Federal Deposit Insurance Corporation

Options Paper

August 2000

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I. INTRODUCTION

This options paper is part of a comprehensive review of the U.S. deposit insurance system by the Federal Deposit Insurance Corporation (FDIC). We are undertaking this review to assure the ability of the system to meet its responsibilities over the next decade. Industry consolidation, expanded activities, globalization and the use of technology have advanced the business of banking and the products and services offered to American depositors. The FDIC wants to ensure that the deposit insurance system continues to protect depositors and contributes to its full extent to the stability of the banking system.

The United States has the oldest federal deposit insurance system in the world, established in 1934 to put an end to the devastating bank runs that shut down businesses and contributed to the Great Depression. The system proved to be a success; following its introduction, deposit insurance restored public confidence in the banking system. For the next three generations, the system served its purpose by helping prevent banking problems from becoming banking panics. In the 1980s, when hundreds of banks and thrifts failed, deposit insurance acted as the anchor for public confidence in the banking system.

In good times and bad times, deposit insurance provides a safe and certain place for people to put their money. By eliminating the disruption caused by bank runs, deposit insurance contributes to the foundation necessary for a robust banking system and by extension, a dynamic financial system. In turn the general economy benefits from the stabilizing influence of deposit insurance.

The success of the U.S. system of federal deposit insurance is particularly evident in contrasting the U.S. experience during the 1980s crisis with recent crises in Asian and Latin American countries that lacked explicit deposit insurance systems. During the U.S. crisis, there were no depositor runs on banks, and bank failures were resolved through a well-established, orderly process. This was not the case for countries without explicit deposit insurance, and it is perhaps sufficient to note that more than 30 countries chose to implement new, explicit deposit insurance systems during the 1990s. The benefits of deposit insurance are appreciated worldwide, and the U.S. system has become a model for the rest of the world.

Nevertheless, the 1980s crisis in the U.S. also provides a sobering reminder that a flawed deposit insurance system can be extremely costly. U.S. taxpayers were billed for more than $130 billion to clean up the savings and loan crisis following the demise of the Federal Savings and Loan Insurance Corporation (FSLIC). This demonstrates that deposit insurance raises complicated issues and requires a careful balancing of competing public policy concerns.

Today, the bank and thrift industries have never been healthier. Bank capital levels are at an all time high, profitability has climbed for the ninth year in a row, and the insurance funds have substantial combined reserves of $42 billion. There will never be a better time to address the latent flaws in the system. Reforms now will also help us maintain the proper incentives for risk and reward to insured institutions, as well as fairness among institutions that present different levels of risk to the system.

The FDIC has identified three fundamental areas for review: the processes for pricing risks, funding insurance losses, and setting coverage limits. This options paper describes various ways in which we might make improvements

to the deposit insurance system. The options are intended to prompt analysis and comment from individuals and organizations that have an interest in the issue.

1. The Need for Reform

With the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA), Congress passed a number of significant reforms to shore up the deposit insurance system. These included prompt corrective action, least-cost resolutions, scaling back of too-big-to-fail, the introduction of risk-based premiums, and a mandate to maintain adequate insurance funds. With the Deposit Insurance Funds Act of 1996 (DIFA), Congress ensured that members of the Bank Insurance Fund (BIF) and the Savings Association Insurance Fund (SAIF) would not face significant and arbitrary differences in deposit insurance pricing.

Despite these significant improvements, the current deposit insurance system has several features that work against the effective and equitable functioning of the system:

- The continued existence of two separate insurance funds based on an anachronistic distinction;
- The current pricing system that creates inappropriate incentives and raises fairness issues;
- The requirement that banks are required to fund insurance losses when they can least afford it; and
- Uncertainty for depositors as to the future real value of FDIC coverage.

Over the past decade the FDIC has stated its view that the two insurance funds the FDIC administers should be merged. The distinction between the funds is increasingly arbitrary; a combined fund would be stronger and more efficient; and the time to merge them is when they are both healthy. These arguments are laid out in detail in Attachment A. This options paper will not address this flaw, other than to state the FDIC's position that a merger of the funds is good public policy either on a stand-alone basis or as the prerequisite for any other changes to the deposit insurance system.

The second and third of these problems result from the conflicting mandates of the FDICIA: to price deposit insurance premiums according to the risk posed by individual institutions, and to maintain a target level of reserves within the insurance funds. The tension between the dual mandates of risk-based pricing and a fixed fund level became far more explicit in 1996 as DIFA severely limited the FDIC's ability to price according to risk.

