

Deposit Insurance*

by

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Abstract

This paper considers the rationale for deposit insurance, such as that provided by the Federal Deposit Insurance Corporation (FDIC). Deposit insurance provides benefits by protecting small, unsophisticated savers and by enhancing financial stability through prevention of bank runs. However, deposit insurance can lead to distortions because governments are politically constrained in their ability to assess banks' risks. The paper gives a brief history of U.S. Federal deposit insurance and then discusses the risk characteristics of providing deposit insurance. Fair market deposit insurance premiums are shown to be analogous to the credit spread that a bank would pay on its uninsured debt or the credit default swap (CDS) spread that insures the bank's debt. Importantly, because of the systematic risk inherent in bank failures, fair insurance premiums must incorporate a systematic risk component that makes premiums exceed expected losses.

The main shortcomings of FDIC insurance result from its attempt to set deposit insurance premiums to target deposit insurance fund (DIF) reserves. This premium-setting scheme leads to subsidies that excessively expand the government safety net and lead banks to make investments that have extreme systematic risk. In addition, too little has been accomplished toward reducing the 'Too Big to Fail' (TBTF) incentive for bailing out large banks.

The paper discusses deposit insurance-related reforms that would improve the efficiency of the financial system. The first is to mitigate TBTF by reducing counterparty risk via centralized clearing (and possibly exchange-trading) of derivatives. The second is to move toward fair pricing of deposit insurance by a greater reliance on market information and possibly enhanced collateralization of deposits. The third is to either abolish the DIF or use market mechanisms such as swaps that can transfer the risk of targeting DIF reserves to investors outside of the banking industry.

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Deposit Insurance

Introduction

The United States government funds its operations by auctioning U.S. Treasury securities which are considered to be free from default risk. It also gives banks the right to issue default-free debt in the form of Federal Deposit Insurance Corporation (FDIC) - insured deposits. FDIC insurance is valuable to a bank since investors require lower interest rates to be paid on default-free debt than on comparable default-risky debt. FDIC backing is particularly valuable during economic downturns when a “flight-to-quality” increases the demand for default-free investments. During 2008, many non-bank financial institutions applied for conversion to bank or thrift holding companies, in large part to obtain access to insured funding.¹ Because a greater share of the financial system is now protected by the ‘safety net’ of deposit insurance, the FDIC’s impact on the financial system has grown.

The goal of this paper is to examine the nature of deposit insurance and suggest reforms that can improve the efficiency and stability of the financial system. Much of its focus is on the appropriate premiums that banks should pay for deposit insurance. Often this issue is underplayed when deposit insurance, and bank regulation more generally, is discussed.² However, it has often been the case that premiums were set too low and deposit insurance was subsidized. Subsidization led intermediaries to switch from uninsured debt to insured deposits, a switch that became easier during the current decade due to legislation that liberalized the formation of bank holding companies.³ With an increasing proportion of the financial system seeking access to artificially cheap credit, there is likely to be a decline in financial system stability and a greater likelihood of taxpayer bailouts.

The plan of the paper is as follows. The next section reviews justifications for government deposit insurance. Its benefits include providing a safe savings vehicle for small, unsophisticated investors and preventing bank runs, while its costs derive from the insurer’s difficulties in assessing banks’ risks. The following section gives a brief history of Federal

¹ Financial institutions that have applied for bank or thrift holding company status include investment banks (Goldman Sachs, Morgan Stanley, Raymond James), finance companies (American Express, CIT, GMAC), and insurance companies (Aegon, Genworth Financial, Hartford Financial, and Lincoln National). Besides gaining access to insured deposits, these institutions become eligible for insurance on their senior, unsecured debt, as will be discussed later.

² In the past, bank regulation has emphasized the appropriate setting of capital standards (such as the Basel I and II international capital standards) far more than the proper setting of deposit insurance premiums. However, a neglect of deposit insurance premiums may be misguided. Theory such as Flannery (1991) implies that setting both capital standards and deposit insurance premiums is required for optimal bank regulation.

³ Specifically, the Financial Services Modernization (Gramm-Leach-Bliley) Act of 1999 eased consolidation between banks, securities firms, and insurance companies.

deposit insurance in the United States. As a prelude to highlighting the shortcomings of FDIC insurance, the fourth section discusses the risk characteristics of deposit insurance and how premiums should be set to avoid subsidies and their resulting distortions.

The fifth section considers how FDIC insurance falls short of an ideal deposit insurance system and why it tends to produce subsidies. While FDIC insurance is promoted as being financed entirely by the banking industry, in practice it has been taxpayer assisted. Taxpayer subsidies are increased by incentives to justify assistance to large banks because they are ‘Too Big to Fail’ (TBTF). The sixth section discusses reforms that would minimize counter-party risk between financial institutions and investors and would mitigate, if not eliminate, TBTF. It also suggests alternative reforms for how deposit insurance premiums should be set in order to reduce subsidies, reduce the risk of banks paying higher premiums during economic downturns, and reduce the likelihood of taxpayer bailouts.

Rationale for Government Deposit Insurance

Government provision of deposit insurance has been justified by two main arguments. One is that deposit insurance creates a safe savings vehicle for small, unsophisticated individuals. If such individuals lack access to low-risk investments other than bank deposits, then deposit insurance transforms their default-risky bank debt into an investment that is default-free. Although, in the absence of deposit insurance, some individuals may be able to seek and monitor credit-worthy banks in which to place their savings, many lesser-informed individuals lack the ability to do this at low cost. It may be more efficient for a government to provide deposit insurance and supervise banks in the place of these many small savers (Merton 1977). A related reason for deposit insurance involves banks’ role in providing a liquid transactions account (checking deposit) for small, uninformed individuals (Gorton and Pennacchi 1990). A bank’s ability to create liquid transactions deposits can break down if its capital declines and default risk rises. In this circumstance, deposit insurance restores deposit liquidity by making deposits default-free.⁴

A second rationale for deposit insurance relates to financial and monetary stability. The reasoning is as follows. Besides providing deposits for small savers, another role for banks is to efficiently lend to “opaque” firms and individuals: those borrowers whose creditworthiness needs to be evaluated and monitored in order to avoid excessive defaults. As Diamond (1984) shows, banks provide a low-cost means of screening the credit of loan applicants and monitoring

⁴ This need for deposit insurance is supported by Laeven’s (2004) empirical findings that insurance coverage is significantly higher in countries where banks tend to be poorly capitalized and where depositors tend to be poorly educated.

borrowers on the behalf of many small savers (depositors). However, the private information about borrower credit risk that banks gain when making such loans can make loans illiquid. If a bank needs to sell such loans prior to maturity, value can be lost by liquidating them. This occurs due to an adverse selection problem where loan buyers suspect that a bank is selling its worst quality loans. Alternatively, after selling a loan, a bank will lack the incentive to efficiently monitor the borrower, increasing the likelihood that the loan will default. In either case, loan buyers will discount the value of the loan so that loan sales will occur at “firesale” prices.

Banks’ role in making illiquid loans then can conflict with their role in providing liquid deposit accounts. Bank runs occur if individuals decide to withdraw their deposits en masse in an attempt to avoid individually suffering losses should the bank need to liquidate its loans. Runs not only cause disruptions to bank-dependent borrowers. If individuals shift out of bank deposits and hoard currency, runs have a monetary impact that is deflationary (Friedman and Schwartz 1963). Deposit insurance eliminates the incentive to start a bank run and thereby avoids the excessive liquidation of bank loans (Diamond and Dybvig 1983).

Along with the benefits of protecting small savers and eliminating bank runs, government deposit insurance entails costs. With deposit insurance, the Federal government is exposed to losses from bank failures and therefore needs to supervise and regulate banks (Flannery 1982). If government supervision and regulation of banks is lax, bank failures can be more likely than in the absence of deposit insurance. As occurs when any limited-liability firm issues debt, banks that issue deposits may have moral hazard incentives to make excessively risky loans and investments that, when successful, return high profits to bank shareholders but, when unsuccessful, return losses to debtholders or the government insurer. When a bank’s debt is uninsured, debtholders have an incentive to limit this risk-taking by restricting the bank’s investments via covenants or by charging higher credit spreads on risky banks’ debt. However, insured depositors lack the incentive to perform this “market discipline.” Hence, there is a need for the government insurer to regulate an insured bank’s capital structure, its investment policy, and to mimic the market discipline of risk-related credit spreads by charging risk-related deposit insurance premiums.

Unfortunately, political concerns impinge on a government’s ability to adequately monitor financial institutions and assess their risks. Compared to market investors, government regulators face constraints that limit their ability to discriminate between banks having different risks of failure. Because of these limitations, deposit insurance premiums and bank regulation are unlikely to reflect the true cost of the government’s guarantee. Stiglitz (1993) argues this point:

“Government, however, faces a tremendous disadvantage in assessing risks and charging premiums based on risk differences. The reason for this, at least in part, is that risk assessments are basically subjective. Economic conditions are constantly changing, and no matter how rational the risk assessor may be, there is always a subjective element in choosing the relevant base for making such judgments....Is it plausible to believe that the government could charge banks in Texas a higher premium for insurance than banks in Idaho, or firms in Houston more than those in Dallas? Any such differentiation might be quickly labeled unfair.

