

Depositor Liquidity and Loss-Sharing in Bank Failure Resolutions

George G. Kaufman

WP 2003-02

Depositor Liquidity and Loss-Sharing in Bank Failure Resolutions

George G. Kaufman*
(Loyola University Chicago and Federal Reserve Bank of Chicago)

ABSTRACT

Bank failures are widely feared for a number of reasons, including concern that depositors may suffer both losses in the value of their deposits (credit losses) and, possibly more importantly, restrictions in access to their deposits (liquidity losses). In the United States, this is not true for insured deposits, which are fully protected and made available to the depositor almost immediately. But both problems may occur for uninsured depositors. Thus, there is pressure on regulators to protect all depositors in bank failures. This is likely to increase both moral hazard risk-taking by banks and poor agency behavior by regulators with large ultimate costs to taxpayers. While ways of reducing the credit loss in bank failures have been widely examined, reducing liquidity losses has received far less attention. One way to mitigate this loss to uninsured depositors is to make the estimated recovery value of their deposits quickly available to them upon failure of the bank through an advance dividend or other payment by the FDIC secured by the bank's assets. Quick depositor access was suggested as a superior solution to deposit insurance in alleviating adverse effects from bank failures during the debate on deposit insurance in the early 1900s and was actually put into effect by both the Reconstruction Finance Corporation and the New York State Banking Department shortly before the establishment of the FDIC. More recently, the FDIC has experimented with the concept. This paper analyzes the pros and cons of providing quick depositor access to deposits at failed banks and reviews the history of the concept. It concludes that such a policy would greatly enhance the FDIC's ability to resolve large bank insolvencies without having to protect uninsured depositors through too-big-to-fail policies.

^{*}John F. Smith Professor of Finance and Economics, Loyola University Chicago and Consultant, Federal Reserve Bank of Chicago

Depositor Liquidity and Loss-Sharing in Bank Failure Resolutions

George G. Kaufman*
(Loyola University Chicago and Federal Reserve Bank of Chicago)

I. Introduction

Bank failures give rise to a number of widespread fears. Among these is the fear of depositors that, if uninsured, they may suffer losses in the current value of their deposits and that, whether insured or not, they may not have full and immediate access to the current value of their accounts so that their deposits are effectively frozen. That is, depositors may suffer a loss in credit value (credit risk) and/or a loss in liquidity (liquidity risk). Both conditions represent a loss in depositor wealth. The potential loss in credit value occurs if the market value of the banks' assets at the date of resolution (failure) is less than that of their deposits and if additional losses are incurred during the resolution process. The potential loss in liquidity occurs if depositors at the failed bank may not access the full current value of their funds after failure until the proceeds from the sale of the bank or its assets are distributed. This loss may be divided into a time or present value loss of receiving a future rather than an immediate payment of the same amount and, if an efficient secondary market for depositor receivership claims does not exist, an additional illiquidity loss.

_

^{*} Parts of this paper, particularly Section IV, draw on Kaufman and Seelig (2002). I am indebted to Lee Davidson (FDIC), Christian Johnson (Loyola University Chicago), Edward Kane (Boston College), Joseph Mason (Drexel University), James Moser (Federal Reserve Bank of Chicago), Steven Seelig (IMF), Stanley Silverberg, and participants at presentations at the Federal Reserve Bank of Chicago and the Western Economic Association for helpful suggestions on earlier drafts. The views expressed in this paper are the author's, and should not be construed as positions of the Federal Reserve Bank of Chicago or the Federal Reserve System.

¹ Restricted depositor access to their accounts is also common in many countries and historically in the United States during a general banking crises to reduce large-scale conversion into specie or foreign currency, even if the banks may be solvent, e.g., in the U.S. during the banking panics of 1893, 1907, particularly 1933, when all banks were effectively closed down for one week during a national "bank holiday" in March and some banks

The reasons for the loss in credit value and ways of minimizing such losses through both enhanced monitoring and disciplining by at-risk depositors and other bank creditors and efficient closure rules by regulators have received considerable attention in the recent literature (e.g., Benston and Kaufman, 1997 and 1998). The potential loss in liquidity has received substantially less attention, however, particularly in the United States where liquidity risk has not been a major problem in recent years. Since the introduction of Federal Deposit Insurance in 1934, effectively all depositors were fully protected immediately at large bank failures and unprotected uninsured depositors in many smaller bank failures were provided with immediate liquidity of the recovery value. Nevertheless, liquidity risk in bank resolutions has been considered a serious problem in the U.S. historically and remains a serious problem in most other countries. Indeed, in these countries loss of liquidity is often perceived as a more frightening consequence of bank failures than the loss of value. For example, a European bank analyst has recently argued that

The issue is not so much the fear of a domino effect where the failure of a large bank would create the failure of many smaller ones; strict analysis of counterparty exposures has reduced substantially the risk of a domino effect. The fear is rather that the need to close a bank for several months to value its illiquid assets would freeze a large part of deposits and savings, causing a significant negative effect on national consumption (Dermine, 1996, p. 680).

Likewise, the Swedish Central Bank has observed that

Freezing a company's assets and suspending its payments from the time the bankruptcy order is issued could have serious implications if applied to banks. A bank's liabilities do after all form an active part of its business operations, and its borrowing and interbank funding activities reflect among other things the banks' central role in the payment system. Suddenly freezing the repayment of liabilities at one or more big banks could have immeasurable consequences for the banking system as a whole (Viotti, 2000, p.55).

In effect, short-term, liquid deposits are suddenly involuntarily transformed into long-term, illiquid deposits.² Recently, Anari, Kolari, and Mason (2002) have found evidence that delays in recovering the value of assets of failed banks in the 1930's and in reimbursing the depositors had strong and lasting effects on the persistence of the Great Depression in the U.S.

Kaufman and Seelig (2002) note that, if there is a threat of serious loss of depositor liquidity in bank failures, bank regulators come under intense pressure both from the depositors and from macroeconomic policy-makers to keep the insolvent banks operating by extending guarantees to some or all stakeholders, particularly if a large bank is failed or a number of smaller banks are failed simultaneously so that the aggregate money supply may be significantly diminished by the effective lengthening of the maturities of the deposits, Thus, the ability and willingness of governments to quickly liquify deposits at failed banks, as well as to keep deposit credit losses small through the appropriate implementation of prompt corrective action and least cost resolution strategies, significantly eases their ability to avoid too-big-to-fail (TBTF) or too-many-to-fail rescues of insolvent banks. That is, avoiding or minimizing depositor illiquidity at failed banks is a prerequisite for resolving insolvent banks efficiently with loss sharing by at-risk depositors.