Because of current restrictions on pricing deposit insurance, most banks and thrifts pay no insurance premiums when they are doing well, but pay high premiums when the industry is weak and banks are failing. This does not make sense for the banks or for the communities they serve. It is possible that, in difficult times, deposit insurance premiums could reduce the pre-tax net income of insured institutions by almost $9 billion. Based on current average capital and loan-to-assets ratios for all insured institutions, this reduction in income could lead to a contraction in lending of more than $65 billion at the precise time in the business cycle when loans are most needed.

The current process for setting deposit insurance coverage limits has brought the issue before Congress on a somewhat arbitrary and ad hoc basis. This has resulted in significant fluctuation in the real value of insurance for depositors. The current coverage limit of $100,000 has declined in real value by half since it was established in 1980. This raises the question of whether Congress wishes to

continue providing the same level of insurance protection for consumers in real terms, or to allow the coverage level to erode in value by maintaining the status quo.

The current deposit insurance arrangements lead to several questions:

How Should the FDIC Price Risk?

Through a combination of legislative changes, regulatory choices and economic events, the pricing and funding of deposit insurance evolved during the 1980s and 1990s into something fundamentally different from what existed during the first 50 years of the FDIC's history. Banks that are paying for deposit insurance at the end of the 1990s are those that have run afoul of capital regulations or the supervisory process. This is a significant departure from past practice. Pricing of deposit insurance has evolved into a penalty system for the few, rather than a priced service for all.

Thus, a decade that began with a legislative mandate for risk-based insurance premiums ended with the FDIC providing a free guarantee of almost three trillion dollars in bank and thrift liabilities. As a result, the moral hazard problems FDICIA intended to address with risk-based deposit insurance may have become more firmly entrenched than ever. (Moral hazard problems are discussed in more detail in Section IV, "Coverage Limits.")

A striking feature of a zero premium is that not only may the rate paid by vastly disparate banks be identical, but the dollar amount as well: a bank with $100 billion in deposits and a complex risk profile can be billed the same amount for its insurance as the smallest and most conservatively run community bank. Presumably, the rationale behind a statutory zero premium is that, as long as a fund is above its target level, it does not need additional funds. However, aside from raising money for the insurance funds, premiums also serve to align economic incentives. When a valuable product is offered at zero cost, it leads to that product being overused, causing distortions throughout the marketplace and, in the case of deposit insurance, potentially exacerbating moral hazard.

If deposit insurance were priced according to risk, it is likely that every bank in the U.S. with insured deposits would pay something for deposit insurance, for the same reason that every bank pays at least some spread over Treasuries for unsecured debt. However, since shortly after the BIF was recapitalized in May 1995, its members that are in the best-rated, 1A-assessment category have not been required to pay deposit insurance premiums. Members of the SAIF that are rated 1A have paid no premiums since January 1997.[1]

At year-end 1999, only 7 percent of all banks and thrifts paid premiums into the deposit insurance funds. Ninety-three percent, or more than 9,500 institutions, do not pay premiums. This stands in stark contrast to the first 50 years of the federal deposit insurance program, when every insured institution paid an annual rate of 3.3 to 8.3 cents for every $100 of insured deposits.

Despite the uniform assessment ratings given to these 1A institutions, they do not all present uniform risks to the deposit insurance funds. The current premium matrix does not recognize institutions that, by objective measures and historical experience, have a higher risk profile, unless the institution fails to maintain the minimum level of capitalization to be considered "well-capitalized" as defined for prompt corrective action purposes or is subject to heightened supervision.[2] In a less favorable

[1] More details on the risk categories in the current premium system are presented in Attachment C.

[2] Federal supervisors rate insured institutions on six factors: Capital; Asset Quality; Management; Earnings; Liquidity; and Sensitivity to market risk (CAMELS).

economic environment, many of these 1A-rated institutions would deteriorate faster than others, yet that higher degree of risk is not built into the current assessment scheme.

How Should New Deposits be Treated?

Most banks and thrifts established since the recapitalization of the insurance funds have never paid for deposit insurance. Through March 2000 this included 844 new banks and thrifts whose insured deposits totaled more than $44 billion. The responsibility for maintaining the $550 million needed to capitalize these deposits at a 1.25 percent DRR falls on the other members of the deposit insurance system.

