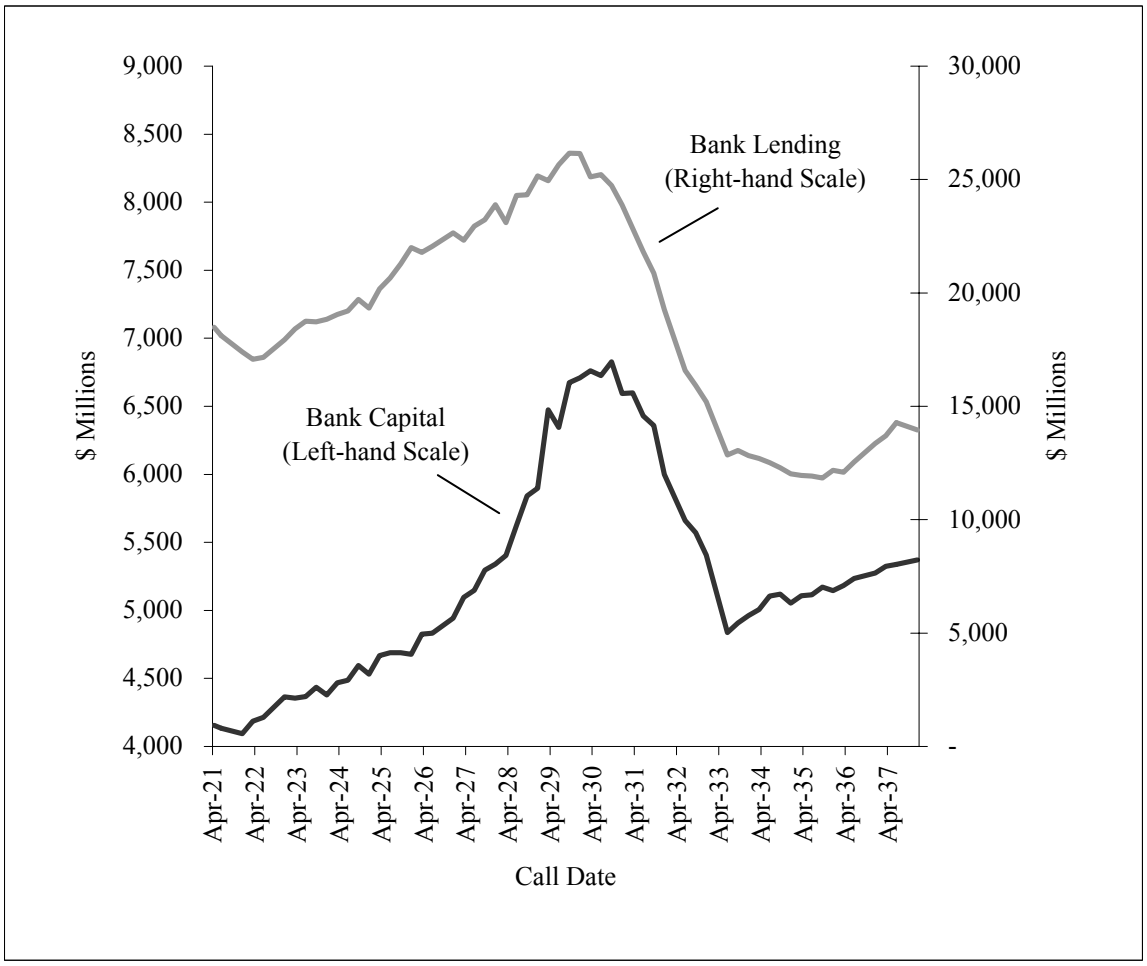
Source: Board of Governors of the Federal Reserve System. "Federal Reserve Bulletin," September 1937, p. 907.

Figure 2
Deposits in Suspended Banks, Monthly Flow, 1921-1936 (Thousands of $)



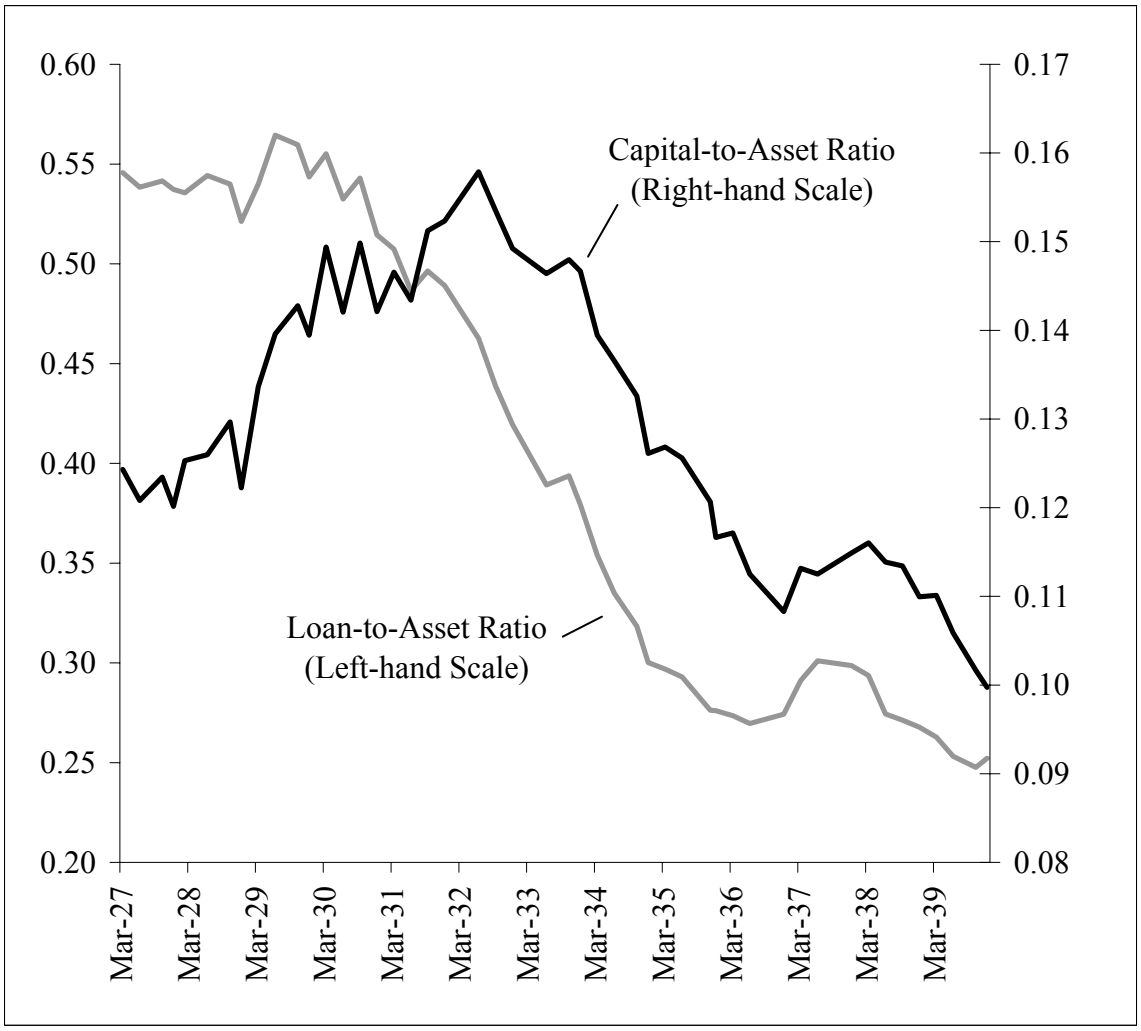
Source: Board of Governors of the Federal Reserve System. "Federal Reserve Bulletin," September 1937, p. 909.

Figure 3: Bank Capital and Bank Lending, 1921-1937



Source: Mason (2001b).

Figure 4: Capital-to-Asset and Loan-to-Asset Ratios, All Member Banks, 1927-1939 Call Dates



Source: Mason (2001b).