This paper discusses why and how a loss in depositor liquidity is generally not now a major problem in the U.S., examines the history of earlier attempts to provide such liquidity and reduce the severity of the problem, and reviews briefly on the status of the problem in other countries. The paper concludes that, because it can liquify quickly both insured and uninsured deposits at failed banks, the U.S can resolve even large bank failures efficiently

_

² The greater fear of liquidity than credit loss is also apparent in the classic 1946 movie, "It's a Wonder Life." The hero of the movie, played by James Stewart, finds himself the operator of a small town building and loan association that is experiencing a run because the town villain banker has called a loan to the association that has absorbed all the association's cash. There is none left for the depositors. The depositors are about to accept the banker's offer of 50 cents on the dollar, when Stewart, using currency his just-married wife had set aside for their honeymoon, persuades the depositors to ask now only for the amounts they desperately needed immediately. This turned out to be far less than 50 cents on the dollar. But, as the cause is good, the depositors are satisfied that they will be paid the rest later and return home. The association and town are saved!

without bailouts, but that the inability of most other countries to do so severely restricts their ability to resolve their failed large banks without bailouts.

II. **Current Treatment of Depositors in U.S.**

When a bank is legally failed and resolved - - so that it is placed in receivership and liquidated or reorganized and recapitalized with a change in control - -, depositors at domestic offices of the bank have claims on the insurance agency equal to the par value of their deposits up the maximum de jure insurance coverage and for amounts above this ceiling on the designated bank receiver, generally the Federal Deposit Insurance Corporation (FDIC), equal to the prorata share of the amount of funds recovered from the sale of the bank or its assets.³ In either case, the uninsured depositors (and other creditors) and the FDIC, which stands in the shoes of the insured depositors, are entitled to the proceeds as they are collected and distributed by the receiver. The FDIC passes through the proceeds to the qualified depositors.

But the asset sales may or may not occur concurrently with the date of failure of a bank. If the bank is sold as a whole on the date of failure, so that that all the assets and deposits are completely assumed by another bank at par or the FDIC contributes sufficient funding immediately to cover any lower asset value, all depositors have full and immediate access to the par amount of their funds and there is no loss in liquidity. But, if asset sales are partially or totally delayed or distribution of funds to claimants are delayed, there is a potential loss in liquidity to both insured and uninsured depositors.

However, although the FDIC may not obtain funds from the asset sales immediately, unlike most other insurance companies, e.g., automobile or fire insurers, it attempts to pay the insured deposits as promptly as possible to reduce depositor illiquidity. It effectively

³ Under the Depositor Preference Act of 1993, deposits at foreign offices of U.S. banks and unsecured nondeposit funds at domestic offices are subordinated to deposits at domestic offices and are eligible for payment only after domestic deposits have been paid in full. Insured (FDIC) and uninsured deposits have equal priority.

advances the insured depositors both the prorata estimated present value of the recovery amount and the difference between the par value of the insured deposits and the recovery amount. The latter represents the insured credit loss. Thus, these deposits do not experience a significant liquidity loss.

To facilitate this policy, insured banks are currently generally failed and placed in receivership on Thursdays or Fridays and the insured deposits made available close to the next business day – Monday – either at the bank that assumed the deposits or at a designated paying agent. The weekend generally provides the FDIC with time to obtain information from the failed bank's records on the identification of the insured depositors and the amount of the eligible insured deposits. In most instances, additional time is provided as the FDIC is notified by the bank's primarily federal regulator when or before a bank becomes classified as "critically under-capitalized" according to the tripwire definitions of prompt corrective action under the FDIC Improvement Act (FDICIA) of 1991.⁴ At this point, resolution is generally required within 90 days, although extensions up to 270 days are permitted. The FDIC reimburses itself for the advances of the recovery amounts from the proceeds of the later asset sales. Errors in estimating the recovery amount effects only the size of the insurance loss, not the size of the payments to insured depositors.

Uninsured depositor at failed banks are affected somewhat differently. Before 1982, if they were not fully protected, which they generally were through assisted merger with another bank (purchase and assumption), so that their funds were fully and immediately available at the assuming bank, uninsured depositors were provided a prorata claim (receivership certificate) on the recovery proceeds above insured maximum and paid as the proceeds were

-

⁴ The regulatory definition of capital for this determination is currently set at tangible book value of equity equal to 2 percent of total on-balance sheet assets. Although regulators can tighten this definition and may also declare an institution insolvent if they determine the institution to be operating in an unsafe and unsound manner, banks that are able to disguise their insolvent or near-insolvent economic condition through legal or fraudulent overstating their assets or understating their losses (underreserving) or liabilities are frequently able to delay

collected by the receiver. In 1983, in order to enhance market discipline on banks by large depositors, the FDIC attempted to put more of them at-risk and began to transfer only insured deposits to assuming banks in full and to subject uninsured deposits to losses. At the same time, to reduce any loss in liquidity, the FDIC advanced payment to these depositors in advance of collecting recoveries from the sale of the bank or its assets equal to a conservative estimate of the present value of the recovery amount. These advance dividends on receivership certificates were generally paid in the form of a deposit at the bank that also assumed the uninsured (FDIC, 1983 and 1997). The uninsured depositors also maintained a claim on any recovery amounts in excess of the dividend, which was paid by the FDIC as collected. Any excess amount collect over the par value of these claims was paid to other creditors and shareholders. If, in retrospect, the FDIC overestimated the recovery amount (underestimated the loss), it absorbed the loss. It is interesting to note that when uninsured deposits were fully and immediately protected, the depositors effectively also received an advance dividend but equal to the par value of the deposits rather than a lesser amount.

The FDIC's experiment with the new policy of loss-sharing was short-lived. When the first large money center bank – the Continental Illinois National Bank (Chicago), which was the country's seventh largest bank, – declined into insolvency in 1984, the FDIC protected all depositors and other creditors at both the bank and its parent holding company fully and immediately. (Belluck, 1984; Sprague, 1986; and Kaufman, 2002). Thereafter through 1991, it likewise protected almost all uninsured as well as all insured depositors at all but a few small banks, where merger with another bank on an assisted basis was not feasible because of restrictions on branching at the time or the assets were heavily impaired and difficult to value (Kaufman, 2002). It was not until after the enactment of FDICIA in 1991 that uninsured depositors were again effectively placed at risk at all banks and that the FDIC

again paid advance dividends to uninsured domestic depositors in many failures where it was able to make meaningful estimates of the recovery value.⁵

Similar to payments on insured deposits in all failures and on uninsured deposits in failures in which these deposits are fully and immediately protected through assisted mergers, advance dividends in failures in which uninsured deposits are not fully protected are generally paid on Mondays, after the bank is failed on Fridays. To protect the FDIC against loss, this policy requires reasonably accurate estimates of the recovery value. Additional time may be necessary to do this and may require earlier notification to the FDIC of a pending downgrading of a bank to critically undercapitalized by other regulators or delaying resolution after a bank is so classified. But, because this information is also required by the FDIC to provide to potential bidders for the failed bank on a timely basis before resolution, the delay to pay advance dividends generally should not greatly increase the total lead time necessary for resolution of all but the largest banks.

However, Kaufman and Seelig (2002) note that liquifying deposit claims immediately has disadvantage as well as advantages. The major advantage is that, if the loss in credit value is not overly large, it permits the FDIC to resolve even large banks with losses imposed on uninsured deposits and other creditors. Political pressure from large depositors should be no more intense than from creditors suffering similar size losses from the failure of any large firm. These depositors are able to view their deposits as similar to the other short-term investments they may make and to experience similar losses. At the same time, small losses to these depositors should not have major adverse consequences on the macroeconomy or

increase losses (Kaufman and Seelig, 2002).