Similarly, institutions that are rated 1A can grow their insured deposits without paying assessments. This zero marginal cost of insurance clearly differs from the private insurance industry, in which higher coverage amounts entail higher charges. With the marginal cost of deposit insurance at zero, the same issues of fairness arise that occur under the new bank scenario: all insured institutions eventually are assessed to cover deposit growth at the fastest-growing, 1A-rated institutions. In a deteriorating financial environment, it will be necessary to raise assessment rates earlier or by a greater amount to make up for the dilution of the reserve ratio attributable to unfunded insured-deposit growth.

Under some circumstances, insured-deposit growth could occur rapidly, accelerating the need to raise assessment rates for all insured institutions. This could happen even in a favorable economic environment in which deposit-insurance losses remain low. In early 2000, an investment company announced plans to convert some of its customers' funds into FDIC-insured accounts. Reports in the media suggested that as much as $100 billion could be converted in this manner in a relatively short period of time. Sudden growth of this magnitude at 1A-rated banks, with no corresponding growth in the fund balance, would dilute the fund's reserve ratio. In this example, the BIF reserve ratio would fall by 5 basis points. With a reserve ratio of 1.35 percent as of March 31, 2000, such a decline would leave the fund's reserve ratio above the statutory minimum of 1.25 percent, but the industry would be closer to mandatory rate increases for all insured institutions, depending on insured-deposit growth and insurance losses. From March 31, 2000, through June 30, 2000, insured deposits at the banks affiliated with the investment company grew by $12 billion.

There is also the possibility of a large shift of household assets into insured deposit accounts in the event of financial market volatility. There is currently more than $11 trillion outstanding in U.S. equity holdings (including mutual fund shares) alone. In a protracted bear market, some of these funds could be transferred to insured deposits. And it is still too early to gauge the probable impact of electronic banking on insured deposit growth. Obviously, the likelihood of deposit inflows from these examples, as from a myriad of other possibilities in an era of financial modernization, cannot be known. The question is whether the current deposit insurance system is capable of addressing the issues raised by these possibilities.

Conversely, institutions that shrink their deposits are not compensated for the indirect benefit they confer on other members of the system. Most BIF members have paid no

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Institutions receive an overall rating ranging from 1 to 5, with 1 being the best rating.

The original decision by the FDIC to lump CAMELS 1- and 2-rated institutions into the same risk category for premium purposes was largely codified into law in 1996 by the DIFA. Federal Deposit Insurance Funds Act, Pub. L. No. 104-208, §§ 2708(b) and 2708(c) (1996) (codified at 12 U.S.C. §§ 1817(b)(2)(A)(iii) and (v)). As a result, the FDIC is largely prohibited from distinguishing between CAMELS 1- and 2-rated institutions for determining premiums.

premiums since 1995, and most SAIF members have paid none since 1996, but all insured institutions paid very high rates in the earlier 1990s. The issue of deposit growth and shrinkage becomes important in any discussion of rebates (other than the refunding of current assessment income). Any such program would require legislation, but the question of who is entitled to how much is complicated by the existence of institutions whose deposit growth or shrinkage was atypical. For example, aggregate BIF-insured deposits grew by 10.5 percent from year-end 1995 to year-end 1999, during which time one bank grew its insured deposits (without any acquisitions) from $19 million to $1.2 billion (up 6,140 percent), and another bank reduced its insured deposits from $763 million to $423 million (down 45 percent). Of these two banks today, the one with a lower level of insured deposits paid considerably higher total assessments in the 1990s.

How Should Losses be Funded?

In reaching a point where the FDIC does not collect assessment revenue from most institutions during good times, we have clearly departed from any concept of spreading insurance losses over time by collecting revenue on an *ex ante* or long-run expected loss basis. In contrast, prior to 1989 it could be argued that Congress intended the FDIC to operate under a form of long-term expected loss pricing. During the period 1933-1989, when premiums were set by statute and never departed from a range of between 3 and 8.3 basis points per annum, accumulated premiums and the investment income on those balances enabled the system to roughly pay for itself. The system in place today, in contrast, amounts essentially to charging nothing in times of prosperity, and a lot in times of adversity, thereby potentially magnifying swings in the banking cycle.