Table 1: Losses on Deposits in Suspended Banks, Annual, 1921-1942

Year	Number of Suspensions	Deposits ($ thousands)	Losses Borne by Depositors ($ thousands)	Losses Relative to Deposits in Suspended Banks (percent)	Losses Relative to Deposits in All Commercial Banks (percent)
Pre-FDIC:					
1921	506	172,806	59,967	34.70%	0.21%
1922	366	91,182	38,223	41.92%	0.13%
1923	646	149,601	62,142	41.54%	0.19%
1924	775	210,150	79,381	37.77%	0.23%
1925	617	166,937	60,799	36.42%	0.16%
1926	975	260,153	83,066	31.93%	0.21%
1927	669	199,332	60,681	30.44%	0.15%
1928	498	142,386	43,813	30.77%	0.10%
1929	659	230,643	76,659	33.24%	0.18%
1930	1,350	837,096	237,359	28.36%	0.57%
1931	2,293	1,690,232	390,476	23.10%	1.01%
1932	1,453	706,187	168,302	23.83%	0.57%
1933	4000*	3,596,708	540,396	15.02%	2.15%
Post-FDIC:					
1934	61	37,332	6,502	17.42%	0.0228%
1935	31	13,902	600	4.32%	0.0018%
1936	72	28,100	185	0.66%	0.0005%
1937	82	33,877	155	0.46%	0.0004%
1938	80	58,243	293	0.50%	0.0008%
1939	71	158,627	1,374	0.87%	0.0033%
1940	48	142,787	57	0.04%	0.0001%
1941	17	29,797	33	0.11%	0.0001%
1942	23	19,517	20	0.10%	0.0000%

*Includes banks suspended under Bank Holiday of March 1933.

Source: Friedman and Schwartz (1963), p. 438 and Authors' calculations.

Table 2: Survival Regression for Individual Fed Member Banks, Dependent Variable: Log Probability of Survival (Daily)
Full Sample of Fed Member Banks (Standard Errors in Parentheses)

Constant	6.044
	(0.283)
Log (Total Assets)	0.105
	(0.011)
State-Chartered Bank Indicator	0.136
	(0.031)
Log (Number of Branches)	-0.012
	(0.006)
Deposit Market Share of Bank	0.259
	(0.099)
Non-Cash Assets/Total Assets	-0.845
	(0.124)
Loans/Other Non-Cash Assets	-0.229
	(0.058)
Loans Eligible for Discount/Loans	0.115
	(0.054)
Losses on Assets and Trading/Assets	0.027
	(0.049)
Real Estate Owned/Non-Cash Assets	-3.415
	(0.331)
(Change in Bond Yield)x(Securities)	-0.247
	(0.239)
Net Worth/Assets	1.700
	(0.184)
Share of Demand Dep.+Due to Banks	-0.164
	(0.059)
Share of Deposits Due to Banks	-0.478
	(0.203)
Share of Assets Due From Banks	0.059
	(0.060)

(Cont'd)

Bills Payable+Rediscounts/Deposits	-1.490
	(0.146)
Private Bills Payable/Total Bills Payable	-0.126
	(0.050)
Interest Paid on Debt/Debt	-0.671
	(0.428)
Crop Inc/Crop+Man. Inc in Co. 1930	0.317
	(0.093)
Pasture Share of Farm Acres in Co. 1930	0.063
	(0.063)
Value of Grains/Crop Value in Co. 1930	-0.016
	(0.058)
Unemployment in Co. 1930	-1.204
	(0.315)
Percentage of Small Farms in Co. in 1930	-0.075
	(0.052)
(Investment)x(Crop Inc. Share) in Co. 1930	0.139
	(0.036)
State Bank Share in Co. in 1930	-0.288
	(0.047)
Lagged Value Building Permits in State	0.054
	(0.010)
Lagged Liab. Failed Bus./Income in State	-0.005
	(0.004)
Growth of Agric. Prices in Nation	-0.086
	(0.264)
Growth of Liab. Of Failed Bus. In Nation	-0.057
	(0.054)
Time	0.044
	(0.001)

No. Observations (Bank-Months)	269,683
Log Likelihood	-11,704

Source: Calomiris and Mason (2003).

Table 3 Financial Ratios and Default Risk for a Stable Sample of 12 New York City Banks

Year	MVE / BVE	E/A %	S_A	BID-ASK %	P	St.Dev. P	MVA
1920	1.23	16.73	2.33	2.53	0.00	0.0	306
1921	1.40	18.03	2.78	2.41	0.30	1.0	317
1922	1.51	18.40	4.27	2.09	7.75	26.5	363
1923	1.54	20.25	1.85	1.73	0.00	0.0	352
1924	1.89	21.70	3.72	1.78	0.00	0.0	434
1925	2.36	24.77	5.49	1.47	0.07	0.2	482
1926	2.27	26.10	2.88	1.26	0.00	0.0	530
1927	2.81	32.16	5.89	1.47	0.00	0.0	573
1928	3.82	34.16	8.28	2.58	0.08	0.2	858
1929	2.80	33.10	17.45	2.74	33.46	71.3	1045
1930	2.06	26.86	8.32	2.05	1.24	2.8	998
1931	1.02	18.54	8.03	4.18	9.18	10.4	739
1932	1.16	19.24	10.62	5.64	34.73	46.8	712
1933	0.88	15.02	6.10	5.41	41.69	112.5	641
1934	0.98	13.88	3.75	5.48	11.72	40.5	781
1935	1.34	16.96	6.32	4.41	23.09	75.4	907
1936	1.32	16.74	4.31	3.66	1.32	4.5	976
1937	0.94	12.95	3.74	4.28	0.60	1.0	863
1938	0.91	12.05	3.49	5.49	7.08	19.5	923
1939	1.39	14.70	5.55	5.63	0.50	1.6	1133
1940	0.93	9.55	2.01	6.71	2.14	7.4	1260

Source: Calomiris and Wilson (2003)

Note: The "stable sample" is defined as the sample of banks that are present in the data base throughout the period. The sample of banks is restricted to banks with available stock prices, as described in the Data Appendix. Data are measured at year end.

Variable Definitions:

MVE =	average market value of equity
BVE =	average book value of equity
E/A =	average market capital-to-asset ratio
S_A =	average asset volatility (standard deviation of asset returns)
BID-ASK =	average bid-ask spread as a percentage of share price
P-VALUE	average deposit default premium in basis points (1.00 = 1 basis point)
St. Dev. P	standard deviation of P
MVA	average market value of assets ($million)

Table 4 Deposit Growth Regressions
Dependent Variable: Annual Percentage Change in Deposits.
Standard Errors in Parentheses.
Asterisks indicate coefficients that are significant at below the 5% significance level.

Variable	OLS (1)	2SLS (2)	OLS (3)	2SLS (4)
Constant	9.528*	10.234*	12.526*	14.192*
	(1.038)	(1.093)	(2.415)	(2.547)
P	-0.0497*	-0.1166*	-0.0514*	-0.1293*
	(0.0136)	(0.0289)	(0.0137)	(0.0301)
Trust Co.			-4.476	-5.275
			(2.809)	(2.906)
Nat. Bank			-2.181	-2.995
			(2.998)	(3.094)
Lagged Ind. Prod.			-2.678	-6.689
			(6.594)	(6.915)
Adj. R-Sq.	0.021	0.026	0.021	0.028

Source: Calomiris and Wilson (2003).

Notes: P is the (end-of-year) deposit default premium, derived from the Black Scholes model, using stock returns and balance sheet data over the last six months of the year. Nat. Bank and Trust Co. are indicator variables for national banks and state trust companies. In the two-stage-least squares (2SLS) regressions, P is treated as an endogenous variable, and the list of instruments includes lagged values of the following variables: the market capital-to-asset ratio, the implied standard deviation of returns to assets, and growth in industrial production.