The market makes such differentiations all the time, converting the subjective judgments of many participants into an objective standard. If some bank in Houston complains about the risk premium it is being charged by the market (in the form of a higher rate it must pay to attract uninsured depositors), there is a simple reply: Provide evidence that the risk has been overestimated, and the market will render a verdict. If the information is credible, the risk premium will be reduced.

In short, government inevitably has to employ relatively simple rules in assessing risk - rules that almost certainly do not capture all of the relevant information, since political considerations will not allow government to differentiate on bases that the market would almost surely employ.

The difficulties government has in assessing risk, and that citizens face in evaluating the government’s performance on this score, provide an opportunity for granting huge hidden subsidies.”

In principle, deposit insurance might be provided by private insurers who face less political constraints when assessing a bank’s risk. However, unsophisticated depositors may lack the ability to evaluate the creditworthiness of private insurers and may have greater confidence that a Federal government can fulfill its deposit guarantee because of its power to tax and print money.⁵ This confidence is especially important for insuring against bank defaults because, as will be argued below, bank failures tend to be correlated, making deposit insurance losses undiversifiable. A private insurance company may need a large amount of capital to ensure that it can make good on its promise and prevent incentives for bank runs.

One possibility would be for private insurers to insure multiple banks’ deposits and then have the Federal government guarantee the private insurers’ policies against default. While government supervision and regulation of the private insurers is required, such an arrangement is likely to be less complex for a government and subject to fewer distortions compared to directly regulating and monitoring each bank. If competitive private insurers are capitalized sufficiently, they would have an incentive to properly assess banks’ risks and set fair premiums.

Another public-private arrangement would allow private insurers to insure a ‘first-loss’ piece (share) of bank losses while the government covers catastrophic losses. One way to

⁵ During the 1980’s as bank failures mounted, there was some anxiety as to whether the U.S. government stood behind Federal deposit insurance corporations. In an attempt to quell this fear, the Competitive Equality Banking Act of 1987 formally stated “deposits up to the statutorily prescribed amount in federally insured depository institutions are backed by the full faith and credit of the United States.”

eliminate the possibility of default by private insurers is to require them to put up collateral equal to the total amount of losses to which they are exposed. If this were done, then the arrangement would be very similar to a ‘credit linked-note’ or a ‘subordinated debt requirement.’ Several proposals have been advanced to require that banks regularly issue subordinated debt.⁶ A similar proposal would require that a bank issue subordinated debt that automatically converts to new shareholders’ equity when the value of its original shareholders’ equity declines (Flannery 2005).⁷ For all of these proposals, the larger is the required private subordinated insurance / debt piece, the smaller would be any distortions resulting from government mispricing of the catastrophic loss piece.

Due to technological change and financial innovation, there may now be other financial structures that can provide the same benefits as those from insuring bank deposits but with lower complexities and costs. For example, new financial arrangements have weakened the argument that deposit insurance is necessary to provide small savers with a safe, liquid transactions account. As discussed in Gorton and Pennacchi (1992, 1993), money market mutual fund shares can substitute for bank deposits. Because money market funds are restricted by U.S. Securities and Exchange Commission (SEC) rules to invest in high credit quality, short-term instruments, rather than longer-maturity, credit risky loans and investments, they have much lower default risk.⁸ Any remaining default risk that money market funds do possess is relatively transparent and easy to assess, even by a government regulator. Government insurance of money market mutual funds could provide extra confidence to investors at much lower cost than deposit insurance.⁹

As outlined in Pennacchi (2006), banks could offer insured money market shares to their customers wanting a liquid, safe account by following SEC rules and fully collateralizing these accounts with money market instruments. These banks’ remaining loans and investments would need to be funded with uninsured debt, such as wholesale Certificates of Deposit (CDs) and

⁶ See Evanoff and Wall (2000) for a review of proposals that require banks to regularly issue subordinated debt. DeYong, Flannery, Lang, and Sorescu (2001) show that subordinated debt yields, as well as supervisory ratings, provide valuable information about a bank’s risk.

⁷ An attractive aspect of this proposal is that a bank is not forced into default and receivership when its original shareholders’ equity declines: its convertible debt serves as ‘contingent capital.’ This is not unlike the February 2009 conversion of the U.S. Treasury’s preferred shares of Citigroup into new Citigroup common shareholders’ equity. Kashyap et al. (2008) present a related contingent capital proposal.

⁸ This statement holds true despite the recent ‘breaking of the buck’ by a Primary Reserve money market fund. This fund’s loss of 1.5 percent of its asset value resulted from its large position in defaulted Lehman Brothers commercial paper, which had been rated A2/P2. Current SEC regulations require at least 95 percent of a fund’s holdings to be rated A1/P1 and at most 5 percent to be rated A2/P2. The fund’s loss could have been prevented by tighter SEC rules, such as disallowing A2/P2 rated obligations or requiring more diversification across companies if they are rated A2/P2.

⁹ In September 2008, the U.S. Treasury established a temporary program to guarantee money market mutual fund shares for an annual premium of 1 basis point (1 cent per \$100 of insured shares).

commercial paper.¹⁰ Such a plan could be most easily implemented for the largest of U.S. banks since the bulk of their liabilities are already in the form of uninsured debt. As is the case today, during times of financial crisis the Federal Reserve can act as a lender of last resort to support wholesale CD and commercial paper markets in order to avoid runs by institutional investors.

In summary, the rationale for government deposit insurance is weaker than when the FDIC was created in 1933. Structural changes in the financial system have created greater scope for private alternatives. There may still be a role for the Federal government to act as a back-stop, but it should leave the lion's share of risk assessment to private investors and/or insurers who can better perform this function. Alternatively, a government deposit insurer could emphasize the use of market information to assess banks' risks; that is, mimic private investors' risk assessments of particular banks. This topic is explored in the sixth section.

Brief History of U.S. Federal Deposit Insurance

Federal deposit insurance began under the (Glass-Steagall) Banking Act of 1933 which created the FDIC to insure deposits of commercial banks. The National Housing Act of 1934 created a parallel insurer for thrift institutions, the Federal Savings and Loan Insurance Corporation (FSLIC). In the wake of the savings and loan crisis, the FSLIC was abolished by the Financial Institutions Reform, Recovery and Enforcement Act of 1989, and its insurance duties were transferred to the FDIC. Because the FSLIC's administration of deposit insurance was similar to that of the FDIC, our description of U.S. deposit insurance will focus on the FDIC.¹¹

Largely because of the government's difficulty in assessing risk, through most of the FDIC's history, deposit insurance premiums did not depend on the creditworthiness of individual banks. From 1935 to 1990, each FDIC-insured bank was assessed one-twelfth of one-percent of its total deposits (approximately 8.3 cents per \$100 deposits; that is, 8.3 basis points). However, the effective FDIC insurance premium per deposit paid by all banks was typically lower because, starting in 1950, a portion of it usually was rebated. This rebate was adjusted in order to target the amount of FDIC reserves in its Deposit Insurance Fund (DIF).¹² FDIC reserves are invested in

¹⁰ There is theoretical research that seeks to explain a bank's structure of making illiquid loans funded by uninsured, short-maturity deposits as an optimal contract. This work includes Diamond (1984), Calomiris and Kahn (1991), and Diamond and Rajan (2001). However, this research truly models bank deposits as short-term bank debt, so that the justifications for a bank's structure holds for wholesale CDs and commercial paper as well as uninsured bank deposits.

¹¹ A third Federal insurer, the National Credit Union Share Insurance Fund (NCUSIF) was created in 1970 to insure the shares (deposits) of credit unions. Its administration of share insurance closely follows that of the FDIC.

¹² Prior to 2005, there were two insurance funds; the Bank Insurance Fund (BIF) covering commercial banks; and the Savings Association Insurance Fund (SAIF) covering thrifts. The Federal Savings and Loan

U.S. Treasury securities, and these reserves increase due to interest payments from these securities and due to banks' net premium payments. Reserves decline due to insurance claims arising from bank failures. The FDIC's reserves began in 1934 with a \$289 million capital injection from the U.S. Treasury and the Federal Reserve.¹³

From the start, the banking industry generally wanted deposit insurance assessments to be set at a relatively low level.¹⁴ Yet, the FDIC desired premiums to be high enough to maintain sufficient reserves for covering future claims from bank failures and reduce the likelihood that additional funds from the U.S. Treasury would be required.¹⁵ Thus, since the creation of the FDIC there has been a focus on its reserves (the DIF) as a separate account within the overall Federal government's balance sheet, and premiums have been adjusted to manage its level. In 1980, the DIF was given a range of between 1.1 to 1.4 percent of the banking industry's total insured deposits. Following depletion of the DIF due to the large number of bank failures during the 1980s (see Figure 1), the Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA) mandated that premiums be set to eventually achieve a 'Designated Reserve Ratio' (DRR) of reserves to total insured deposits of 1.25 percent.