⁵Under FDICIA, the FDIC may protect uninsured depositors and creditors if it receives permission to invoke the systemic risk exemption on the basis that failing to protect these stakeholders "would have serious adverse effects on economic conditions or financial stability" and doing so "would avoid or mitigate such adverse effects" (FDICIA, 1991, p.43). But such permission is considerably more difficult to receive and implement than before 1991 (Kaufman, 2002). The Depositor Preference Act of 1993 subordinated deposits at non-U.S. offices and uninsured creditors to uninsured deposits at U.S. offices.

ignite a chain reaction that leads to the failure of other banks. Likewise, by not freezing deposits, the money supply is not likely to be greatly reduced.

On the other hand, liquifying these deposits is likely to reduce the intensity of market discipline by reducing the potential loss to affected depositors.⁶ Thus, there is a tradeoff in affecting expected losses from failure resolution between increased depositor discipline and increased pressure for bailout. The longer the delay time in providing depositor access to the value of their accounts, the greater is both the intensity of market discipline - decreasing expected losses - and the pressure for bailouts - increasing expected resolution losses. optimal time delay is given by the relative behavior of the two schedules as delay time increases and occurs when the reduction in the expected loss from additional market discipline exceeds the increase in expected loss from intensified bailout pressure by the greatest amount (Kaufman and Seelig, 2002). If the market discipline schedule increases faster from the date of resolution, the longest delay time is optimal in reducing expected losses. If pressure for bailout increases faster throughout, immediate access is optimal. But delay time is a function not only of FDIC policy with respect to these two factors, but also of the technical ability of the FDIC to obtain the necessary data on deposit ownership and insurance eligibility and estimated recovery value. The rapid access frequently provided by the FDIC implicitly reflects both the FDIC's technical ability to obtain the required data and its perception that the disadvantage of increased bailout pressure in increasing expected losses always or quickly exceeds the advantage of increased market discipline in reducing these loses.

Ш **History of Depositor Treatment at Failed Banks**

⁶ A recent study of depositor behavior in Argentina, Chile and Mexico in the early 1990's found that insured as well as uninsured depositors disciplined riskier banks both by charging higher deposit rates and by withdrawing deposits (Peria and Schmukler, 2001). Among other possible reasons the authors note for this unexpected behavior by insured depositors are potential delays in receiving payment. Likewise, Demiriguc-Kunt and Huizinga (1999) report finding evidence of market discipline in a large number of countries that have government provided safety-nets, but do not list delayed payments as one of the possible reasons.

Reductions in depositor (or before that in noteholder) liquidity when banks fail have been identified as a major costly problem almost from the very first bank failure.⁷ Thus, as Upham and Lamke (1934, p. 162) noted even in 1934 that:

it is perhaps surprising that it took so many years to find a satisfactory means of expediting substantial initial payment to depositors at closed banks [because] the desirability of such procedure was early recognized.

An early suggestion of a potential solution to the problem is included among the questions circulated by the National Monetary Commission in 1908. The Commission was established by the Congress in the Aldrich-Vreeland Act to inquire into the causes and implications of the banking and financial crises of 1907 and earlier and to make recommendations for improvements in the financial system. It published a 20-volume report that included many classic studies and the results of a 19 question questionnaire mailed to various representatives of the U.S. banking industry. Question 18 asked:

Would it be well, in your opinion, to change the existing laws so that liquidating banks could, in some way, arrange to pay depositors more rapidly? A careful examination of the assets of failed banks will frequently show about how much dividend they can eventually pay, and considerable distress would be prevented if something approximating this amount could be paid to depositors without any delay (National Monetary Commission, 1910, p.8).

The response was highly favorable. Responses were obtained from 85 respondents. Of these, 63, or some two-thirds, favored a change to pay depositors of closed banks more rapidly. This percent was the same among bankers and bank examiners, the two largest groups of respondents. Only 12 respondents, or 14 percent, were opposed to such a change and the remainder either skipped the question or were undecided.

⁷ Empirical support for the high cost of depositor illiquidity is provided for the period 1921 through 1940 in Mason, Anari and Kolari (2000).

The search for solutions to the illiquidity problem in bank failures increased in intensity as the number of banks failing increased sharply after the start of the Great Depression in 1929. By the time it reached its nadir in 1933, nearly 10,000 commercial banks or some 40 percent of the industry had failed. Between 1865 and 1933, receiverships, during which depositors were paid in installments as the assets were sold, lasted as long as 21 years and averaged six years in length (FDIC, 1998b). As a result, the loss of liquidity became an increasingly important public policy concern.

In the early 1930s, before the enactment of deposit insurance in the U.S. in 1933, Senator Carter Glass, a coauthor of the Federal Reserve Act and the influential chairman of the Senate Banking Committee at the time, proposed more rapid payment to depositors at failed banks as a superior alternative to deposit insurance, which he opposed (Bradley, 2000; Bremer, 1935; Kennedy, 1973; and Willis and Chapman, 1934). Unlike federal government deposit insurance, rapid payment to depositors was perceived as maintaining depositor discipline to guard against loss in value. Willis and Chapman describe the objective of the Glass proposal as follows:

Recognizing that in bank failures the source of difficulty and loss is not primarily found in lack of assets, but...that the resources of depositors are tied up and rendered unavailable for long periods...liquidation power and not guaranty was demanded...insuring an almost immediate settlement within a short time upon the basis of the estimated worth of the [failed] bank's assets...This plan was considered by the [Banking] Committee entirely adequate to the protection of the bank depositor against most of the evils to which he had been subject, while leaving him still with a measure of individual responsibility for the protection of his claims through the selection of a well-qualified bank. (Willis and Chapman, 1934, pp. 65-67).

The plan called for the establishment of a Federal Liquidating Corporation that would estimate a bank's recovery value immediately upon its failure, quickly sell the bank as a whole or in parts, and quickly pay the proceeds to the receiver for speedy disbursement to the

depositors. But this plan appears to have been found too difficult to implement, primarily because it required more accurate estimates of the market value of the failed bank's assets than many believed possible at the time.