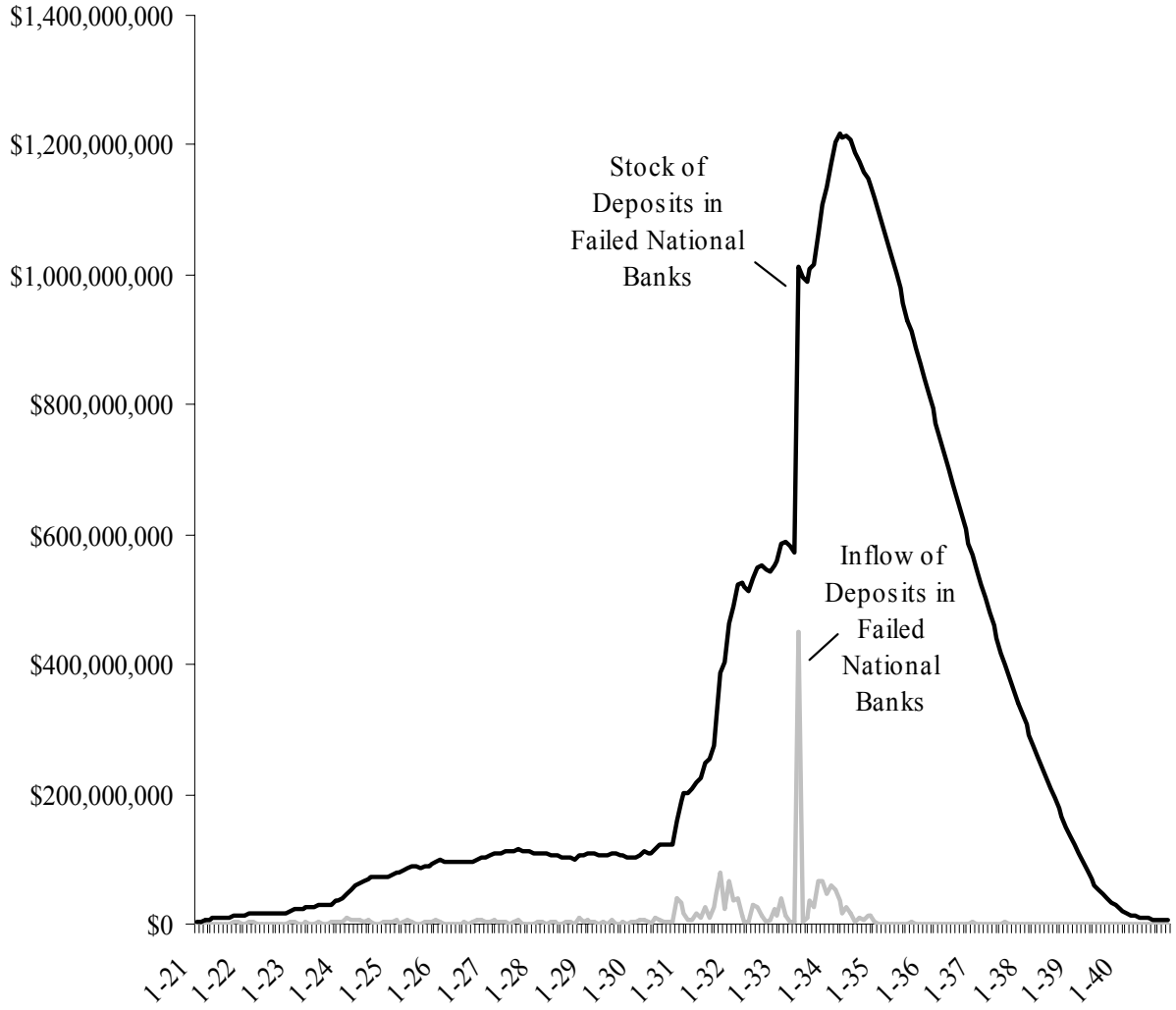
Table 5 Dividend Growth Regressions (1929-1939)
Dependent Variable is Annual Percentage Change in Dividends.
Standard Errors in Parentheses.
Asterisks indicate coefficients that are significant at below the 5% significance level.

Variable	(1)	(2)	(3)
Constant	3.77	6.75	7.85
	(4.13)	(8.91)	(9.21)
ba	-1.91*	-1.78*	-1.81*
	(0.65)	(0.67)	(0.75)
P	-0.115*	-0.131*	-0.131*
	(0.055)	(0.057)	(0.061)
ba_{-1}			-0.225
			(0.684)
P_{-1}			0.02
			(0.08)
year29		11.31	11.42
		(11.01)	(11.15)
year30		-22.31*	-22.38*
		(10.75)	(11.00)
year31		-1.16	-1.35
		(11.12)	(11.27)
year32		-9.70	-9.74
		(11.76)	(11.90)
year33		-11.12	-11.16
		(11.75)	(11.87)
year34		-2.12	-2.55
		(11.81)	(12.00)
year35		-2.86	-3.09
		(11.81)	(11.91)
year36		-0.74	-0.65
		(11.69)	(11.81)
year37		1.89	2.27
		(11.66)	(11.83)
year38		0.36	0.26
		(11.66)	(11.76)
Adj. R-Sq.	0.05	0.06	0.05

Source: Calomiris and Wilson (2003)

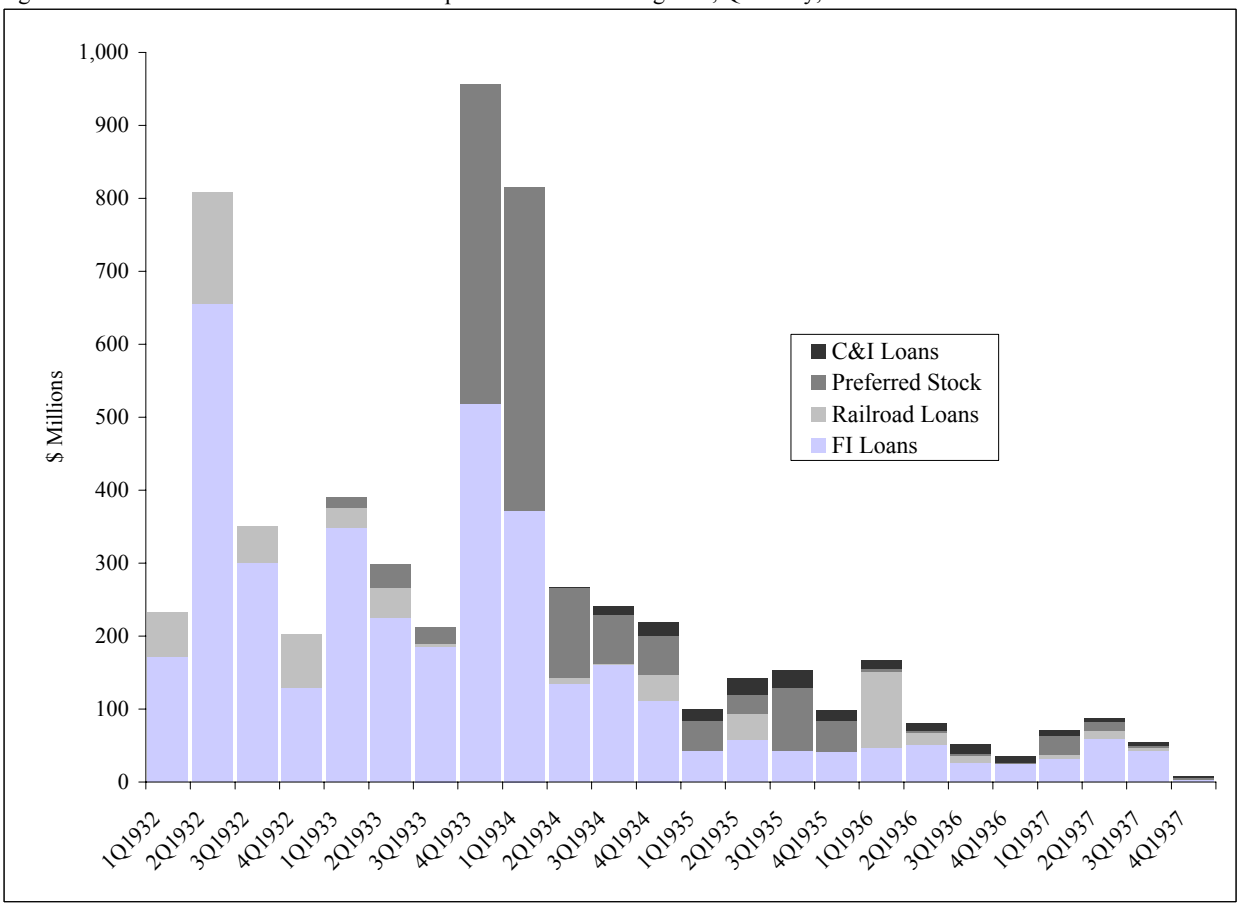
Notes: ba and P are the end-of-year bid-ask spread and deposit default premium. 1939 is the omitted year dummy.