The costly bank failures of the 1980s and early 1990s, which required over \$100 billion of taxpayer funds to resolve the failures of thrift institutions, ultimately led to reforms that included more stringent supervision of problem banks. The 1991 Federal Deposit Insurance Corporation Improvement Act (FDICIA) instituted several nondiscretionary supervisory interventions known as 'prompt corrective action' whose purpose was to quickly resolve problem banks by requiring that they quickly increase their capital ratios or be closed.¹⁶ The FDIC was also required to resolve problem and failed banks in a manner that would impose the least cost to the DIF. FDICIA's only exception to implementing these 'least cost' provisions could be when doing so "would have serious adverse effects on economic conditions or financial stability." This 'systemic risk exception' requires approval by at least two-thirds of the FDIC Board, two-thirds of the Federal Reserve Board, and the U.S. Treasury Secretary after consultation with the U.S. President.

Insurance Corporation (FSLIC) operated an insurance fund which became known as the SAIF when it was taken over by the FDIC in 1989. The funds were merged as the DIF in 2005.

¹³ By 1951, the FDIC repaid with interest this initial capital injection.

¹⁴ See Federal Deposit Insurance Corporation (1984) page 56.

¹⁵ The Banking Act of 1935 provided the FDIC with a \$975 million line of credit from the U.S. Treasury. Currently, this line of credit is formally set at \$30 billion.

¹⁶ Prompt corrective action was a response to the view that thrift and commercial bank regulators had delayed the closure of undercapitalized banks. These delays, known as 'regulatory forbearance', had added to the ultimate cost of resolving failed banks and led to the taxpayer bailout.

FDICIA also required that the FDIC establish risk-related premiums. The outcome of this requirement was a schedule where premiums differed depending on three levels of a bank's capitalization (well-capitalized, adequately-capitalized, or under-capitalized) and three supervisory rating groups (rating '1' or '2', rating '3', or rating '4' or '5'). As a result, banks could in principle pay nine different levels of insurance premiums depending on their capitalization and supervisory rating. Unfortunately, this assessment plan failed to effectively discriminate between different banks' riskiness since during 1996 to 2006, well over 90 percent of all banks were categorized in the lowest risk category (well-capitalized, rating '1' or '2').

FDICIA and the Deposit Insurance Funds Act of 1996 further specified that if DIF reserves exceeded the DRR of 1.25 percent, the FDIC was prohibited from charging any insurance premiums to banks in the lowest risk category. Further if DIF reserves fell below 1.25 percent, the law specified that all banks should be assessed an insurance premium of at least 23 basis points per \$100 deposits until the 1.25 percent target was restored. However, during the entire 1996 to 2006 period, DIF reserves were above 1.25 percent of insured deposits and the vast majority of banks were classified in the lowest risk category. Hence, during this decade, all but a small minority of banks paid nothing for deposit insurance.

The Federal Deposit Insurance Reform Act of 2005 (FDIRA) instituted two major changes regarding the setting of insurance premiums. First, this legislation allowed the FDIC to revise the risk-based classification system and allow premiums to be charged even for banks categorized as least risk. The revised risk categories continue to be based on capital levels and supervisor ratings, but additional information on financial ratios and, for large banks, the credit ratings of their long-term debt are used. At the time of adoption, approximately 45 percent of banks were charged the minimum rate. The initial proposal permitted base risk-related rates to range from 2 to 40 basis points.¹⁷

Second, instead of the DRR having a hard target of 1.25 percent, the DRR was given the looser range of 1.15 percent to 1.50 percent. As a way of managing reserves to satisfy this DRR range, when DIF reserves exceed 1.50 percent (*1.35 percent*), a rebate of 100 percent (*50 percent*) of the surplus would be paid to banks. If DIF reserves fall below 1.15 percent, the FDIC must establish a restoration plan that raises premiums to a level sufficient to return reserves to the DRR range within five years. The reserves of DIF did fall to 1.01 percent of insured deposits on June 30, 2008, and the FDIC presented a restoration plan that assessed rates from 12 to 50 basis points, depending on risk category.¹⁸

¹⁷ For details, see Federal Register 71, No.141, July 24, 2006.

¹⁸ Federal Register 73, No.201, October 16, 2008.

During the last quarter of 2008, the FDIC established temporary insurance programs. The Emergency Economic Stabilization Act, which created the Troubled Assets Relief Program (TARP) and was signed into law on October 3, 2008, also raised the basic per account deposit insurance coverage from \$100,000 to \$250,000 until December 31, 2009. In addition, the FDIC gained approval for a 'systemic risk exception' under FDICIA to create its Temporary Liquidity Guarantee Program (TLGP). TLGP is voluntary program that has two main provisions. First, for a 10 basis point deposit insurance premium surcharge on balances exceeding \$250,000, a bank can obtain unlimited insurance coverage for non-interest bearing transactions accounts until December 31, 2009. Second, banks and bank holding companies can issue senior unsecured debt until June 30, 2009 that is guaranteed against default, with coverage limited until June 30, 2012.¹⁹ The insurance premiums for debt having an initial maturity of between 30 and 180 days, 181 and 364 days, and 365 days or greater are 50 basis points, 75 basis points, and 100 basis points, respectively.

The amount of insured bank and bank holding company liabilities under these temporary programs will not be included in the calculation of the DIF reserve to insured deposit ratio when calculating the DRR target range. However, because the TLGP was established under FDICIA's systemic risk exception, any net losses from the program are required to be covered by a special assessment charged to all banks. Any net surplus generated by TLGP would be added to the DIF. Note that a systemic risk exception was also invoked on November 23, 2008 when the FDIC made up to \$10 billion in loan guarantees to assist Citigroup, so that any net losses from these guarantees would also require a special assessment paid by all banks.

At the end of 2008, the DIF had fallen to 0.40 percent of insured deposits, and the FDIC forecasted that the fund would be wiped out in 2009 unless premiums were raised further. On February 27, 2009, the FDIC Board approved a 'one-time' 20 basis point surcharge that would raise total premiums from 32 to 70 basis points, depending on risk category. However, after an outcry by the banking industry that such a large increase was unfair, the FDIC reversed course and reconsidered raising premiums by only 10 basis points if legislation could be passed to raise its Treasury borrowing authority from \$30 billion to \$100 billion.

Nature of Deposit Insurance Risks

Several types of financial contracts provide insurance against default and are closely related to deposit insurance or guarantees of non-deposit bank debt. An example that has a long

¹⁹ In most cases the FDIC will approve issuance of debt that is no greater than 125 percent of a bank's debt as of September 30, 2008. This debt can include promissory notes, commercial paper, and interbank funding having a maturity of at least 30 days.

history in international trade is a financial guarantee called a “standby letter of credit.” Standby letters of credit are guarantees typically made by a financial institution to insure one party in a contract against the default of a second party’s obligation in the contract. Often, this obligation is for the second party to make a future payment in return for a good delivered or service rendered by the first party. Hence, a letter of credit insures against the second party’s default risk. Another example is municipal bond insurance: a guarantee by a financial institution against the default of a bond issued by a state or local government. The insurer guarantees to (first party) investors the full promised payment on a municipal bond should the municipality (second party) default.

Another very similar contract is a credit default swap (CDS). Under this contract, the insurer is called a ‘protection seller’ and receives periodic premiums over the life of the insurance contract from a ‘protection buyer’ (first party). Should a second party default on a debt obligation, the protection seller pays the protection buyer the difference between the promised payment (or par value) of the second party’s debt and the debt’s current market or recovery value. Thus, if a CDS is written on a bank’s senior, unsecured debt, the contract’s protection seller is providing the same insurance as that provided by the FDIC under its TLGP guarantee of the bank’s senior, unsecured debt. Similarly, a CDS contract written on a bank’s uninsured, wholesale CD provides the same guarantee against default as does FDIC insurance of a CD.

Given the similarity between CDS contracts and deposit insurance, let us consider by way of the following example how their fair market premiums should relate to yields on default-free and default-risky debt. Suppose that a newly-issued, default-free Treasury note maturing in five years sells at par and makes periodic coupon payments at an annual rate of 4 percent. Also, a newly-issued five-year note issued by a default-risky bank sells at par, but it must promise to pay periodic coupon payments at an annual rate of 6 percent. The extra 2 percent in promised yield, defined as the bank note’s ‘credit spread,’ provides fair market compensation to an investor for the bank note’s default risk.

Indeed, one can see that this 2 percent credit spread would equal the fair CDS premium to insure the bank note. This is because an investor desiring a default-free note would be indifferent between buying the Treasury note at 4 percent or purchasing the default-risky bank note at 6 percent along with buying five years’ of credit protection and paying a CDS premium of 2 percent. Similarly, an investor desiring a default-risky note would be indifferent between purchasing the bank note at 6 percent or purchasing the Treasury note at 4 percent and selling five years’ of credit protection and receiving a CDS premium of 2 percent.