The current "cushion" in the BIF, the amount by which the fund exceeds 1.25 percent, is $2.3 billion.[3] If insurance losses not covered by the systemic risk exception were to exceed this amount—as they did in each year from 1988 through 1992[4]—and the fund fell below 1.25 percent and was expected to remain there for a year or more, the FDIC would be forced to raise average assessment rates to a minimum of 23 basis points. Therefore, all banks would be forced to pay substantially higher premiums at a time when many banks were under stress. On a strict pay-as-you-go basis, banks would have had to pay approximately 62 basis points in 1991.

If the FDIC had more latitude in setting rates when the reserve ratio falls short of the DRR, the recapitalization period could be extended with rates less than 23 basis points. This would help to avoid a credit crunch and to moderate the negative impact of deposit insurance premiums on real economic activity.

How Should the Coverage Levels be Determined?

The current process for setting deposit insurance coverage limits has brought the issue before Congress on a somewhat arbitrary and ad hoc basis. This has resulted in significant fluctuation in the real value of insurance for depositors. Deposit insurance has a simple, but important purpose: to provide a safe place for depositors to keep their money, as a way to prevent bank runs and maintain the stability of the banking and financial system.

Since 1934, the basic coverage amount has increased five times, from $5,000 to $100,000.

[3] Despite growth of the fund during the first quarter of 2000, this cushion fell from $2.5 billion at year-end 1999 because of insured-deposit growth in the first quarter.

[4] Annual losses ranged from $2.7 billion to $6.9 billion during this five-year period. These are actual losses and not loss provisions, which were even higher but were partially recovered when many projected failures did not occur.

Most of the increases more or less reflected cost-of-living adjustments, but the most recent increase is an exception. The 1980 jump from $40,000 to $100,000 had more to do with attracting deposits to insured institutions in a competitive market of very high interest rates. Today, 20 years later, $100,000 of deposit insurance has lost about half its value, based on the Consumer Price Index.

The next several decades will be a time in which the population is aging, retirement costs are increasing, and the supply of federally-backed investment vehicles, such as Treasury notes and bonds, may decline. Thus, a long-term perspective may argue for allowing for the coverage limit to keep up with changes in the price level, household wealth, or other measures relevant to households.

However, there are trade-offs to consider. Higher coverage limits can increase moral hazard. The 1980 increase is widely viewed as contributing to the high cost of the savings and loan crisis. Also, the impact of higher coverage limits on insured deposit growth is difficult to predict, and the likely distribution of benefits is subject to debate.

2. Overview of Options Paper

This remainder of this paper organizes the discussion into three major areas: pricing risk, funding insurance losses, and coverage levels.

Section II of this paper discusses the pricing of deposit insurance for individual banks. If deposit insurance is viewed as a service that banks use, the question is how this service should be priced. One answer is that the price should reflect the risk that the bank presents to the deposit insurance system. This expected loss approach to pricing is consistent with the best practices that have developed in the banking industry in recent years.

The next question is what information should serve as the basis for pricing. Supervisory ratings are appealing because they are based on quality information and reflect the judgment of experienced supervisors; however, too great a reliance on ratings raises concerns about consistency and subjectivity. This suggests the appeal of more objective information, which could include non-public information (such as credit exposures), Call Report information, and market information. Finally, the FDIC could generate pricing information through risk-sharing contracts with market participants.

Section III deals with how deposit insurance losses are funded from an aggregate perspective. The funding of FDIC losses has evolved over the years from a system that featured steady premiums with a fluctuating reserve ratio to a system that targets a specific reserve ratio and results in volatile premiums. The mandate to maintain a particular ratio can lead to steep premiums during bad times and calls for rebates during good times.

One general approach is a user fee system in which banks have no claim on past premiums. Under such an approach, the question is whether premiums will be relatively stable and consistent with expected loss pricing, or whether premiums will be more closely tied to current losses or the reserve ratio in order to guard against premiums that are too high or too low.

A mutual approach would differ from the user fee system in that banks would have some claim on past premiums. This could take the form of rebates when the insurance fund is viewed as too large; this raises the question of how to allocate these rebates. Alternatively, banks could hold claims on the insurance fund, similar to mutual fund shares. This could address concerns about free rider and pricing problems. Under mutual arrangements, the cash flow between a bank and the insurance fund could have two components: one to price

risk at the margin and the other to reflect the bank's claim on the fund.