Figure 5: Failed National Bank Deposit Flows and Stocks: Monthly, January 1921-December 1940.



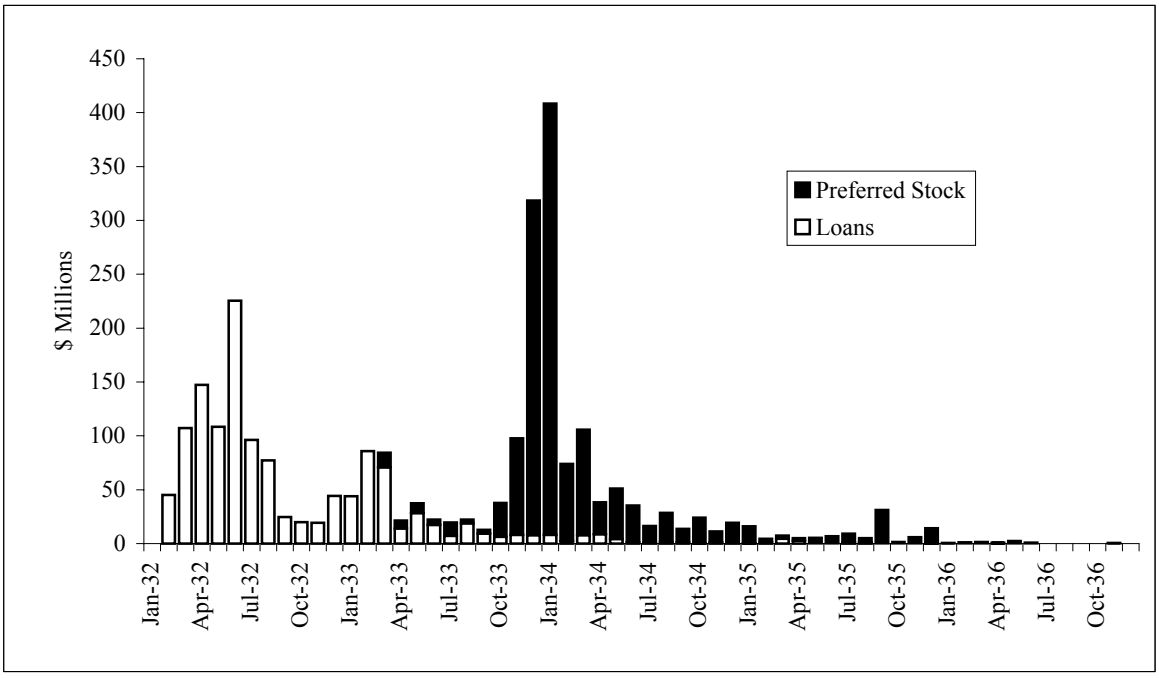
Source: Anari, Kolari, and Mason (2002).

Figure 6: RFC Authorizations Under Four Corporate Assistance Programs, Quarterly, 1932-1937



Source: Mason (2001b).

Figure 7: Amounts Authorized to Open Banks Under the RFC Loan and Preferred Stock Programs, Monthly, 1932 - 1936



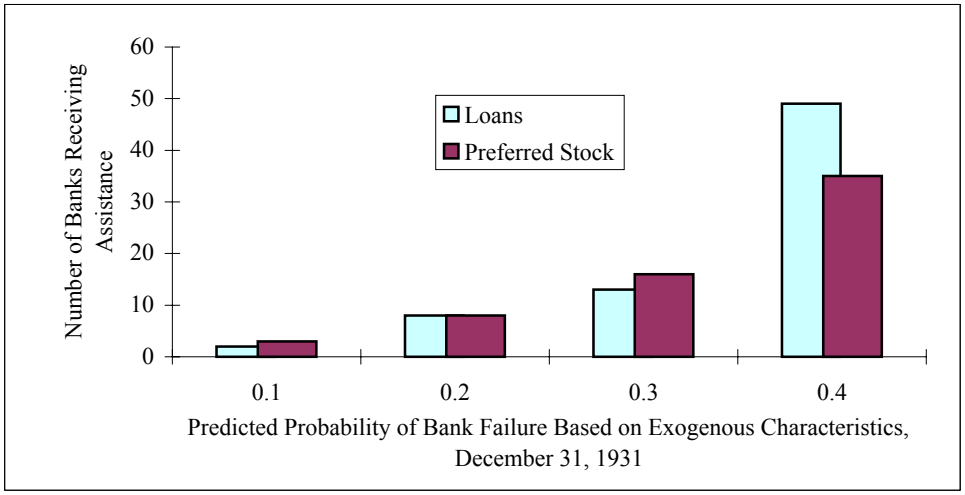
Source: Mason (2001b).

Note: Figure includes only loans to open banks. Does not include loans to receivers or those made on preferred stock. The RFC preferred stock program began in March 1933. Preferred stock includes investments made through notes and debentures to banks in states that prohibited preferred stock investments.

Table 6: Preferred Stock vs. Loans, February 1932-December 1936

	Preferred Stock		Notes and Debentures		Loans to All Banks		Loans to Receivers/Conservators	
Month	Number of Authorizations	Amount of Authorizations ($ millions)	Number of Authorizations	Amount of Authorizations ($ millions)	Number of Applications (Authorizations used where no data was available on applications)	Amount of Authorizations ($ millions)	Number of Authorizations	Amount of Authorizations ($ millions)
Jan-28	NA	NA	NA	NA	108	45.27	0	0.00
Feb-28	NA	NA	NA	NA	821	108.16	3	0.85
Mar-28	NA	NA	NA	NA	1296	153.08	104	5.86
Apr-28	NA	NA	NA	NA	1181	114.50	107	5.95
May-28	NA	NA	NA	NA	1172	236.43	85	11.09
Jun-28	NA	NA	NA	NA	1099	97.37	24	1.23
Jul-28	NA	NA	NA	NA	899	85.06	50	7.77
Aug-28	NA	NA	NA	NA	515	28.98	46	4.43
Sep-28	NA	NA	NA	NA	484	21.45	21	1.67
Oct-28	NA	NA	NA	NA	462	22.26	30	2.84
Nov-28	NA	NA	NA	NA	633	49.79	57	5.52
Dec-28	NA	NA	NA	NA	551	46.92	31	2.82
Jan-29	NA	NA	NA	NA	612	89.37	28	3.62
Feb-29	4	13.68	0	0.00	702	74.78	23	4.20
Mar-29	3	7.40	1	0.20	234	60.66	35	46.76
Apr-29	12	9.11	0	0.00	193	64.11	62	35.86
May-29	20	4.84	0	0.00	160	38.84	55	21.47
Jun-29	27	12.73	0	0.00	112	100.91	45	93.89
Jul-29	24	2.90	1	0.50	148	36.18	90	17.38
Aug-29	23	3.76	0	0.00	103	20.97	54	11.81
Sep-29	27	6.33	2	25.04	108	104.57	61	98.34
Oct-29	11	18.07	23	71.70	195	40.54	133	32.47
Nov-29	795	181.15	1250	129.72	358	109.03	298	101.45
Dec-29	1063	141.85	1128	258.54	447	53.06	419	45.14
Jan-30	200	53.50	107	18.25	356	36.67	339	34.34
Feb-30	269	74.96	101	23.28	289	55.48	260	47.86
Mar-30	171	25.71	71	4.05	279	47.61	269	39.06
Apr-30	279	41.56	56	5.43	161	32.70	147	28.62
May-30	234	27.61	45	6.61	138	19.08	124	17.87
Jun-30	158	12.74	55	2.73	111	40.04	95	39.08
Jul-30	127	11.22	41	15.91	90	104.73	84	103.32
Aug-30	106	10.62	26	1.87	63	11.74	60	10.56
Sep-30	95	20.78	38	2.90	97	26.53	90	26.22
Oct-30	71	9.20	19	1.03	97	20.85	90	19.70
Nov-30	152	16.29	24	1.85	133	22.78	124	21.52
Dec-30	122	13.69	28	1.83	46	12.14	41	11.71
Jan-31	38	2.50	9	0.79	80	9.72	73	8.62
Feb-31	33	1.64	15	1.41	92	15.78	85	11.31
Mar-31	22	2.00	9	0.25	75	10.73	69	7.95
Apr-31	30	5.12	6	0.07	72	21.13	69	21.05
May-31	32	6.36	12	0.44	56	14.10	49	13.97
Jun-31	34	7.03	46	1.17	44	10.05	38	9.18
Jul-31	34	3.11	27	0.84	45	7.04	42	5.87
Aug-31	8	25.12	10	6.18	47	7.45	46	7.42
Sep-31	11	1.20	7	0.31	42	6.23	41	6.23
Oct-31	7	5.78	2	0.07	48	13.49	47	13.42

Figure 8: Distribution of Condition of Banks Receiving Assistance



Source: Mason (1996).