The advantages of such a scheme had also been seen by others. For example, in 1931, the Federal Reserve Bank of New York attempted to have depositors at failed banks receive the recovery value of their claims faster by requesting healthy member banks to buy the assets of failed banks and advance the proceeds to them for immediate distribution (Bradley, 2000 and Friedman and Schwartz, 1963). This proposal did not become operational. But in 1933, the New York State Banking Department was able to implement such an arrangement. It entered into agreements with the Manufacturers Trust Co. and other large New York City commercial banks to serve as both liquidating and paying agents for a failed bank and partially assume the deposits of the bank up to an agreed percentage of par amount (Upham and Lamke, 1934). The depositors would have access to this amount, sometimes within 24 hours of the time their banks were failed. The assuming bank would be reimbursed from the liquidation of the failed bank's assets. Charles Clough, Comptroller of Manufacturers Trust noted the advantages of this program as follows:

Three things were definitely accomplished. Business men, whose working capital was frozen, were given relief through the release of their bank balances, and at the same time, were given immediate substantial banking connections which would enable them to continue in business; apparent distress among depositors was relieved at once; and the entire process of liquidation was accomplished more expeditiously and economically than was thought possible (Upham and Lamke, p. 76)

In 1932, the Reconstruction Finance Corporation Act authorized the newly established Reconstruction Finance Corporation (RFC) to loan funds to banks closed for liquidation or reorganization to enable them to make quick partial payments to depositors. These loans were

securitized by the failed banks' assets. As Jesse Jones, long-time chairman of the RFC, wrote in his memoirs, these loans would

...make at least a part of the depositor's balance available to him, pending liquidation....We endeavored to lend up to the probable liquidation value of their [the bank's] assets...The government could afford to wait; often the individual could not. (Jones, 1951, p. 39)

The volume of such loans increased substantially after the national bank holiday in March 1933, when a large number of banks remained closed for some time or permanently.

The freezing of the deposits at these banks was viewed as decreasing purchasing power in the community and delaying recovery from the depression. To expedite the provision of funds for this purpose, President Franklin Roosevelt suggested a deposit liquidation program "to stimulate and encourage liquidating agents of banks closed after January 1, 1933 to borrow funds from the RFC in order that funds may be made available to depositors as quickly as possible" (Upham and Lamke, 1934, pp. 168-169).

In part, because the RFC did not wish to operate such a program directly, Roosevelt established a new Deposit Liquidation Board that could borrow from the RFC using the assets of the closed banks as collateral. The Board charged a lower interest rate on these loans than the rate charged by the RFC and loaned on 80 percent of the liquidation value of the assets, which was determined not on the basis of their current value but on values that the RFC projected it could get in "an orderly liquidation period of three to five years in a recovering stock and bond market" (Olsen, 1988, p. 75). Although the volume of loans for this purpose increased rapidly in 1933, the volume was still considered by some as too little and too slow and a number of bills were introduced in Congress to have the Treasury or other federal government agencies also advance funds to depositors at closed banks. Despite gathering considerable support, none of the bills were enacted (Calomiris and White, 1994). Authority

to provide such loans was, however, included in the FDI Act, although apparently not used to liquify frozen uninsured deposits until 50 years later in 1983. With the sharp decline in the number of bank failures after 1934, legislative interest in liquifying deposits at failed banks diminished.

When the FDIC was established it paid insured deposits as promptly as it was technically able. In its Annual Report for 1934, it stated that:

Payments of the insured portion of depositors' claims against the bank which closed during 1934 were started promptly after the receiverships began. The interval between the appointment of the receiver and first payment to insured depositors varied from 2 to 22 days, the average being seven days. Upon notification of suspension, preparations were begun for payment of the insured deposits. Before payment can be made an analysis of the deposit liabilities of the closed bank is necessary. Balances due to depositors in the various classes of deposit accounts carried by the bank must be brought together in one deposit liability register, in order that the new insured deposit of each depositor in each right and capacity may be determined, as required by law. After the period in which the stockholders might enjoin the State authorities from placing banks in liquidation had expired, depositors were paid as rapidly as their claims we presented. (FDIC, 1934, p. 26).

Through time, the delay interval in paying the amount of insured deposits in deposit payoff resolutions declined steadily. The length of the interval between the date of closure and the date of payment was published by individual resolution in the FDIC annual reports from 1934 through 1980. By 1940, the interval had been shortened to 10 to 14 days and by the 1970s, to five to seven days. In 1980, the last time this information was published in the annual report, the interval was only two to three days. But, because these were calendar and not business days, the term "immediate" used in the 1980 Annual Report appears appropriate.

On the other hand, until 1983, the few uninsured depositors that were not protected through deposit assumption resolutions were paid through time as the receiver collected and distributed the proceeds from the sale of the failed banks' assets.⁸

Insured deposits were paid more slowly than by the FDIC by both the former Federal Savings and Loan Insurance Corporation (FSLIC), which insured S&Ls before the FDIC, through the early 1960s and the states of Ohio, Maryland and Rhode Island, which experienced the failure of a large number of relatively small, perceived state insured banks and thrift institutions in the 1980s and early 1990s. Insured depositors in the latter institutions were limited to withdrawing a maximum dollar amount per week or month (Kane, 1992 and Pulkkinen and Rosengren, 1993). Thus, these insured depositors suffered liquidity losses.

In 1983, as noted earlier, to strengthen depositor discipline, the FDIC began to require uninsured depositors to share in the FDIC's losses at more failed banks. At the same time, to reduce any liquidity loss to these depositors, the FDIC advanced dividends to them equal to a conservative estimate of the pro-rata present value of the recovery amount.⁹ This was accomplished through a modified payoff procedure in which another bank assumed all the insured deposits of the failed bank and a portion of the uninsured deposits (partial assumption) depending on the value of the bank's assets purchased and/or any payment to the bank by the FDIC equivalent to the advance dividend (FDIC, 1983 and 1997 and Isaac, 1983).

Through time, the FDIC pursued a combined loss-sharing and advance dividend of less than par value program on a stop-and-go basis. This procedure was used in the resolution

90 percent as collateral for borrowing at the Fed discount window. The FDIC, as receiver, began paying liquidating dividends on the certificates in 1983. It paid 55 percent of the value of the claims in the first two years and terminated the receivership in 1996 after paying nearly 90 percent of the value of the claims on a nonpresent value basis (FDIC, 1998a).

The medium-sized Penn Square Bank (Oklahoma City), which failed in 1982, was by far the largest bank to be

resolved by the FDIC with losses to uninsured depositors, when its large and uncertain off-balance sheet contingent obligations made it difficult for the FDIC to sell the bank quickly. It was resolved through a deposit payoff. Uninsured depositors received receivership certificates. Depository institutions that held these certificates were able to value them immediately at 80 percent of their par value for regulatory purposes and at 90 percent as collateral for borrowing at the Fed discount window. The FDIC, as receiver, began paying

of 13 smaller bank failures in 1983-84 and the FDIC issued an official request for public comment on this strategy in 1985 (FDIC, 1985 and 1997 and Short, 1985). But, the program was halted when uninsured deposits were again fully protected at nearly all failures at the Continental Bank and for some seven years thereafter. The program was resurrected in March 1992 after the enactment of FDICIA in 1991 and effectively halted again after 1995. ¹⁰

After being paid in 75 of 180 bank failures between 1992 and 1995, including in all six failures in 1995, advance dividends were paid in only three of the 35 failures since then through 2002 (Table 1). The dividends were not paid in any of the largest four failures in this period, possibly because of the FDIC's difficulty in valuing their assets. Significant fraud and investment in exceptionally risky and complex assets contributed greatly to these failures, all of which experienced unusually high loss to asset ratios. Nevertheless, a policy of advance dividends to uninsured depositors in an environment of small losses may well serve in place of fuller deposit insurance as a means of reducing the damage from bank failures and strengthening the financial system, as proposed more than 50 years earlier by Senator Glass.