Thus, we see that the spread between the default-risky bond’s yield and the default-free bond’s yield equals the fair premium for default insurance; that is, the fair CDS premium.

Similarly, we can think of the spread between the interest rate on a bank's uninsured deposit and the interest rate on the same bank's insured deposit as equal to the fair premium for deposit insurance.

Indeed, deposit insurance is exactly a CDS contract written on a deposit but where the bank pays the CDS premium to the protection seller (deposit insurer) on the behalf of the depositor. Since the insured deposit is now a default-free investment, the depositor is willing to accept the default-free interest rate (e.g. 4 percent on a five-year CD) while that bank pays the credit spread (e.g., 2 percent), so that the bank's all in cost would be approximately the same as if it issued an uninsured deposit (e.g., 6 percent). Interestingly, even the periodicity of premium payments for FDIC insurance and the typical CDS contract are the same: they are both assessed on a quarterly basis.

Deposit insurance and CDS guarantees on bank debt have risk characteristics that differ in important ways relative to most other forms of insurance such as life and property/casualty insurance. The risks from underwriting multiple term life insurance policies or automobile collision policies can be diversified away by pooling the risks of several policies together. This is not the case for deposit insurance. The risks of deposit insurance losses due to bank failures cannot be diversified away by pooling the risks of many banks together because deposit insurance loss claims are not independent or uncorrelated events. Bank failures are linked to macro-economic conditions which tend to create financial distress at many banks at the same time. This is not surprising since bank assets consist largely of real estate, commercial, and consumer loans which experience higher default rates during economic downturns. Thus, bank failures and deposit insurance losses rise during recessions and decline during expansions, so that they bear 'systematic' risk.

Figure 1 shows the number of insured commercial bank and thrift institution failures during each year since the start of U.S. Federal deposit insurance. Clearly, failures are clustered and are not independently distributed across years.²⁰ There were many years when the FDIC suffered little or no losses but a significant number of years when its losses were substantial. This pattern of skewed risk differs substantially from those of automobile or term life insurance policies, where loss rates from underwriting a large pool of insured individuals are relatively similar from one year to the next. These other forms of insurance have loss events that are much closer to being independently distributed, so that the law of large numbers applies and the average loss rates for the insured pool during any particular year are highly predictable.

²⁰ Using a sample of 68 publicly-traded U.S. banks over the 1987 to 1996 period, Pennacchi (2000) finds that the average monthly correlation between banks' market values of capital (net worth) is 37.5 percent.

When insurance is written on a pool of independent risks, a competitive insurer can set premiums equal to the annual expected losses and, due to the high predictability of these losses, experience minimal net profits or losses each year. This is not the case for deposit insurance due to the skewed nature of bank failures. If premiums are set to expected losses at the beginning of a year, the insurer will tend to experience small net profits in most years that will be wiped out by significant net losses in a smaller number of years. Moreover, because bank failures tend to occur during economic downturns (recessions), the net profits and losses of underwriting deposit insurance will have risk that varies systematically with the economy and the value of other assets.

In terms of the Capital Asset Pricing Model (CAPM), underwriting deposit insurance is a positive ‘beta’ investment: during economic expansions (*recessions*) when stock market returns are high (*low*), a deposit insurer will make profits (*losses*) because premiums will be greater (*less*) than loss claims from bank failures. Thus, to compensate an insurer for the risk that losses will be highest during severe recessions, *fair premiums must exceed expected losses*. In other words, fair market deposit insurance premiums will contain a systematic risk premium in addition to expected losses so that a deposit insurer charging fair premiums will earn positive average profits. Importantly, empirical evidence finds that firms’ actual credit spreads on uninsured debt contain, in addition to an expected loss component, a significant systematic risk premium.²¹ Thus, these uninsured debt holders, who can be viewed investing in default-free debt along with underwriting debt insurance, earn average returns greater than a holder of only default-free debt.

As a result, if a deposit insurer does not include a charge for systematic risk when setting premiums, insured deposits will be subsidized relative to other forms of uninsured funding. This leads to financial system distortions that excessively expand deposit insurance: 1) Banks will prefer financing using insured deposits rather than uninsured deposits or debt, thereby reducing market discipline; 2) Non-bank financial intermediaries will lose market share relative to subsidized banks, in part as non-bank institutions convert to banks.²²

The relationship between fair premiums and expected losses are illustrated in Figure 2. The graphs are examples based on the simple Merton (1977) model, but their qualitative features

²¹ See Elton, Gruber, Agrawal, and Mann (2001).

²² A prime example occurred after passage of the Financial Services Modernization (Gramm-Leach-Bliley) Act of 1999 which allowed securities firms to acquire banks. Recall that during the period 1996 to 2006, deposit insurance premiums clearly were subsidized because they were set at zero for the vast majority of banks. As a result, retail securities firms chose to transfer hundreds of billions of dollars of their customers’ sweep accounts out of money market mutual funds and into FDIC insured money market deposit accounts (MMDA). During the five years from the end of 1999 to the end of 2004, balances in MMDAs grew at a 16.4 percent annual rate while assets of retail money funds *declined* at a 3.0 percent annual rate, a phenomenon that Crane and Krasner (2004) refer to as “re-intermediation.”

hold for more realistic models.²³ On the horizontal axis is a bank's capital-to-debt ratio over the range of 15 percent to -5 percent, while the vertical axis gives annualized premiums and losses as a proportion of the bank's total debt. In each case, the graphs assume the annualized standard deviation of a bank's capital/total liabilities ratio is 5 percent. The baseline assumption is that the bank's assets have systematic risk such that the expected rate of return on bank assets exceeds the default-free interest rate by 1 percent per annum.²⁴

Panel A considers the case of a one-year insurance contract horizon and shows how fair premiums and expected losses increase as a bank's capital ratio declines. However, due to systematic risk, fair premiums rise faster than expected losses. The difference between these two curves is the systematic risk premium required to compensate for the likelihood that the insurer's losses are incurred during economic downturns while its profits are received during economic upturns. Panel B is a similar graph but for a five-year insurance contract horizon. Here, we see that both annualized premiums and annualized expected losses are greater than in Panel A, and the difference between fair premiums and expected losses for any particular capital level is greater. Fixing a premium over five years, versus one year, is unattractive to an insurer because it does not allow for adjustments upward if economic conditions worsen after the first year.

Also in Panel B is given the case where a bank's assets are assumed to have double the systematic risk such that their expected rate of return exceeds the default-free interest rate by 2 percent. Importantly, we maintain the assumption that the bank's capital ratio volatility remains at 5 percent, so that the fair premium is the same as the alternative case where systematic risk is less. However, assets with higher systematic risk, and therefore a higher expected rate of return, produce average insurer losses that are less, so if one were to incorrectly use expected losses as a measure for setting insurance premiums, it would appear that the bank with more systematic risk is 'safer' and should be charged a lower premium. However, this is incorrect since while, on average, the bank imposes less losses on the insurer, when it does impose losses they are likely to occur during severe economic downturns.

This last example points to a third distortion that arises if insurance premiums are set to a bank's expected losses and fail to include a systematic risk premium: 3) Banks making loans and investments with higher systematic risk enjoy a greater financing subsidy relative to banks making loans and investments with lower systematic risk. As detailed in Pennacchi (2006), this systematic risk subsidy distorts the financial system's allocation of resources in favor of

²³ Pennacchi (2005) gives estimates of fair premia and expected losses for 42 large U.S. banks based on a multiperiod extension of the Merton (1977) model.

²⁴ Historically, returns on bank assets have averaged approximately a 1 percent more than banks' interest payments on their debt and deposits. See Pennacchi (2000) for a discussion.

investments with excessive systematic risk, thereby magnifying the amplitude of economic cycles. If banks herd into investments with high systematic risk, there is a greater tendency for them to fail at the same time, creating more severe banking crises; that is, more ‘systemic’ risk.

Shortcomings of the Current FDIC System

The 2005 FDIRA made some improvements. As mentioned earlier, FDIRA abolished the hard target for DIF that required premiums to rise (*fall*) sharply when the DIF fell below (*rose above*) a DRR of 1.25 percent. FDIRA also led to greater variation in premiums for banks having different risk attributes. Overall, this legislation gives the FDIC slightly more flexibility in setting premiums.

However, the current framework for setting premiums continues to produce needless distortions to banks’ costs of financing and, more generally, to the financial system’s allocation of credit. Finance theory provides no rationale for linking fair premiums to the level of an insurer’s reserves: the DIF reflects past premiums and past insurance losses. Fair insurance premiums should be forward looking, reflecting the likelihood of future insurance losses.