Table 7: Test of the Difference Between the Mean Predicted Probability of Bank Failure Based on Exogenous Characteristics: Banks Receiving RFC Loans and Preferred Stock

	Banks Receiving Loans	Banks Receiving Preferred Stock	t-Statistic for Difference Between Means
Mean	0.31	0.29	1.32
Std. Dev	0.08	0.10	

Source: Mason (1996).

Table 8: Accelerated Failure Time Models with RFC Loans and Preferred Stock Purchases

The model measures the determinants of log survival time, measured in days, from December, 31, 1931 to December 31, 1935. Both survival models use a Weibull parameterization. Bank financial data are from Federal Reserve *Reports of Condition and Income* . RFC loan and preferred stock data are from monthly *Reports of Activity of the RFC* . The RFC variable in the first column pertains to loans, while that in the second column pertains to preferred stock purchases. Standard errors are in parentheses.

Variable Name:	(1)		(2)	
Constant	11.723	***	7.493	***
	(1.693)		(1.013)	
Illiquid Assets / Total Assets	-8.220	***	-3.564	***
	(1.566)		(1.089)	
Bonds, Stocks, and Securities Owned / Illiquid Assets	3.225	***	2.568	***
	(1.252)		(1.031)	
Real Estate Owned / Illiquid Assets	4.843		3.406	
	(3.791)		(3.415)	
Loans and Discounts / Illiquid Assets	3.975	***	2.811	***
	(0.983)		(0.819)	
Paper Eligible for Rediscount at the Fed / Loans and Discounts	1.191	**	1.283	***
	(0.591)		(0.513)	
Net Worth / Total Assets	2.040	*	1.375	
	(1.384)		(1.225)	
Bills Payable and Rediscounts / Debt	-3.722	***	-2.750	***
	(1.378)		(1.145)	
Interest and Discount on Loans / Total Earnings	-1.763	**	-0.588	
	(0.904)		(0.704)	
Recoveries / Total Earnings	1.187		-0.222	
	(1.135)		(1.056)	
Losses / Total Expenses	-1.058	***	-0.586	*
	(0.415)		(0.366)	
Predicted Probability of RFC Loan	-3.663	***		
	(1.483)			
Predicted Probability of RFC Preferred Stock Purchase			6.873	***
			(1.276)	
Number of Individuals in Panel:	357		327	
Number of Bank-Year Observations	979		979	
Log-Likelihood:	-990.9		-971.9	
Restricted (Slopes=0) Log-L.	-1094.8		-1094.8	
Chi-Squared (k-1 df)	207.9		227.6	

* (**) (***) statistically significant at the 10% (5%) (1%) level.

Source: Mason (2001a).

Table 9: Rates on RFC Assistance and Selected Private Market Alternatives, 1932-1937 (Percent per annum)

Year	RFC Loans to Banks	RFC Loans to Railroads	RFC Preferred Stock in Financial Institutions	RFC Loans to the Commercial & Industrial Sector	Federal Reserve Bank of NY Discount Rate (high)[a]	Moody's Railroad Common Stock Yields[b]	Preferred Stocks[b]	Bank Rates on Short-term Business Loans[c]
1932	5.77	6.00	-	-	3.50	7.23	6.13	4.70
1933	4.79	5.50	5.10	-	3.50	5.67	5.75	4.30
1934	4.00	5.00	4.92	6.00	2.00	5.75	5.29	3.50
1935	4.00	5.00	3.54	5.42	1.50	4.85	4.63	2.90
1936	4.00	5.00	3.54	5.42	1.50	3.67	4.33	2.70
1937	4.00	5.00	3.54	5.42	1.50	5.26	4.45	2.60

[a] Source: Historical Statistics, series X 455, p. 1001.

[b] Source: Historical Statistics, series X 474-486, p. 1003.

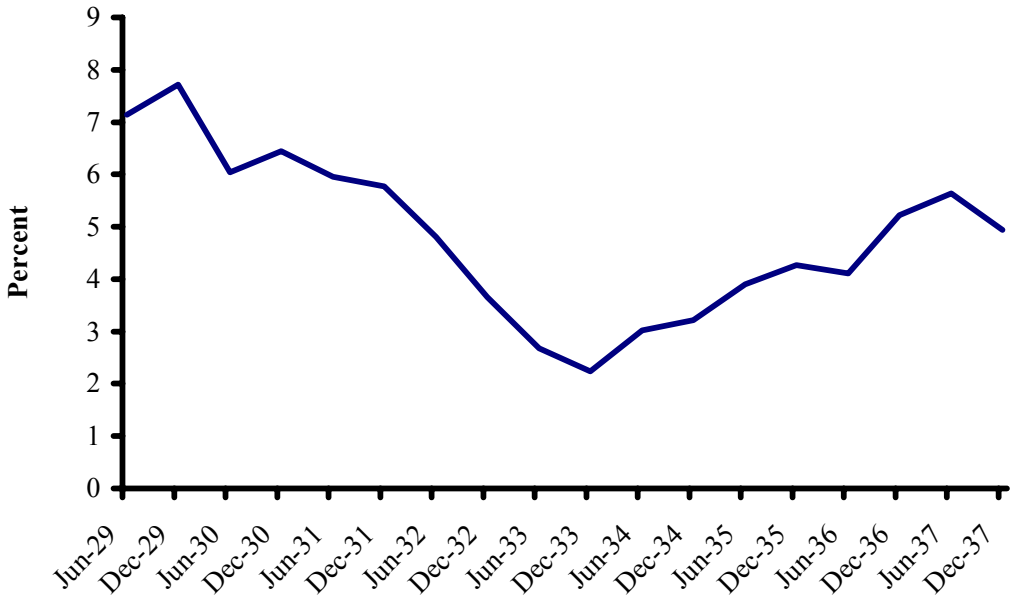
[c] Source: Historical Statistics, series X 466, p. 1002.

Table 10: Outstanding Obligations of the RFC
(In addition to those sold to the Treasury in the initial capitalization)

As of December 1932				
	Series A	3.50% notes	$810,000,000.00	
Total				$810,000,000.00
As of December 1933				
	Series D-1	0.13%	$475,000,000.00	
	Series D-2	2%	1,290,000,000.00	
	Series D-3	0.13%	230,000,000.00	
	Series D-4	3%	355,000,000.00	
	Series Feb. 1, 1934		78,726,187.37	
	Series E	2.25%	101,299,666.67	
Total				$2,530,025,854.04
As of December 1934				
	Series D-1	0.13%	$475,000,000.00	
	Series D-2	2%	1,290,000,000.00	
	Series D-3	0.13%	960,000,000.00	
	Series D-4	3%	560,000,000.00	
	Series DA-1		265,000,000.00	
	Series DA-2		35,000,000.00	
	Series E	2.25%	149,621,666.67	
	Series F	2%	64,093,000.00	
	Series G	3%	16,000,000.00	
	Series H		19,622,000.00	
				$3,834,336,666.67
As of December 1935				
	Series G		$16,000,000.00	
	Series H		87,288,000.00	
	Series J-1		1,715,000,000.00	
	Series J-2		1,525,000,000.00	
	Series J-3		635,000,000.00	
	Series J-4		220,000,000.00	
	Series K		149,171,666.67	
				$4,347,459,666.67
As of December 1936				
	Series H		$86,378,000.00	
	Series K		165,346,666.67	
	Series L-1		2,640,000,000.00	
	Series L-2		1,035,000,000.00	
	Series L-3		5,000,000.00	
	Series L-4		5,000,000.00	
				$3,936,724,666.67
As of December 1937				
	Series K		$297,272,666.67	
	Series L-1		2,640,000,000.00	
	Series L-2		815,000,000.00	
	Series L-3		25,000,000.00	
	Series L-4		125,000,000.00	
				$3,902,272,666.67

Source: Mason (1996).