IV. Treatment of Depositors in Other Countries

Both insured and uninsured depositors at failed banks are treated differently in most countries than are their counterparts in the U.S. Deposits at these banks are often frozen for substantially long periods of time. Depositors at least for insured, who would incur no loss in

⁹ Before depositor preference, uninsured deposits and other creditor claims had equal priority and both received equal treatment and advance dividends. Since depositor preference, advance dividends have been restricted to uninsured depositors.

¹⁰ Section 416 of FDICIA grants the FDIC authority to make a quick final settlement payment to uninsured and unsecured claimants based on its recent receivership recovery rate "to maintain essential liquidity and to prevent financial disruption." Particularly in light of the large variance in losses it experienced in the relatively few post-FDICIA failures, the FDIC has viewed this provision as less flexible and potentially more costly than the use of advance dividends, which is tailored to the estimated loss of the individual bank, and has not used it.

¹¹ On July 27, 2001, the FDIC resolved the Superior Bank FSB in Chicago. With \$2.3 billion in assets, it was the largest institution resolved since the early-1990s. The loss was estimated in excess of 25 percent. At the date of closure, some 1,000 depositors held \$43 million in uninsured deposits. Because the failure resulted from major fraudulent activities, the FDIC could not get a reasonably accurate estimate of the recovery value of the assets quickly and, as a result, did not advance a dividend to the uninsured depositors. They were to be paid as the funds were collected by the FDIC, serving as conservator. The FDIC made a first payment of 32 percent on March 12, 2002 and a second payment of 15 percent on May 28, 2002.

par value but would incur liquidity losses from such delays, this is not necessarily the result of only a deliberate policy to increase market discipline. Rather, as was noted earlier, the delays are also the result of the inability of the deposit insurer to obtain, process, and certify the required information on the identity of the insured depositors and the amounts insured to make accurate payments sooner. This may be expected to vary from country to country. Indeed, legal time constraints are frequently imposed to limit, not extend, the length of any freezing of accounts. For example, Article 10 of the Directive of the European Union dealing with deposit-guarantee schemes, which became effective on July 1, 1995, requires that each member country's national insurance agency pay insured depositors "within three months of the date on which the competent authorities make a determination" that the bank is unable to repay its deposits in full and deposits become unavailable to the depositors. But, this time period may be extended for three three-month periods to a maximum of twelve months if necessary in "exceptional circumstance." Likewise, in Canada, the Canadian Deposit Insurance Corporation provided depositors of the failed Federation Trust Company in 1994 access to the insured portion of their deposits only 52 days after the bank was declared legally failed, although faster advance payments were made in cases of critical need (Canada Deposit Insurance Corporation, 1994-95).

To obtain additional information on the deposit paying practices of other countries, the FDIC surveyed 78 deposit insurers in 64 foreign countries in February 2000 on, among other issues, the availability of funds to depositors after a bank has been declared insolvent and differences in the treatment of insured and uninsured depositors. The countries chosen were those that had explicit deposit insurance schemes in place at the time. The responses of 30 countries that actually experienced bank failures since 1980 are analyzed here.¹²

-

¹² Other aspects of the survey are analyzed in Bennett (2001). A more complete analysis of this subsurvey appears in Kaufman and Seelig (2002).

Only three countries (Japan, Italy and Peru) provide for immediate payment of insured deposits. Five other countries gave insured depositors access to their funds within one month of the failure. The large majority of all respondents attempted to give insured depositors access within no more than three months. Four countries delayed depositor access longer. Although almost all of the respondents provided insured depositors with all their funds with a delay, they generally paid the funds all at one time. Only the deposit insurers in Italy, Austria, Latvia and Peru paid in installments.

The survey results clearly show that the practice of advancing funds to uninsured depositors at failed institutions is largely unique to the United States. Twenty-three of the respondents indicated that insured depositors cannot be fully protected in their country and only three deposit insurers (Canada, Japan, and Slovakia) indicated that they had the power to advance funds to cover uninsured depositors. Unlike it has for insured deposits, the European Union has no harmonizing directive covering payment to uninsured depositors or other creditors. This is left to the laws and regulations of the individual countries.

The timing of availability of funds to uninsured depositors is typically dependant on the type of resolution. In countries, such as Italy and Brazil, uninsured depositors have immediate access to their deposits if a resolution results in the transfer of the deposits to another financial institution. In most countries, unprotected depositors have to wait for the liquidation process to yield sufficient cash for payments to be made to them. The practices surrounding the liquidation of assets and payment of claims follows the national practices for corporate bankruptcy, with discretion being vested with the courts or the liquidator, receiver, or administrator for the failed bank estate. In all cases where the uninsured depositor were dependent on a liquidation process for their proceeds, they received access to their funds in installments.

A review of the additional comments volunteered by the respondents on the survey form suggests that, because most deposit insurers have no discretion to protect uninsured depositors in liquidations or to advance funds from their deposit insurance funds to uninsured depositors, they tend to use resolution strategies that fully protect uninsured depositors. This suggests that these countries are likely to resort to too big to fail type bailout resolutions strategies when larger banks become insolvent that include partial or total nationalization of the banks and/or extending blanket guarantees to the depositors and other creditors while the insolvent banks continue in operation.

IV. Summary and Conclusions

Losses in depositor liquidity appear to be a cause of adverse consequences of bank failures, at minimum, equal in importance to losses in deposit credit value, and in many countries far more important. Insured, as well as uninsured, accounts at failed banks are often partially or totally frozen until the receiver collects and distributes the proceeds from the sale of the bank or its assets, which may take up to many years. It follows that to reduce the adverse effects of bank failures, it is generally important to reduce the magnitude and length of depositor illiquidity. In the United States, illiquidity does not appear to be a very significant problem currently, but it was historically and still is in most other countries. In the U.S., the FDIC pays depositors the par amount of their insured deposits the next business day after the bank is legally failed, generally on a Monday after a bank is failed on the previous Friday. Payment is generally at an assuming bank. If the FDIC suffers no loss in the resolution or when it protects all uninsured deposits in full, the FDIC also makes the full par amount of the uninsured deposits available at the assuming bank.

In more recent years, except in cases of massive fraud or unusually difficult to value assets, the FDIC has frequently advanced a dividend to uninsured depositors at the same time it compensates the insured depositors in an amount equal to a conservative estimate of the

present value of the recovery amount. Thus, depositor illiquidity is minimized. If this is achieved and if losses in deposit value are kept small through appropriate application of prompt corrective action strategies, the FDIC is in a better position to resolve even large insolvent banks efficiently with minimum pressure for protecting stakeholders from either the stakeholders themselves or the government and helps to explain the successful introduction of uninsured deposit loss- sharing resolutions in recent years. That is, loss-sharing resolutions are economically and politically easier when depositor liquidity is provided. Indeed, one can argue that a program to quickly liquify all deposits at failed banks is a prerequisite to resolving insolvent banks efficiently with minimum social welfare loss. Thus, it is surprising that the FDIC has effectively stopped paying advance dividends to uninsured depositors in bank failures since 1995. The FDIC would do well to reactivate this program and to announce it publicly as ongoing policy to reduce depositor fears of illiquidity in bank resolutions.