As discussed in Feldman (1998) and Pennacchi (2000), setting deposit insurance premiums to target DIF reserves (even if the target is a ‘soft’ range of DRRs) implies that premiums tend to rise during economic downturns when bank failures rise and the DIF is depleted, as happened in 2008-2009. In contrast, premiums tend to fall during economic expansions when bank failures decline, as was the case prior to 2008. Thus, tying premiums to the DIF reserves can amplify economic cycles as insured deposit funding becomes cheaper (*more expensive*) during expansions (*recessions*).

One line of reasoning for setting premiums to maintain a target level of DIF reserves is that such a practice insulates taxpayers from having to fund deposit insurance losses: premiums paid by banks will be raised to always replenish the DIF so that taxpayers will not be at risk. However, the political economy of banking crises is incompatible with such a commitment by the banking industry. As occurred when FSLIC loss claims soared, surviving depository institutions argue that they should not be responsible for the imprudent behavior of their failed members.²⁵ In the 1989 FIRREA, legislators accepted this argument and agreed that taxpayers should help cover the thrift industry’s losses. Curry and Shibut (2000) calculate that as of year-end 1999, resolving the savings and loan crisis cost the thrift industry \$29 billion, but the cost borne by taxpayers was \$124 billion.

²⁵ As FDIC loss claims have risen during the current financial crisis, the same arguments are being made by banks who face the possibility of higher FDIC premiums needed to replenish the DIF. For example, see “FDIC’s New Assessment Lambasted as Unfair,” the *American Banker*, March 2, 2009.

Consistent with a lack of commitment to having the banking industry cover all deposit insurance losses, actions during the current financial crisis have transferred potential deposit insurance losses from banks on to taxpayers. In late September 2008, Wells Fargo and Citigroup were negotiating with the FDIC for assistance in return for taking over the distressed bank, Wachovia. However, Wells Fargo pulled out of the negotiations, leaving Citigroup as the only bidder. On September 29, Citigroup made a \$2.2 billion bid to acquire Wachovia with FDIC assistance given under FDICIA's 'systemic risk' exception.²⁶

The next day, September 30, the U.S. Treasury issued Internal Revenue Service (IRS) Notice 2008-83 which abolished limitations on tax shelters derived from an acquiring bank's use of an acquired bank's prior losses.²⁷ Shortly afterward, on October 3, Wells Fargo re-entered the bidding for Wachovia with a \$15.4 billion offer that required no FDIC assistance. The FDIC and Wachovia, siding with Wells Fargo, nullified the Citigroup deal.

What motivated Wells Fargo to re-enter at such an attractive bid? Under the prior tax rule, Wells Fargo would have been limited to deducting Wachovia losses of \$930 million a year for 20 years. However, under the new rule Wells Fargo can deduct all \$74 billion of Wachovia losses. At a 35 percent corporate tax rate, the extra \$55.4 billion in deductible losses represents a roughly \$19.4 billion taxpayer infusion to Wells Fargo and Wachovia. This is likely to be more than the value of the assistance that the FDIC would have provided to Citigroup, yet the assistance to Wells Fargo does not affect the DIF and will not be borne by the banking industry in the form of higher future insurance premiums.

This targeted Treasury tax ruling subsequently benefited two other distressed bank mergers. Tax experts estimate that the takeover of distressed National City by PNC, announced on October 24, 2008, will cost taxpayers \$5.1 billion in lost revenue from PNC's expanded deductions.²⁸ Similarly, Banco Santander's October 13, 2008 announcement to fully acquire Sovereign will result in several billion dollars of tax benefits deriving from the Treasury's ruling. The 2009 American Recovery and Reinvestment Act (Stimulus Legislation) signed into law on February 17, 2009 repealed IRS Notice 2008-83 for future acquisitions, but grandfathered the tax benefits received for the aforementioned previous acquisitions.

²⁶ The FDIC would absorb all losses above \$42 billion on a \$312 billion portfolio of Wachovia loans in exchange for a \$12 billion stake in Citigroup. Any net cost of this FDIC assistance would require a special assessment charged to the banking industry.

²⁷ Congress had intended to restrict the amount of an acquired firm's losses that an acquiring firm could deduct in order to prevent mergers that were motivated only by tax benefits. The Treasury's ruling exempted only loan losses of acquired banks from this restriction. Some have questioned whether the U.S. Treasury had the authority to amend this tax law. See "Obscure Tax Breaks Increase Cost of Financial Rescue," *The Wall Street Journal*, October 18, 2008.

²⁸ See "PNC Stands to Gain from Tax Ruling," *The Wall Street Journal*, October 30, 2008.

Another recent example of potential taxpayer assistance involved the November 23, 2008 assistance to Citigroup. The U.S. government agreed to cover 90 percent of losses above \$29 billion on Citigroup's \$306 billion portfolio of mortgage-related assets. However, the first \$5 billion of any U.S. government losses are absorbed by the U.S. Treasury via assistance through the TARP, while the next \$10 billion are absorbed by the FDIC. Hence, rather than Citigroup's assistance being provided solely by the FDIC and affecting the DIF, taxpayers are first in line to bear losses.²⁹ In January 2009, the Congressional Budget Office (CBO 2009) estimated that the present value of taxpayer losses for all TARP assistance to Citigroup is \$5 billion. More generally, taxpayer assistance provided to other banks through the TARP Capital Purchase Program (CPP) very likely will take the place of FDIC losses that would have been incurred from resolving failed banks. CBO's estimate of taxpayer losses from other CPP assistance is \$32 billion.

Thus, political motivations designed to aid the banking industry make it unlikely that a DIF reserve targeting scheme truly commits banks to covering losses from failures. When losses become large, government officials find either direct or indirect ways to let the banking industry off the hook and transfer the cost of bank failures to taxpayers. Perhaps this is why the banking industry has been in favor of a DIF targeting scheme: during economic expansions banks receive premium rebates of the DIF surplus but during economic recessions banks are released from bearing the full brunt of paying higher premiums to replenish the DIF. Thus, by itself, a DIF targeting policy leads to a subsidy of the banking industry. In contrast, a policy in which premiums are set fairly and independent of the DIF would, by definition, involve a zero subsidy, and taxpayers would, on average, make profits from providing deposit insurance.³⁰

This is not a contradiction, as discussed earlier, the expected profits earned by taxpayers provide compensation for their exposure to systematic risk. As shown in Pennacchi (2000), if insurance premiums were set fairly, under most scenarios the value of the DIF should be expected to grow indefinitely. In other words, a stable DIF ratio is incompatible with fair pricing for deposit insurance. This is another argument for ignoring the DIF and allowing the U.S. Treasury

²⁹ For this guarantee, the U.S. Treasury obtains \$4 billion in Citigroup preferred stock and the FDIC obtains \$3 billion in Citigroup preferred stock. Of course this preferred stock may end up being worthless if the U.S. government ends up having to make good on its guarantee. There are other provisions to the assistance involving a \$20 billion preferred stock injection by the Treasury.

³⁰ If Federal government budgets are appropriately based on accrual accounting, rather than cashflow accounting, the cost of Federal deposit insurance should be recorded when the government's liability for providing that insurance is incurred. In turn, the present value of premium revenue received from providing the insurance will equal that same cost if premiums are set equal their fair market values.

to retain any premiums in excess of deposit insurance losses and to cover any deficits. Under fair premiums the Treasury should profit, on average.

Another reason for ignoring FDIC reserves is that highlighting them is likely to undermine depositor confidence. If reporting reserves furthers the myth that they are essential for insuring bank deposits, runs by insured depositors can result from falling DIF reserves during financial crises.³¹ As promoted by many banks and the FDIC website “FDIC deposit insurance is backed by the full faith and credit of the United States government,” and it should be this fact alone that supports FDIC insurance viability and pricing.

While a reserve targeting policy contributes to subsidizing deposit insurance, the current FDIC framework for determining how premiums should vary with respect to a given bank’s risk may also subsidize systematic risk. For the most part, the models underlying the FDIC’s premium schedules are based on either: the probability that a bank experiences a supervisory rating downgrade; or the bank’s credit rating on its long-term debt. Unfortunately, the probability of a rating downgrade does not account for the sensitivity of a bank’s downgrade risk to overall economic conditions; that is, its systematic versus its idiosyncratic risk. Similarly, the credit rating of a bank’s debt reflects the rating agency’s view of the probability of default or the expected default loss. It does not measure the systematic risk of default; that is, the sensitivity of default to economic conditions.³²

As illustrated in Figure 2 and discussed in Duffie, Jarrow, Purnanandam, and Yang (2003), the required systematic risk component of fair deposit insurance premiums can be large. Also as noted earlier, failure to incorporate this systematic risk component creates incentives to excessively issue insured deposits and motivates banks to make investments in high systematic risk loans and securities. Moreover, failure to account for systematic risk is likely to provide a relatively greater deposit insurance subsidy to large banks: Demsetz and Strahan (1997) find that larger banks typically possess greater systematic risk than do smaller ones. Their evidence is consistent with the current financial crisis which has centered on systematic losses at primarily large banks.