Figure 9: US National Bank Common Dividend Payout Ratio (as Percent of Common Capital)



Source: *Annual Report* s, Office of the Comptroller of the Currency, various years.

Table 11: Dividends of US National Banks

	Common Dividends	Preferred Dividends	Common Dividends /Common Capital
Jun-29	116,254	na	7.14
Dec-29	131,643	na	7.72
Jun-30	105,386	na	6.04
Dec-30	110,091	na	6.44
Jun-31	100,400	na	5.95
Dec-31	93,623	na	5.77
Jun-32	75,532	na	4.81
Dec-32	59,849	na	3.66
Jun-33	39,247	na	2.68
Dec-33	32,391	536	2.24
Jun-34	40,027	2,894	3.02
Dec-34	42,095	7,209	3.22
Jun-35	45,146	8,967	3.90
Dec-35	53,640	9,895	4.27
Jun-36	51,574	10,570	4.11
Dec-36	66,337	7,629	5.22
Jun-37	72,642	6,867	5.64
Dec-37	64,161	4,665	4.94

Source: *Annual Report* s, Office of the Comptroller of the Currency, various years.

Table 12: Univariate Attributes of Banks With and Without RFC Preferred Stock, Illinois Sample

Banks without Preferred Stock, December 31, 1934	N	Mean	Std. Dev	Min	Max
Dividend Payout Rate, 1934	161	0.008	0.017	0.000	0.080
Change in Dividend Payout Rate, 1931-1934	161	-0.486	5.477	-11.408	11.002
Change in Capital/Asset Ratio, 1929-1934	91	-0.242	0.336	-1.743	0.504
Change in Capital/Asset Ratio, 1931-1934	91	-0.345	0.313	-1.701	0.524
Change in Capital/Asset Ratio, 1933-1934	146	-0.262	0.180	-0.895	0.104
Asset Growth, 1929-1934	91	0.044	0.408	-0.713	1.589
Asset Growth, 1929-1931	91	0.194	0.336	-0.497	1.725
Asset Growth, 1929-1933	146	0.270	0.166	-0.116	0.951
Estimated P(Fail), 1929	69	0.138	0.145	0.000	0.662
Estimated P(Fail), 1931	88	0.096	0.129	0.000	0.696
Estimated P(Fail), 1933	144	0.021	0.064	0.000	0.543
Estimated P(Fail), 1934	158	0.004	0.014	0.000	0.110
Change in Estimated P(Fail), 1929-1934	68	-6.640	4.222	-18.602	4.721
Change in Estimated P(Fail), 1931-1934	86	-5.761	4.012	-16.027	5.233
Change in Estimated P(Fail), 1933-1934	142	-3.166	5.026	-32.353	9.242

Banks with Preferred Stock, December 31, 1934	N	Mean	Std. Dev	Min	Max
Dividend Payout Rate, 1934	75	0.001	0.007	0.000	0.050
Change in Dividend Payout Rate, 1931-1934	75	-4.000	5.951	-11.408	10.820
Change in Capital/Asset Ratio, 1929-1934	56	-0.201	0.405	-1.873	0.744
Change in Capital/Asset Ratio, 1931-1934	58	-0.317	0.339	-2.049	0.315
Change in Capital/Asset Ratio, 1933-1934	63	-0.210	0.266	-1.479	0.338
Asset Growth, 1929-1934	56	-0.090	0.349	-0.703	1.078
Asset Growth, 1929-1931	58	0.098	0.293	-0.374	1.436
Asset Growth, 1929-1933	63	0.205	0.187	-0.220	1.042
Estimated P(Fail), 1929	44	0.165	0.124	0.001	0.656
Estimated P(Fail), 1931	58	0.147	0.136	0.000	0.536
Estimated P(Fail), 1933	63	0.056	0.103	0.000	0.420
Estimated P(Fail), 1934	75	0.011	0.042	0.000	0.342
Change in Estimated P(Fail), 1929-1934	44	-7.521	5.311	-21.626	0.995
Change in Estimated P(Fail), 1931-1934	58	-6.526	5.342	-19.975	5.027
Change in Estimated P(Fail), 1933-1934	63	-4.388	4.998	-19.024	12.349

Table 13A: First-round RFC Preferred Stock Regression

Dependant Variable	RFC Preferred Stock
	Coefficient (Std. Error)
Intercept	-9,657,421 (1,809,977)
Size (log of total assets)	633,609 (114,548)
Illiquid Assets (loans and discounts over other bonds and securities)	1,279,659 (771,276)
$P(Fail)_{31}$	1,418,046 (1,230,609)
Number of Obs.	144
R^2	0.1809
Adjusted R^2	0.1635

Table 13B: Second-round Regression of Predicted RFC Preferred Stock and Fundamentals on Capital and Dividends

Dependant Variable	Dividends/ Total Common Capital	Net Worth/ Total Assets	Change in Dividends/ Total Common Capital	Change in Net Worth/ Total Assets
	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)
Intercept	0.0068 (0.0019)	0.1373 (0.0066)	-0.0160 (0.0029)	-0.0670 (0.0072)
$P(Fail)_{31}$	-0.0085 (0.0102)	0.0029 (0.0363)	0.0172 (0.0161)	0.0984 (0.0398)
Predicted Preferred Stock Sold to RFC	1.850E-09 (1.540E-09)	-2.010E-08 (5.484E-09)	-1.244E-08 (2.432E-09)	1.169E-08 (6.012E-09)
Number of Obs.	144	144	144	144
R^2	0.0155	0.0869	0.1643	0.0624
Adjusted R^2	0.0016	0.074	0.1525	0.0492

Table 14A: Approved Conditions for Public Funds Injection into Japanese Banks in March 1999