The importance of deposit liquification at failed banks has been recognized in a number of periods in the U.S. throughout, at least, the twentieth century and was even proposed as a better behaving alternative to deposit insurance. Short-lived experiments with liquifying deposit accounts at failed banks were implemented in the early 1930s before the introduction of deposit insurance, when bank failures were frequent, by both the RFC and New York State Banking Commission. But these programs were terminated when the number of bank failures declined sharply after the Great Depression and the FDIC protected most uninsured as well as all insured deposits and provided near immediate account access to them. Only recently has the FDIC left uninsured deposits unprotected and been faced with the liquification problem.

But liquifying both insured and uninsured deposits at failed banks is less frequent in most other countries both because of technical problems in quickly identifying the eligible deposits and depositors and estimating the recovery values and because of the absence of

legislation explicitly providing for payments in advance of recoveries. As a result, political and economic pressures often encourage governments in these countries to avoid failing large insolvent banks and instead to maintain them in operation at a high long-term cost to their economies. Thus, if these countries were to introduce loss-sharing resolutions, they would benefit from adopting advance dividend payments along the lines of the FDIC program in the U.S. in the mid-1990s or, at minimum, encouraging the development of an efficient secondary market in depositor receivership claims.

FDIC Advanced Dividends Payments in Bank Resolutions (1992 – 2002)

Table 1

| Year | Number of failures (A) | Advanced Dividends Paid (numbers) (B) | Percentage (%) (B)/(A) |
|-------|------------------------------|---------------------------------------|------------------------------|
| 1992 | 120 | 35 | 29 |
| 1993 | 41 | 26 | 63 |
| 1994 | 13 | 8 | 62 |
| 1995 | 6 | 6 | 100 |
| 1996 | 5 | 2 | 0 |
| 1997 | 1 | 0 | 0 |
| 1998 | 3 | 0 | 0 |
| 1999 | 7 | 0 | 0 |
| 2000 | 6 | 1 | 17 |
| 2001 | 3 | 0 | 0 |
| 2002 | 10 | 0 | 0 |
| TOTAL | 215 | 78 | 36 |

Source: FDIC

References

- Anari, Ali, James Kolari, and Joseph Mason, "Bank Asset Liquidation and the Propagation of the U.S. Depression," <u>Working Paper</u>, <u>02-35</u>, Wharton Financial Institutions Center, August 2002.
- Belluck, Pam, "Continental Illinois Rescue May Doom FDIC Plan to Share the Insurance Risk," National Journal, August 11, 1984, pp. 1521-1524.
- Bennett, Rosalind L., "Failure Resolution and Asset Liquidation," <u>FDIC Banking Review</u>, Vol.14, No.1, 2001, pp. 1-28.
- Benston, George J. and George G. Kaufman, "FDICIA After Five Years," <u>Journal of Economic Perspective</u>, Summer 1997, pp. 139-158.
- Benston, George J. and George G. Kaufman, "Deposit Insurance Reform in the FDIC Improvement Act: The Experience to Date", <u>Economic Perspectives</u> (Federal Reserve Bank of Chicago), Second Quarter 1998, pp. 2-20.
- Bradley Christine M., "A Historical Perspective on Deposit Insurance Coverage," <u>FDIC Banking Review</u>, Vol.13, No.2, 2000, pp. 1-25.
- Bremer, C.D., American Bank Failures, New York: Columbia University Press, 1935
- Calomiris, Charles W. and Eugene N. White, "The Origins of Federal Deposit Insurance" in Claudia Goldin and Gary D. Libecap, eds., <u>The Regulated Economy</u>, Chicago: University of Chicago Press, 1994, pp. 145-188.
- Canada Deposit Insurance Corporation, Annual Report, 1994-95, Ottawa, 1995.
- Demirguc-Kunt Asli and Harry Huizinga, "Market Discipline and Financial Safety Net Design", Working Paper, Washington, D.C.: World Bank, July 1999.
- Dermine, Jean, "Comment," <u>Swiss Journal of Economic and Strategies</u>, December 1996, pp. 679-682.
- Federal Deposit Insurance Corporation, Annual Report, Washington, D.C., various years.
- Federal Deposit Insurance Corporation, <u>Deposit Insurance in a Changing Environment</u>, Washington, D.C., 1983.
- Federal Deposit Insurance Corporation, "Request for Comments Market Discipline for FDIC-Insured Banks," <u>Federal Register</u> (50 FR 19088), May 6, 1985
- Federal Deposit Insurance Corporation, History of the Eighties, Washington, D.C., 1997.
- Federal Deposit Insurance Corporation, Managing the Crisis, Washington, D.C., 1998a.
- Federal Deposit Insurance Corporation, Resolutions Handbook, Washington, D.C., 1998b.

- Friedman, Milton and Anna J. Schwartz, <u>A Monetary History of the United States</u>, 1867-1960, New York: Princeton University Press, 1963.
- Isaac, William M., "Address to National Council of Savings Institutions," New York, N.Y., December 6, 1983.
- Isaac, William M., "A Former Regulator's Perspective on the Decades of the 1980s," Unpublish paper presented at a FDIC Conference on the History of the Eighties, Washington, D.C., January 20, 1997.
- Jones, Jesse H., Fifty Billion Dollars, New York: MacMillan Co., 1951.
- Kane, Edward J., "How Incentive-Incompatible Deposit-Insurance Funds Fail," in George G. Kaufman, ed., <u>Research in Financial Services</u>, Vol. 4, Greenwich, CT.: JAI Press, 1992, pp. 51-91.
- Kaufman, George G., "Too Big to Fail in Banking: What Remains?" Quarterly Review of Economic and Finance, Summer 2002, pp.423-436.
- Kaufman, George G., and Steven A. Seelig, "Post Resolution Treatment of Depositors at Failed Banks," <u>Economic Perspectives</u> (Federal Reserve Bank of Chicago), 2Q. 2002, pp. 27-41.
- Kennedy, Susan E., <u>The Banking Crisis of 1933</u>, Lexington, KY: University Press of Kentucky, 1973
- Mason, Joseph, Ali Anari, and James Kolari, "The Speed of Bank Liquidation and Propagation of the U.S. Great Depression," <u>The Changing Financial Industry Structure and Regulation</u>, Chicago: Federal Reserve Bank of Chicago, May 2000, pp. 320-345.
- National Monetary Commission, Suggested Changes in the Administrative Features of the National Banking Laws: Replies to Circular Letter of Inquiry of September 26, 1908, Washington: Government Printing Office, 1910.
- Olson, James S., Saving Capitalism, Princeton, N.J.: Princeton University Press, 1988.
- Peria, Maria Soledad Martinez and Sergio L. Schmuker, "Do Depositors Punish Banks For Bad Behavior? Market Discipline, Deposit Insurance, and Banking Crises; <u>Journal of Finance</u>, June 2001, pp. 1029-1051.
- Pulkkinen, Thomas E. and Eric S. Rosengren, "Lessons from the Rhode Island Banking Crisis", New England Economic Review, May/June 1993, pp. 3-12.
- Short, Eugenie D., "FDIC Settlement Practices and the Size of Failed Banks," <u>Economic Review</u> (Federal Reserve Bank of Dallas), March 1985, pp 12-20.
- Sprague, Irvine H., <u>Bailout: An Insider's Account of Bank Failures and Rescues</u>, New York: Basic Books, 1986.