In addition to deficiencies in insurance premium setting, insufficient progress has been made in reducing the ‘Too Big to Fail’ (TBTF) problem. TBTF directly impacts deposit insurance because the ‘systemic risk exception’ to FDICIA allows the FDIC to circumvent the resolution method that would minimize deposit insurance losses. Often, the course taken to assist a TBTF

³¹ Cook and Spellman (1994) provide evidence that FSLIC-insured depositors demanded a risk premium to cover the possibility that the FSLIC would be unable to fulfill its guarantee.

³² Coval, Jurek, and Stafford (2007) emphasize this point and discuss how a focus on credit ratings resulted in the creation of structured financial instruments with excessive systematic risk.

bank ends up protecting investors' in a troubled bank's uninsured debt. If such investors expect that the bank is TBTF, so that they are de facto insured, the default risk premium (credit spread) that the bank pays on its debt will be smaller than in the absence of TBTF. Hence, the implicit insurance deriving from TBTF represents another subsidy to large banks.³³

The FDIC has made progress in improving large banks' reporting of their amounts of insured and uninsured deposits so that at the time of a failure it can quickly determine which accounts qualify for immediate availability of funds. However, as described in Stern and Feldman (2004), there are many other measures that could have been implemented to prevent the losses at one large financial institution from spilling over to others. It is the fear that these spillovers would create systemic risk that provides the main justification for TBTF bailouts.

Reform Proposals

This section discusses reforms that are intended to mitigate the distortions of Federal deposit insurance. Some proposals are alternative ways of reaching the same goal, which is to manage and price insurance fairly, thereby creating a level playing field between various types of financial intermediaries and markets.

Resolving Large Financial Institution Failures Assisting large financial institutions that become distressed, either via U.S. Treasury assistance or the FDIC via a systemic risk exception, creates distortions when such assistance is not provided to smaller financial institutions. TBTF causes moral hazard by creating incentives for financial institutions to grow large and complex, perhaps through inefficient acquisitions. It also produces incentives for excessive risk-taking since with TBTF firms are not penalized by paying a credit spread commensurate with their risk.

TBTF is not inevitable. In recent TBTF assistance to Bear Stearns, AIG, Wachovia, and Citigroup, the justification was that the failure of these institutions would lead to losses at other financial institutions because of complex inter-connectedness, primarily due to counterparty risk in over-the-counter (OTC) derivative contracts. Therefore, removing the negative externality of OTC contracts would be the most important reform for ending TBTF.

In principle, parties in derivative contracts might research the creditworthiness of their trading partners and set appropriate margin (collateral) requirements. However, as noted by Merton (1995), many customers of large financial institutions lack the desire or expertise to

³³ A TBTF subsidy is often cited by small bank owners, often to lobby for an increase in the insured deposit limit. Recently, small bank owners have complained of the FDIC's 'systemic risk exceptions' since both small and large banks could be burdened with a special assessment if such assistance proves costly to the FDIC. See "Prospect of Citi Premium Fuels Anger," *The American Banker*, November 25, 2008.

evaluate the institution's default risk.³⁴ Hence, there may be significant cost efficiencies from having a central clearinghouse with expertise in setting appropriate margin for OTC derivative transactions. Clearinghouses have an excellent record of preventing contract defaults, even during times of extreme market volatility. A central clearinghouse also has an information advantage that enables it to net the various positions that a particular party has with many different counterparties. Netting can reduce the amount of margin required by a party if some of its derivative positions are offsetting.

In addition to central clearing of derivatives, a further step to eliminate TBTF would be to encourage or require exchange trading, rather than over-the-counter trading, of derivatives. While there may be some benefits to OTC contracts because the contract's terms can be customized, a downside to OTC trading is that a particular financial institution may have a significant share of the market-making in a specific type of OTC contract. Hence, even in the absence of counterparty risk, TBTF might be invoked if an institution's failure leads to a significant reduction in the market-making capacity of a specific type of contract. If, instead, the contract was traded on an exchange, the market structure for the contract would remain intact following any financial institution's failure. Another well-known benefit of exchange trading is that standardization of contracts increases contract liquidity and makes for more competitive and transparent pricing.

Fair Market Pricing of Insurance As noted earlier, governments face political constraints when assessing risk (Stiglitz 1993). One step toward insulating the FDIC from charges of unfairness in rate setting is to rely on market prices when determining insurance premiums. Recently, the UK Treasury made an important advance in this regard. On October 8, 2008, it announced a 'Credit Guarantee Scheme' (CGS) similar in form to the FDIC's TLGP for insuring banks' senior, unsecured debt. However, instead of following the FDIC's policy of setting the same premiums for all qualifying banks, the annual premium that the UK Treasury charges for a bank's senior, unsecured debt equals 50 basis points plus the bank's median five-year maturity CDS spread during the twelve months prior to October 8, 2008.³⁵ Because CDS spreads differ across banks, this premium setting method discriminates between high and low risk banks. Furthermore, because CDS spreads are likely to incorporate a systematic risk premium, this method also avoids subsidizing systematic risk.

³⁴ For example, a customer that wishes to take a position in an interest rate swap or a CDS on a third party corporation may not have the desire or expertise to evaluate the credit of the OTC dealer who is taking the other side of the derivative contract.

³⁵ The guarantee can be used to cover CDs, commercial paper, and senior unsecured bonds and notes. The Treasury can apply its own estimate of an appropriate CDS spread if public data for the bank's CDS spreads is unavailable.

A potential criticism to using market information, such as CDS spreads, to set insurance premiums is that such a practice would create excessive volatility in the premiums paid by banks.³⁶ However, this view fails to account for differences in the types of insurance contracts that can be offered. As discussed in Pennacchi (2005), insurance contracts, and therefore fair premiums, can vary based on a contract's maturity. An insurance contract's maturity can be compared to the maturity of a firm's uninsured debt. For example, a firm could choose to issue all of its debt with a one-year maturity and each year roll over all of its debt into new debt having a one-year maturity. In such a case, the credit spread that the firm pays on its debt could change dramatically each year as its creditworthiness and the market price of default risk change annually. But an alternative example is a firm that chooses to issue debt having a five-year maturity, and each year only one-fifth of its total debt matures and is rolled over into new five-year debt. Such a firm with five-year overlapping debt contracts would pay an average credit spread that is much smoother over time.

Figure 3 illustrates the fair insurance premiums that five different banks would have paid on their senior, unsecured debt during the 2004 to 2008 period. The premiums equal the individual banks' market CDS spreads having maturities of one or five years. In Panel A of the figure, banks are assumed to have one-year insurance contracts while in Panel B, the banks are assumed to have five-year overlapping contracts. It is apparent that the five-year overlapping contracts possess a smoother time series of insurance premiums. However, the cost to the bank for this greater stability is a greater average premium for the longer-maturity contract. The reason is that an insurer providing long-maturity contracts bears greater systematic risk: its premiums do not rise much during bad economic times when a bank's default risk is likely to rise. Therefore, to compensate the insurer for greater net losses during bad years, the average long-maturity premium must exceed the average short-maturity premium.

While CDS markets typically exist for major banks' senior unsecured debt, market information on these spreads is not directly applicable to setting insurance premiums on deposits because deposits are an even more senior claim on a bank's assets. This seniority of deposits was established under the Omnibus Budget Reconciliation Act of 1993 and is known as 'depositor preference.'³⁷ However, models exist for converting the CDS spreads on less senior debt to fair insurance premiums on more senior deposits. Furthermore, if the bank has publically traded equity (stock), information on stock prices can be used to determine fair deposit insurance rates.

³⁶ A similar criticism is often made for market value accounting.

³⁷ See Marino and Bennett (1999) and Osterberg and Thomson for the consequences of this legislation.

Moreover, Falkenheim and Pennacchi (2003) and Duffie, Jarrow, Purnanandam, and Yang (2003) provide techniques for estimating fair deposit insurance rates for privately-held banks.

As discussed in the second section, a structural change that would greatly simplify the setting of premiums for insured deposits is to take the concept of depositor preference further and give FDIC-insured deposits a secured (collateralized) claim on high credit quality bank assets. There is precedent for this practice. When the Federal Reserve lends to banks through the Discount Window, it requires banks to pledge high-quality securities to secure its loans. Similarly, when Federal Home Loan Banks (FHLBs) make advances to banks, they require that these loans be secured with mortgage-related assets. Because of this pledged collateral, the Federal Reserve and the FHLBs have higher priority than the FDIC's unsecured claim on a bank's assets in the event that the bank fails. Requiring that insured deposits be collateralized by high-quality money market instruments allows fair deposit insurance rates to be negligible, comparable to the 1 basis point premium currently charged by the U.S. Treasury to insure the shares of money market mutual funds. Pennacchi (2006) discusses the feasibility of requiring such collateralization.