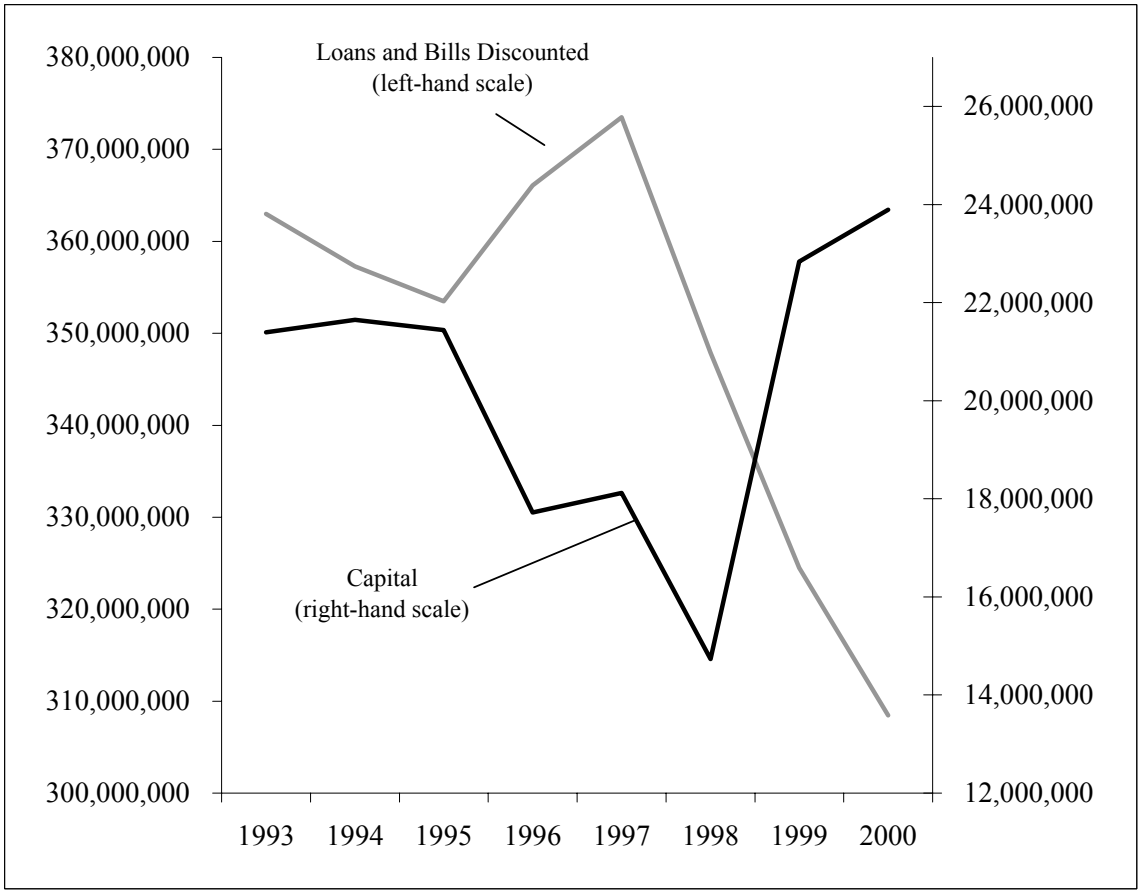
(billion yen)	total amount	convertible preferred stock	period until conversion can be done (years)	dividend yield (%)	subordinated bonds or loans
Daiwa	408	408	0.25	1.06	0
Chuo Trust	150	150	0.25	0.90	0
Mitsui Trust	400.2	250.2	0.25	1.25	150
Sakura	800	800	3.50	1.33	0
Fuji	1,000	250	5.50	0.40	200
		250	7.50	0.55	
		300	(non-convertible)	2.10	
Sumitomo Trust	200	100	2.00	0.76	100
Mitsubishi Trust	300	200	4.33	0.81	100
Toyo Trust	200	200	0.25	1.15	0
Bank of Yokoham	200	70	2.33	1.13	100
		30	5.33	1.89	
Asahi	500	300	3.25	1.15	100
		100	4.25	1.48	
Tokai	600	300	3.25	0.93	0
		300	4.25	0.97	
Sumitomo	501	201	3.08	0.35	0
		300	6.33	0.95	
DKB	900	200	5.33	0.41	200
		200	6.33	0.70	
		300	(non-convertible)	2.38	
IBJ	600	175	4.25	0.43	250
		175	4.42	1.40	
Sanwa	700	600	2.25	0.53	100
total	7,459	6,159			1,300

Table 14B: Approved Conditions for Public Funds Injection into Japanese Banks in March 1998

	types of issuance	conditions of issuance (%, initial 5 years)	amount (billion yen)	Notes
(Nippon Credit Bank)	preferred stock	6 m/s LIBOR + 3.00	60	
(Ashikaga Bank)	perpetual subordinated bonds	6 m/s LIBOR + 2.95	30	regional bank
Daiwa	perpetual subordinated loans	3 m/s LIBOR + 2.70*	100	(*initial 10 years & 3 m/s)
(Yasuda Trust)	perpetual subordinated bonds	6 m/s LIBOR + 2.45	150	
(LTCB 1)	perpetual subordinated loans	6 m/s LIBOR + 2.45	46.6	
(LTCB 2)	preferred stock	6 m/s LIBOR + 1.00	130	
Chuo Trust 1	perpetual subordinated loans	6 m/s LIBOR + 2.45	28	
Chuo Trust 2	preferred stock	6 m/s LIBOR + 2.50	32	
(Hokuriku Bank)	perpetual subordinated loans	6 m/s LIBOR + 2.45	20	regional bank
Mitsui Trust	perpetual subordinated bonds	6 m/s LIBOR + 1.45	100	
Sakura	perpetual subordinated bonds	6 m/s LIBOR + 1.20	100	
Fuji	perpetual subordinated bonds	6 m/s LIBOR + 1.10	100	
Sumitomo Trust	perpetual subordinated bonds	6 m/s LIBOR + 1.10	100	
Mitsubishi Trust	perpetual subordinated bonds	6 m/s LIBOR + 1.10	50	
Toyo Trust	perpetual subordinated bonds	6 m/s LIBOR + 1.10	50	
Bank of Yokohama	perpetual subordinated loans	6 m/s LIBOR + 1.10	20	regional bank
Asahi	perpetual subordinated loans	6 m/s LIBOR + 1.00	100	
Tokai	perpetual subordinated loans	6 m/s LIBOR + 0.90	100	
Sumitomo	perpetual subordinated bonds	6 m/s LIBOR + 0.90	100	
(Bank of Tokyo-Mitsubis	perpetual subordinated bonds	6 m/s LIBOR + 0.90	100	
DKB	preferred stock	6 m/s LIBOR + 0.75	99	
IBJ	subordinated bonds (fixed periods)	6 m/s LIBOR + 0.55	100	
Sanwa	subordinated bonds (fixed periods)	6 m/s LIBOR + 0.55	100	
total			1,726	

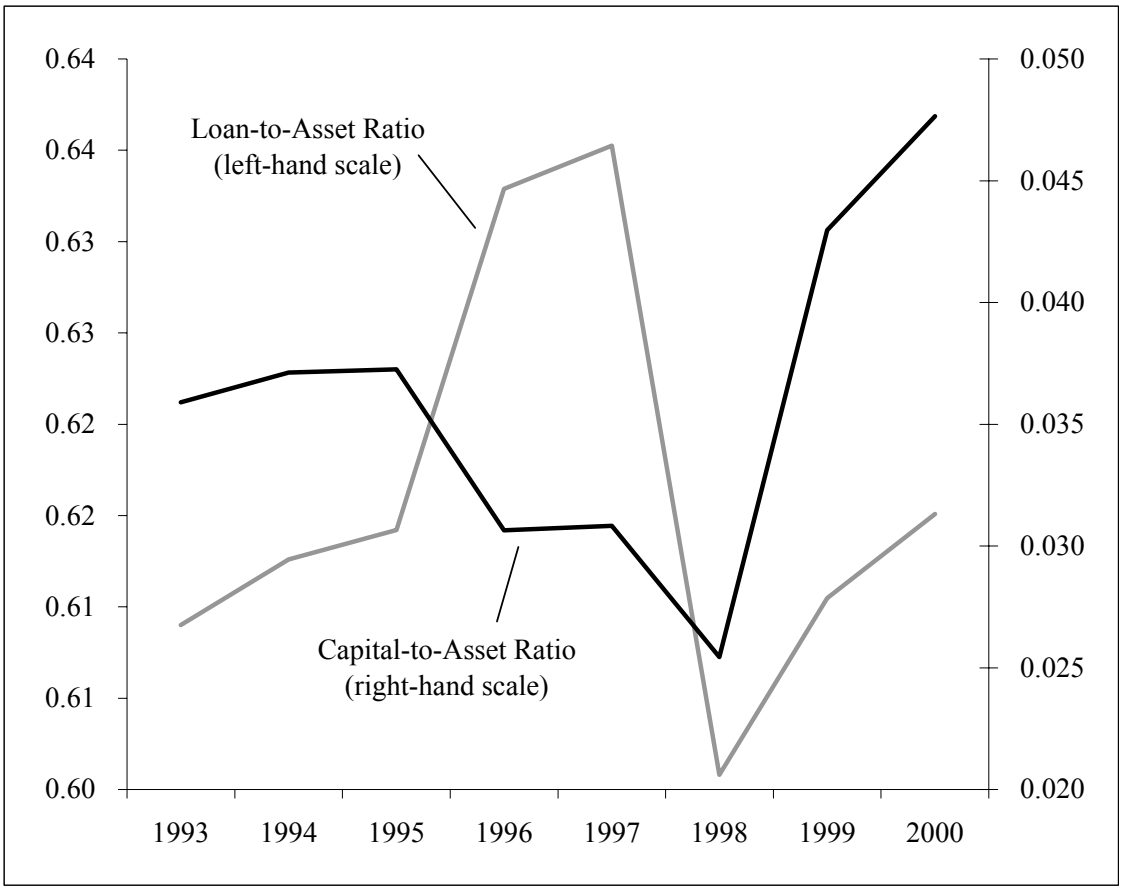
Sources: Nikkei Shinbun (March 13, 18, 1998, and March 5, 13, 1999)