- Upham, Cyril and Edwin Lamke, <u>Closed and Distressed Banks</u>, Washington, D.C.: Brookings Institution, 1934.
- Viotti, Staffan, "Dealing with Banking Crises Proposal for a New Regulatory Framework," <u>Sveriges Riksbank Economic Review</u>, No. 3, 2000, pp. 46-63.
- Willis, H. Parker and John M. Chapman, <u>The Banking Situation</u>, New York: Columbia University Press, 1934.

Working Paper Series

A series of research studies on regional economic issues relating to the Seventh Federal Reserve District, and on financial and economic topics.

| Dynamic Monetary Equilibrium in a Random-Matching Economy Edward J. Green and Ruilin Zhou | WP-00-1 |
|---|----------|
| The Effects of Health, Wealth, and Wages on Labor Supply and Retirement Behavior <i>Eric French</i> | WP-00-2 |
| Market Discipline in the Governance of U.S. Bank Holding Companies: Monitoring vs. Influencing Robert R. Bliss and Mark J. Flannery | WP-00-3 |
| Using Market Valuation to Assess the Importance and Efficiency of Public School Spending Lisa Barrow and Cecilia Elena Rouse | WP-00-4 |
| Employment Flows, Capital Mobility, and Policy Analysis Marcelo Veracierto | WP-00-5 |
| Does the Community Reinvestment Act Influence Lending? An Analysis of Changes in Bank Low-Income Mortgage Activity Drew Dahl, Douglas D. Evanoff and Michael F. Spivey | WP-00-6 |
| Subordinated Debt and Bank Capital Reform Douglas D. Evanoff and Larry D. Wall | WP-00-7 |
| The Labor Supply Response To (Mismeasured But) Predictable Wage Changes <i>Eric French</i> | WP-00-8 |
| For How Long Are Newly Chartered Banks Financially Fragile? Robert De Young | WP-00-9 |
| Bank Capital Regulation With and Without State-Contingent Penalties David A. Marshall and Edward S. Prescott | WP-00-10 |
| Why Is Productivity Procyclical? Why Do We Care? Susanto Basu and John Fernald | WP-00-11 |
| Oligopoly Banking and Capital Accumulation Nicola Cetorelli and Pietro F. Peretto | WP-00-12 |
| Puzzles in the Chinese Stock Market John Fernald and John H. Rogers | WP-00-13 |
| The Effects of Geographic Expansion on Bank Efficiency Allen N. Berger and Robert DeYoung | WP-00-14 |
| Idiosyncratic Risk and Aggregate Employment Dynamics Jeffrey R. Campbell and Jonas D.M. Fisher | WP-00-15 |

| Post-Resolution Treatment of Depositors at Failed Banks: Implications for the Severity of Banking Crises, Systemic Risk, and Too-Big-To-Fail <i>George G. Kaufman and Steven A. Seelig</i> | WP-00-16 |
|---|----------|
| The Double Play: Simultaneous Speculative Attacks on Currency and Equity Markets Sujit Chakravorti and Subir Lall | WP-00-17 |
| Capital Requirements and Competition in the Banking Industry Peter J.G. Vlaar | WP-00-18 |
| Financial-Intermediation Regime and Efficiency in a Boyd-Prescott Economy <i>Yeong-Yuh Chiang and Edward J. Green</i> | WP-00-19 |
| How Do Retail Prices React to Minimum Wage Increases? James M. MacDonald and Daniel Aaronson | WP-00-20 |
| Financial Signal Processing: A Self Calibrating Model Robert J. Elliott, William C. Hunter and Barbara M. Jamieson | WP-00-21 |
| An Empirical Examination of the Price-Dividend Relation with Dividend Management Lucy F. Ackert and William C. Hunter | WP-00-22 |
| Savings of Young Parents Annamaria Lusardi, Ricardo Cossa, and Erin L. Krupka | WP-00-23 |
| The Pitfalls in Inferring Risk from Financial Market Data Robert R. Bliss | WP-00-24 |
| What Can Account for Fluctuations in the Terms of Trade? Marianne Baxter and Michael A. Kouparitsas | WP-00-25 |
| Data Revisions and the Identification of Monetary Policy Shocks Dean Croushore and Charles L. Evans | WP-00-26 |
| Recent Evidence on the Relationship Between Unemployment and Wage Growth Daniel Aaronson and Daniel Sullivan | WP-00-27 |
| Supplier Relationships and Small Business Use of Trade Credit Daniel Aaronson, Raphael Bostic, Paul Huck and Robert Townsend | WP-00-28 |
| What are the Short-Run Effects of Increasing Labor Market Flexibility? <i>Marcelo Veracierto</i> | WP-00-29 |
| Equilibrium Lending Mechanism and Aggregate Activity Cheng Wang and Ruilin Zhou | WP-00-30 |
| Impact of Independent Directors and the Regulatory Environment on Bank Merger Prices: Evidence from Takeover Activity in the 1990s Elijah Brewer III, William E. Jackson III, and Julapa A. Jagtiani | WP-00-31 |
| Does Bank Concentration Lead to Concentration in Industrial Sectors? <i>Nicola Cetorelli</i> | WP-01-01 |

| On the Fiscal Implications of Twin Crises Craig Burnside, Martin Eichenbaum and Sergio Rebelo | WP-01-02 |
|---|----------|
| Sub-Debt Yield Spreads as Bank Risk Measures Douglas D. Evanoff and Larry D. Wall | WP-01-03 |
| Productivity Growth in the 1990s: Technology, Utilization, or Adjustment? Susanto Basu, John G. Fernald and Matthew D. Shapiro | WP-01-04 |
| Do Regulators Search for the Quiet Life? The Relationship Between Regulators and The Regulated in Banking <i>Richard J. Rosen</i> | WP-01-05 |
| Learning-by-Doing, Scale Efficiencies, and Financial Performance at Internet-Only Banks Robert DeYoung | WP-01-06 |
| The Role of Real Wages, Productivity, and Fiscal Policy in Germany's Great Depression 1928-37 Jonas D. M. Fisher and Andreas Hornstein | WP-01-07 |
| Nominal Rigidities and the Dynamic Effects of a Shock to Monetary Policy Lawrence J. Christiano, Martin Eichenbaum and Charles L. Evans | WP-01-08 |
| Outsourcing Business Service and the Scope of Local Markets <i>Yukako Ono</i> | WP-01-09 |
| The Effect of Market Size Structure on Competition: The Case of Small Business Lending Allen N. Berger, Richard J. Rosen and Gregory F. Udell | WP-01-10 |
| Deregulation, the Internet, and the Competitive Viability of Large Banks and Community Banks Robert DeYoung and William C. Hunter | WP-01-11 |
| Price Ceilings as Focal Points for Tacit Collusion: Evidence from Credit Cards Christopher R. Knittel and Victor Stango | WP-01-12 |
| Gaps and Triangles Bernardino Adão, Isabel Correia and Pedro Teles | WP-01-13 |
| A Real Explanation for Heterogeneous Investment Dynamics Jonas D.M. Fisher | WP-01-14 |
| Recovering Risk Aversion from Options Robert R. Bliss and Nikolaos Panigirtzoglou | WP-01-15 |
| Economic Determinants of the Nominal Treasury Yield Curve Charles L. Evans and David Marshall | WP-01-16 |
| Price Level Uniformity in a Random Matching Model with Perfectly Patient Traders Edward J. Green and Ruilin Zhou | WP-01-17 |
| Earnings Mobility in the US: A New Look at Intergenerational Inequality Bhashkar Mazumder | WP-01-18 |