Another alternative that would simplify the setting of FDIC deposit insurance premiums was the subordinated debt or private insurance requirement mentioned earlier. If banks had substantial amounts of subordinated (and possibly convertible) debt or private insurance that covered a substantial 'first loss' piece of deposit insurance losses, then the fair FDIC premium for covering additional catastrophic losses would be small.³⁸ Given this structure, any deviations from fair FDIC deposit insurance pricing would cause minor distortions.

Deposit Insurance Fund As stated earlier, the setting of fair market deposit insurance premiums, which prevents subsidies and distortions to banks' costs of financing, is possible only if premiums are divorced from DIF reserves. The most straightforward way to prevent DIF reserves from impinging on the fair pricing of insurance is to abolish the DIF. Without a DIF, the FDIC's net income from providing deposit insurance would be transferred each year to the U.S. Treasury, similar to the Federal Reserve's transfer of its seigniorage revenue from money creation to the Treasury. In years when this net revenue is negative, the FDIC would receive an opposite transfer from the Treasury. However, since fair insurance premiums exceed expected insurance losses due to their systematic risk component, when the FDIC sets fair premiums its expected transfer to the Treasury will be positive.

³⁸ Note that issuance of mandatory subordinated debt could be designed similar to the overlapping longer-maturity insurance contracts discussed above.

If it is politically infeasible to allow for FDIC funding from the Treasury during the minority of years when its net revenues are negative, it could still set fair premiums (as if the fund did not exist) but operate a separate reserve targeting scheme. Specifically, the fair premiums charged to banks by the FDIC would continue to augment DIF reserves, and the FDIC's deposit insurance loss claims would continue to deplete DIF reserves. However, the FDIC would charge a separate assessment to replenish the DIF when it is below the DRR range and pay a separate dividend from the DIF when it is above the DRR range. Importantly, the participants in this reserve targeting scheme *need not be banks*. The FDIC could sell shares in the DIF that require the shareholder to contribute funds when the DIF is below the DRR range and to receive dividends when the DIF is above the DRR range. If the FDIC charges fair premiums, the market value of these shares will be approximately zero when the DIF is at the midpoint of the DRR range.

Banks could participate in this reserve targeting scheme, but from a risk-management point of view, it would be better if they sold their current shares to investors outside the banking industry who are better able to bear the risk. As discussed earlier, reserve targeting assessments tend to rise when bank failures are high, so that banks should diversify away from this risk that requires them to draw down their capital when they are likely to want to increase it. By transferring the risk of reserve targeting outside of the banking industry, banking stability should improve.

A similar reserve-targeting risk transfer mechanism is to create an 'FDIC industry assessment swap market.'³⁹ Note that banks pay quarterly assessments to the FDIC, and due to reserve targeting, the average assessment per deposit across all banks is stochastic, rising (*falling*) when the DIF falls below (*rises above*) target. An industry assessment swap market allows a bank to swap a future FDIC industry-average assessment for a payment that is known today. In terms of a standard (interest rate) swap, banks would want to be fixed-rate payers and floating rate receivers, where they receive the future industry-average assessments required by the FDIC during future quarters. Like other derivative markets, a centralized clearinghouse would determine appropriate margin requirements to mitigate the swaps' counter-party risk.

Conclusions

Federal deposit insurance provides benefits by protecting small, unsophisticated savers and by mitigating bank runs. However, because governments are politically constrained in their

³⁹ A similar derivative security exists for the property insurance industry and is called an 'industry loss warrant.'

assessment of banks' risks, government deposit insurance is usually priced unfairly and administered inefficiently. As a result, government deposit insurance can create financial system distortions. If deposit insurance is to be fairly priced, premiums need to be divorced from the deposit insurance fund (DIF) reserves and must include a systematic risk component that compensates the insurer (taxpayers) for bearing loss claims during economic downturns.

Unfortunately, current FDIC practice continues to link premiums to DIF reserves and fails to incorporate a systematic risk premium, thereby subsidizing systematic risk. In addition, 'Too Big to Fail' (TBTF) creates a reason for giving preferential assistance to large, interconnected financial institutions, thereby subsidizing size and complexity. These subsidies led to distortions that helped create the current financial crisis.

This paper presented alternative ways that deposit insurance subsidies and their resulting inefficiencies can be reduced. An essential reform is to minimize TBTF, which should be accomplished largely by central clearing and exchange-trading of derivatives. A second set of reforms focus on reducing the mispricing and distortions of deposit insurance. Alternatives include mandatory subordinated debt, private insurance with a Federal backstop, relying on market information to set deposit insurance premiums, and mandatory collateralization of insured deposits.

Changes are needed now more than ever due to the recently expanded deposit insurance safety net. Hopefully, the current crisis will motivate structural improvements that can enhance financial system efficiency and stability.

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Figure 1
Number of Commercial Bank and Thrift Failures, 1934 – 2008

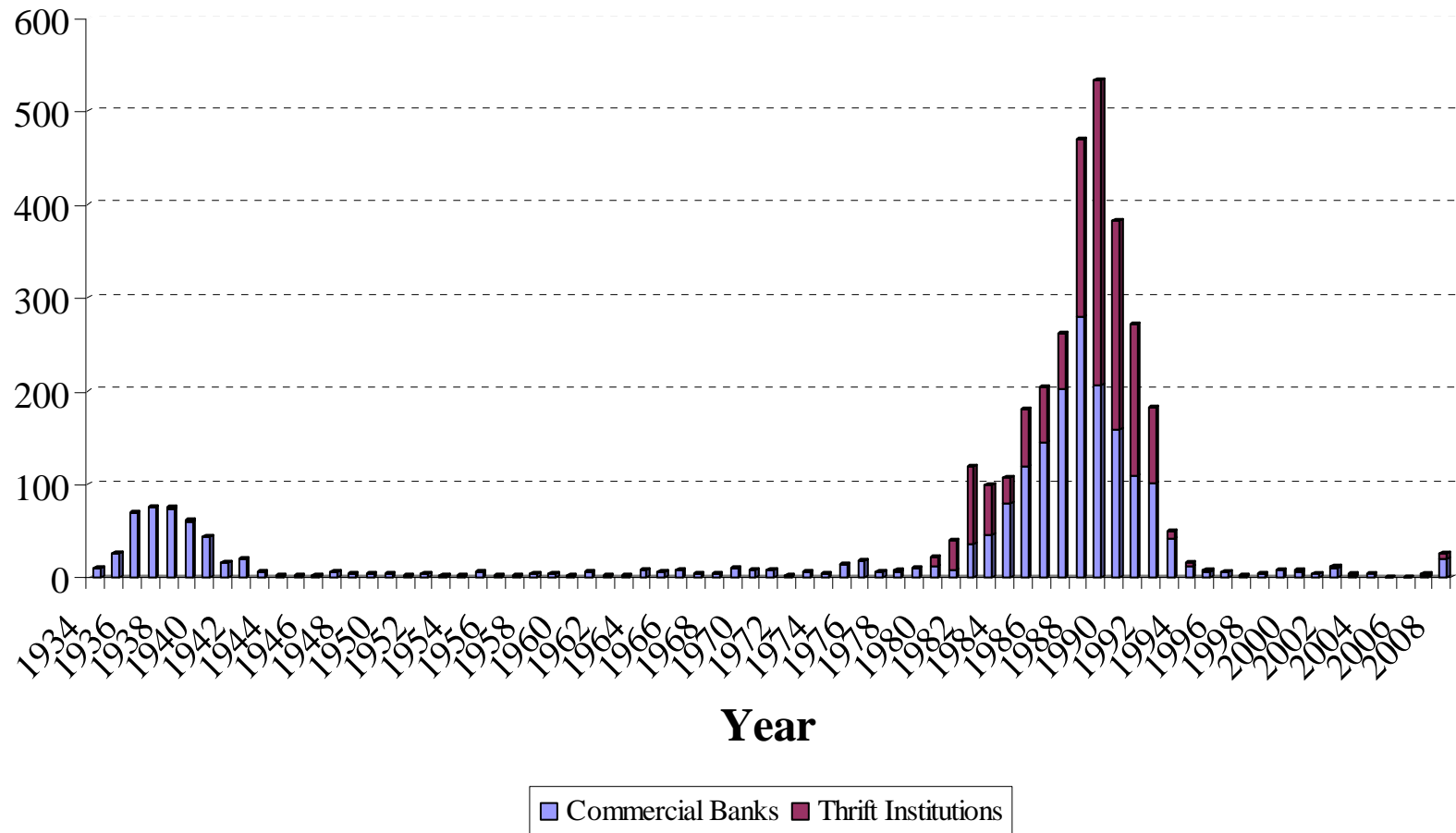
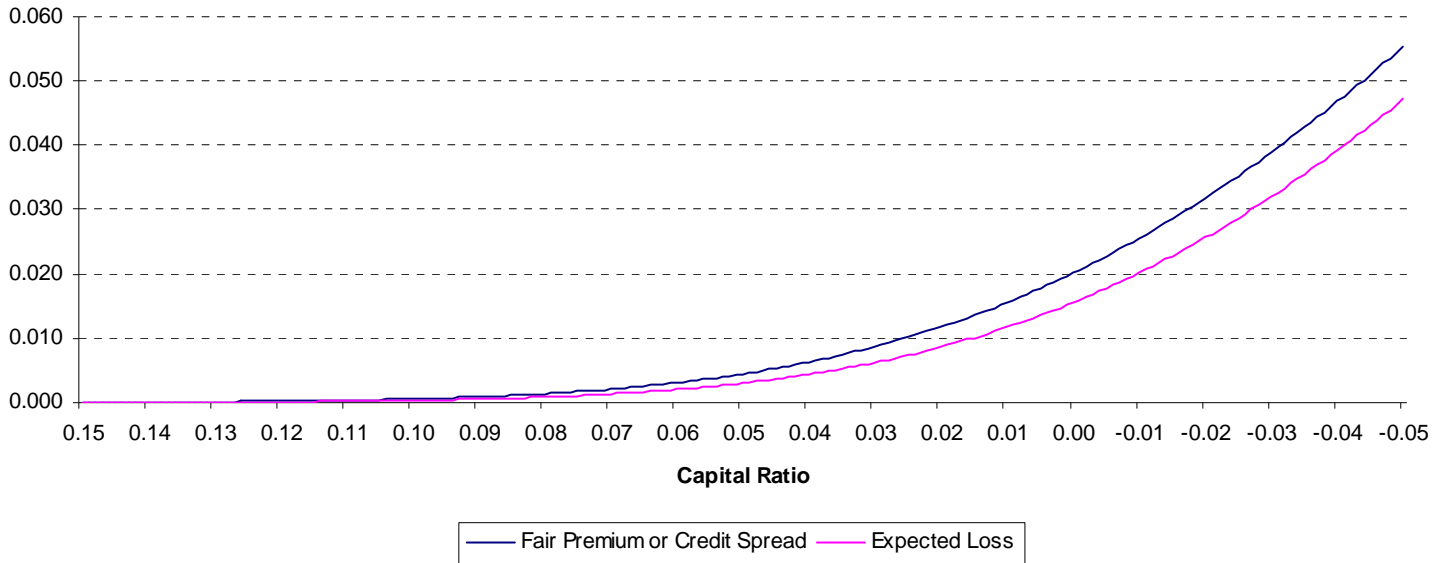