Figure 10: Capital and Loans of Japanese Banks, 1993-2000



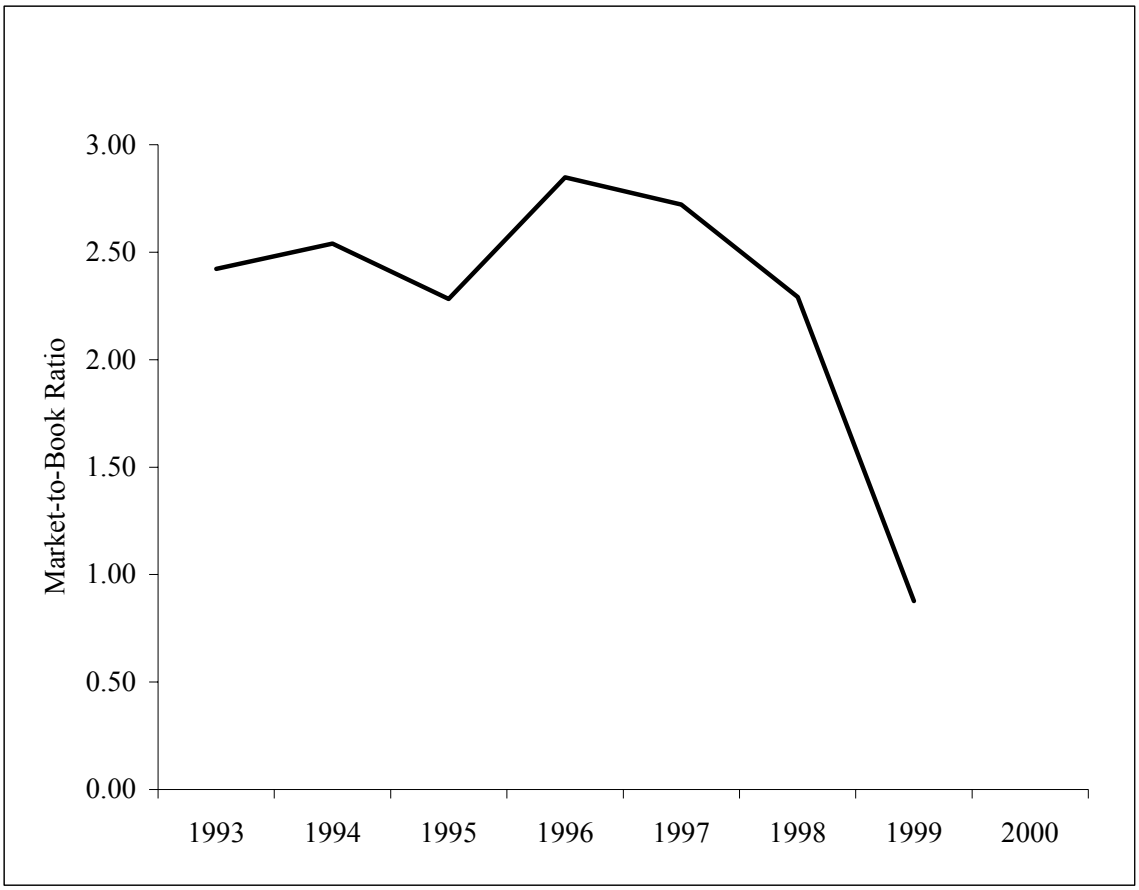
Source: Japanese Bankers Association.

Figure 11: Capital-to-Asset and Loan-to-Asset Ratios of Japanese Banks, 1993-2000



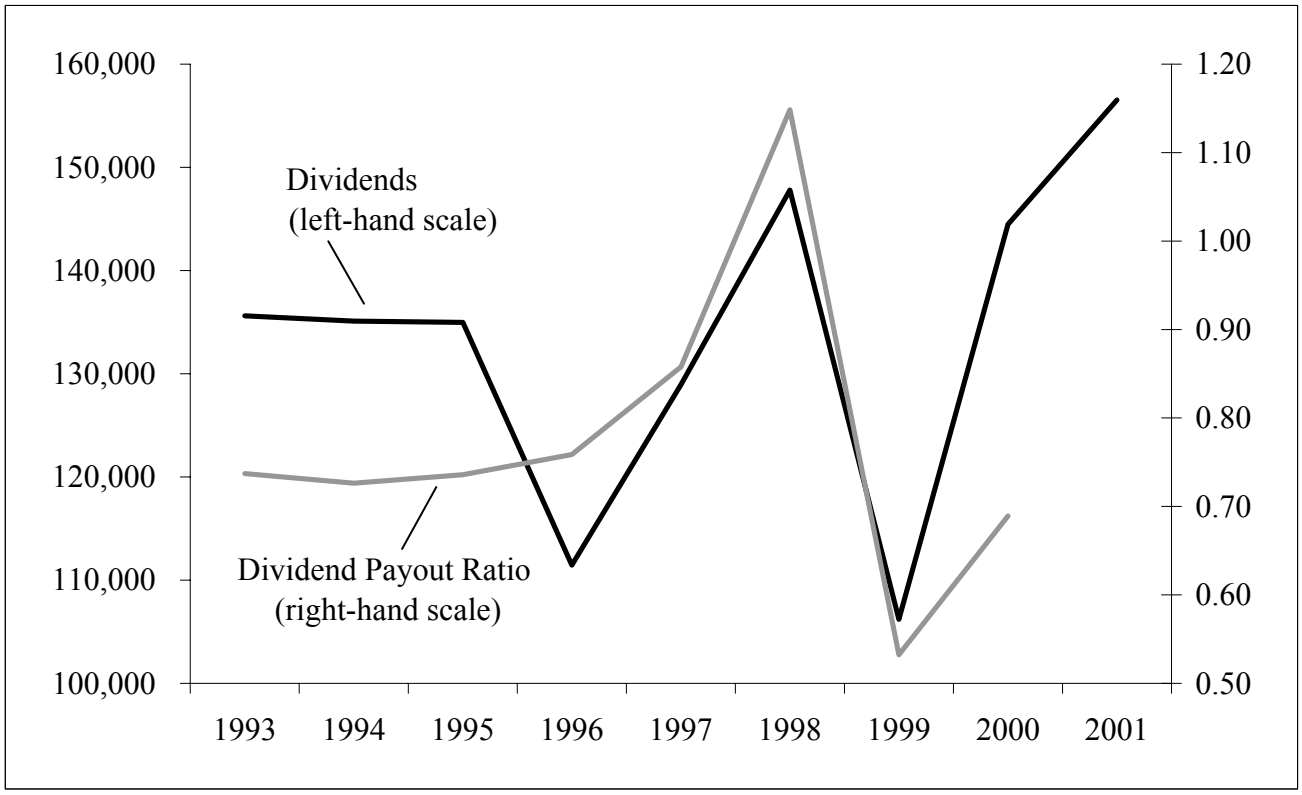
Source: Japanese Bankers Association.

Figure 12: Market-to-Book Ratios of Japanese Banks, 1993-2000



Source: Japanese Bankers Association.

Figure 13: Japanese Bank Dividend Payments For Stable Sample of Banks, 1993-2001



Source: Japanese Bankers Association.

Table 15: Japanese Bank Dividend Payments For Stable Sample of Banks, 1993-2001

Year	Dividends	Payout Ratio
1993	135,617	0.74
1994	135,108	0.73
1995	134,981	0.74
1996	111,450	0.76
1997	128,939	0.86
1998	147,791	1.15
1999	106,206	0.53
2000	144,486	0.69
2001	156,532	na

Source: Japanese Bankers Association.