| The Effects of Health Insurance and Self-Insurance on Retirement Behavior Eric French and John Bailey Jones | WP-01-19 |
|--|----------|
| The Effect of Part-Time Work on Wages: Evidence from the Social Security Rules Daniel Aaronson and Eric French | WP-01-20 |
| Antidumping Policy Under Imperfect Competition Meredith A. Crowley | WP-01-21 |
| Is the United States an Optimum Currency Area? An Empirical Analysis of Regional Business Cycles Michael A. Kouparitsas | WP-01-22 |
| A Note on the Estimation of Linear Regression Models with Heteroskedastic Measurement Errors Daniel G. Sullivan | WP-01-23 |
| The Mis-Measurement of Permanent Earnings: New Evidence from Social Security Earnings Data Bhashkar Mazumder | WP-01-24 |
| Pricing IPOs of Mutual Thrift Conversions: The Joint Effect of Regulation and Market Discipline Elijah Brewer III, Douglas D. Evanoff and Jacky So | WP-01-25 |
| Opportunity Cost and Prudentiality: An Analysis of Collateral Decisions in Bilateral and Multilateral Settings Herbert L. Baer, Virginia G. France and James T. Moser | WP-01-26 |
| Outsourcing Business Services and the Role of Central Administrative Offices <i>Yukako Ono</i> | WP-02-01 |
| Strategic Responses to Regulatory Threat in the Credit Card Market* <i>Victor Stango</i> | WP-02-02 |
| The Optimal Mix of Taxes on Money, Consumption and Income Fiorella De Fiore and Pedro Teles | WP-02-03 |
| Expectation Traps and Monetary Policy Stefania Albanesi, V. V. Chari and Lawrence J. Christiano | WP-02-04 |
| Monetary Policy in a Financial Crisis Lawrence J. Christiano, Christopher Gust and Jorge Roldos | WP-02-05 |
| Regulatory Incentives and Consolidation: The Case of Commercial Bank Mergers and the Community Reinvestment Act Raphael Bostic, Hamid Mehran, Anna Paulson and Marc Saidenberg | WP-02-06 |
| Technological Progress and the Geographic Expansion of the Banking Industry Allen N. Berger and Robert DeYoung | WP-02-07 |

| Choosing the Right Parents: Changes in the Intergenerational Transmission of Inequality — Between 1980 and the Early 1990s David I. Levine and Bhashkar Mazumder | WP-02-08 |
|--|----------|
| The Immediacy Implications of Exchange Organization James T. Moser | WP-02-09 |
| Maternal Employment and Overweight Children Patricia M. Anderson, Kristin F. Butcher and Phillip B. Levine | WP-02-10 |
| The Costs and Benefits of Moral Suasion: Evidence from the Rescue of Long-Term Capital Management Craig Furfine | WP-02-11 |
| On the Cyclical Behavior of Employment, Unemployment and Labor Force Participation <i>Marcelo Veracierto</i> | WP-02-12 |
| Do Safeguard Tariffs and Antidumping Duties Open or Close Technology Gaps? Meredith A. Crowley | WP-02-13 |
| Technology Shocks Matter Jonas D. M. Fisher | WP-02-14 |
| Money as a Mechanism in a Bewley Economy Edward J. Green and Ruilin Zhou | WP-02-15 |
| Optimal Fiscal and Monetary Policy: Equivalence Results Isabel Correia, Juan Pablo Nicolini and Pedro Teles | WP-02-16 |
| Real Exchange Rate Fluctuations and the Dynamics of Retail Trade Industries on the U.SCanada Border Jeffrey R. Campbell and Beverly Lapham | WP-02-17 |
| Bank Procyclicality, Credit Crunches, and Asymmetric Monetary Policy Effects: A Unifying Model Robert R. Bliss and George G. Kaufman | WP-02-18 |
| Location of Headquarter Growth During the 90s Thomas H. Klier | WP-02-19 |
| The Value of Banking Relationships During a Financial Crisis: Evidence from Failures of Japanese Banks Elijah Brewer III, Hesna Genay, William Curt Hunter and George G. Kaufman | WP-02-20 |
| On the Distribution and Dynamics of Health Costs Eric French and John Bailey Jones | WP-02-21 |
| The Effects of Progressive Taxation on Labor Supply when Hours and Wages are Jointly Determined Daniel Aaronson and Eric French | WP-02-22 |

| Inter-industry Contagion and the Competitive Effects of Financial Distress Announcements: Evidence from Commercial Banks and Life Insurance Companies Elijah Brewer III and William E. Jackson III | |
|--|----------|
| State-Contingent Bank Regulation With Unobserved Action and Unobserved Characteristics David A. Marshall and Edward Simpson Prescott | WP-02-24 |
| Local Market Consolidation and Bank Productive Efficiency Douglas D. Evanoff and Evren Örs | WP-02-25 |
| Life-Cycle Dynamics in Industrial Sectors. The Role of Banking Market Structure <i>Nicola Cetorelli</i> | WP-02-26 |
| Private School Location and Neighborhood Characteristics Lisa Barrow | WP-02-27 |
| Teachers and Student Achievement in the Chicago Public High Schools Daniel Aaronson, Lisa Barrow and William Sander | WP-02-28 |
| The Crime of 1873: Back to the Scene <i>François R. Velde</i> | WP-02-29 |
| Trade Structure, Industrial Structure, and International Business Cycles Marianne Baxter and Michael A. Kouparitsas | WP-02-30 |
| Estimating the Returns to Community College Schooling for Displaced Workers Louis Jacobson, Robert LaLonde and Daniel G. Sullivan | WP-02-31 |
| A Proposal for Efficiently Resolving Out-of-the-Money Swap Positions at Large Insolvent Banks George G. Kaufman | WP-03-01 |
| Depositor Liquidity and Loss-Sharing in Bank Failure Resolutions <i>George G. Kaufman</i> | WP-03-02 |