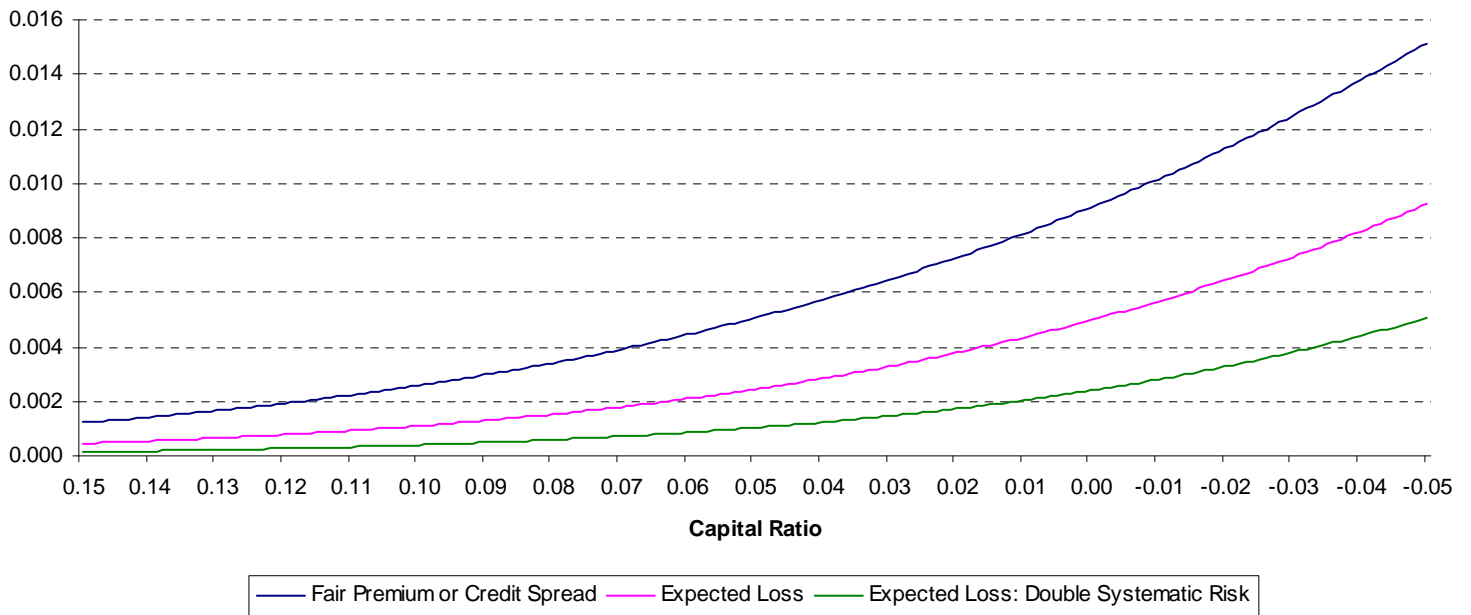
Figure 2

Annualized Fair Insurance Premiums (or Credit Spreads) and Expected Losses

A. One Year Maturity with Capital Volatility = 5 percent



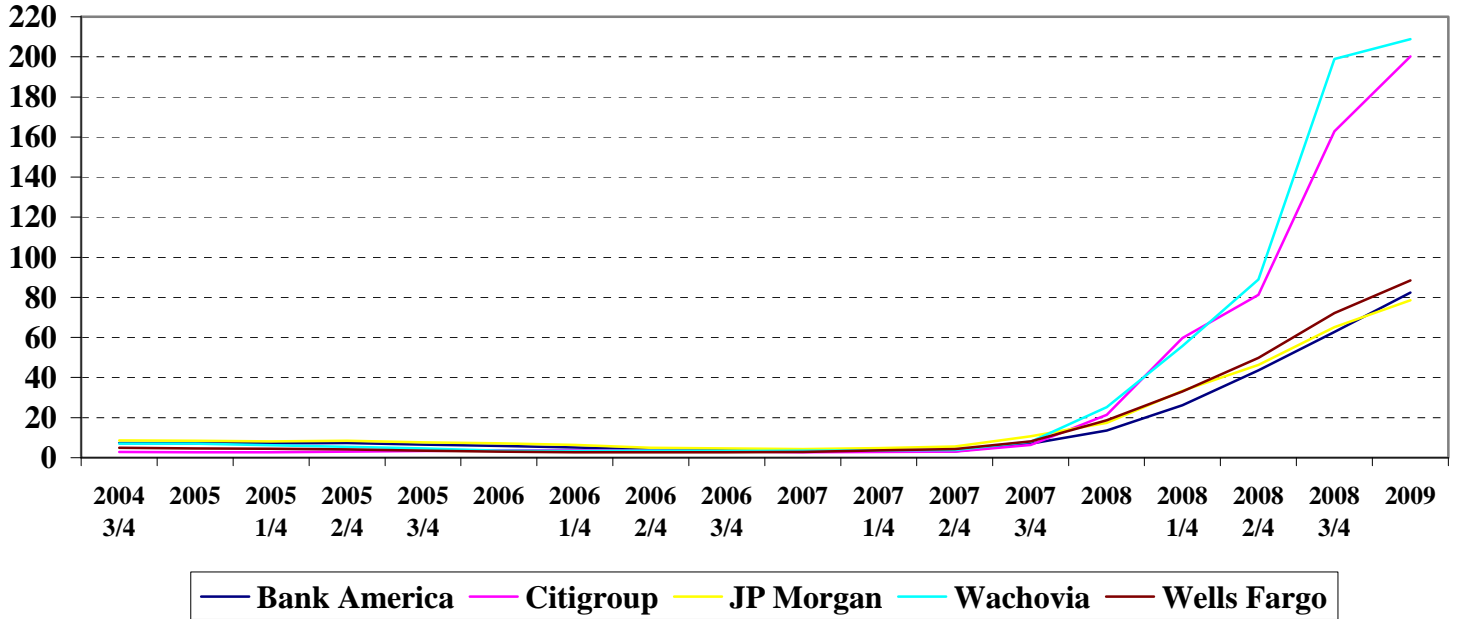
B. Five Year Maturity with Capital Volatility = 5 percent



Note: The graphs are based on Merton (1977) and assume that a bank's capital-to-liability ratio has an annual standard deviation of 5 percent and that the expected return on bank assets is 1 percent greater than the default-free interest rate, except in Panel B where for the case of double systematic risk, the expected return on bank assets is 2 percent greater than the default-free interest rate.

Figure 3
Fair Insurance Premiums

A. Premiums for Annual Maturity Insurance Contracts



B. Premiums for Five-Year Maturity Overlapping Insurance Contracts