Section IV discusses the appropriate extent of deposit insurance coverage. The section begins with a review of the history of coverage levels in nominal and real terms. This is followed by preliminary estimates of how an increase in the coverage limit would be expected to increase the amount of insured deposits. This depends on the behavior of households and businesses, and further study would allow more confidence in these estimates.

It is widely recognized that there is a tradeoff between the stability that deposit insurance brings and the potential for distortion of the market process. Coverage levels speak directly to that tradeoff: higher coverage may provide greater stability during difficult times, while lower coverage may enhance market discipline and minimize distortion. The section addresses this tradeoff with a discussion of moral hazard, implicit protection, and industry structure.

The options in the coverage section include continuing the existing system of ad hoc statutory adjustments; indexing for inflationary adjustments; or simplifying the current system to limit a particular level of coverage to one account per person. Other ideas for changes to coverage include extending higher coverage to municipal and other public deposits; this raises issues similar to those posed by brokered deposits. The section ends with excess coverage options including increased use of private coverage, new excess coverage through the FDIC, FDIC-backed private insurance, or coinsurance systems.

3. Review Process and Comments on Options Paper

This paper is one step in the FDIC's comprehensive review of the deposit insurance system. FDIC Chairman Donna Tanoue publicly announced the review on March 7, 2000, in a speech before the Independent Community Bankers of America. On April 25, 2000, the FDIC held a Deposit Insurance Roundtable with bankers, their trade group representatives, consumer group representatives, and industry experts. The Roundtable provided an opportunity for interested parties to raise issues and discuss broad policy options for consideration in the FDIC's review. A transcript of the proceedings may be viewed at *www.fdic.gov*. The Roundtable was followed by outreach meetings with bankers during May and June in Minneapolis, Dallas, and Kansas City. The FDIC also held discussions with members of state banking organizations during their annual spring visits to Washington and with several leadership groups and staff of the national trade associations.

In addition, the FDIC has held discussions with academics and other outside experts. To provide a more explicit "market perspective" on deposit insurance pricing and fund exposure, the FDIC retained the risk-management consulting firm of Oliver, Wyman & Company (Oliver, Wyman). Oliver, Wyman employed an analytical framework similar to that used by the largest financial institutions for analyzing their credit exposures. The purpose was to explore ways to incorporate "best practices" from private-sector risk management into the consideration of FDIC pricing and funding issues.

The ideas and perspectives that were communicated through these various efforts have been incorporated into the options paper. The FDIC will carefully review comments and weigh feedback from the options paper in order to narrow the policy choices and guide the additional analytical work necessary to develop a set of policy recommendations that is appropriately balanced, workable, and fair. As studies conducted by FDIC staff and others are completed, additional discussion—perhaps a

new set of roundtables or outreach meetings—will be arranged with interested parties.

Because this paper is not intended to advocate specific approaches but to solicit comment, we have presented a wide range of concepts for dealing with the policy issues under discussion. Examples of how these conceptual approaches might work in practice are included, and readers are encouraged to comment both on the specific examples and on broad conceptual approaches.

Comments on the options paper may be registered on the FDIC web site at *www.fdic.gov*. The Internet version of the options paper will include a survey which will become available on August 31. Readers are invited to respond to the specific questions that will be posted on the FDIC web survey for each topic and to provide any additional comments relating to the survey questions.

Comments may also be addressed to Robert E. Feldman, Executive Secretary, Attention: Comments/OES, Federal Deposit Insurance Corporation, 550 17th Street, N.W., Washington, D.C. 20429. Comments may also be hand-delivered to the guard station at the rear of the 550 17th Street Building (located on F Street) between 7:00 a.m. and 5:00 p.m. on business days. In addition, comments may be faxed to (202) 898-3838, or sent via the Internet to comments@fdic.gov.

FDIC staff will review comments as they are received and summarize them each month through the fall of 2000, beginning with September. Comments will be available for inspection and photocopying at the FDIC Public Information Center, Room 100, 801 17th Street, N.W., between 9:00 a.m. and 4:30 p.m. on business days.

II. PRICING DEPOSIT INSURANCE FOR INDIVIDUAL BANKS

Depositors value the simplicity and certainty that deposit insurance provides, and banks benefit from being able to offer insured deposits to customers. Like other services banks use, a financial guarantee such as deposit insurance is not costless to provide. The starting point for the discussion in this section is that it is equitable and reasonable for a bank to compensate the parties who bear the risk of providing this benefit.

In this section we will consider ways of differentiating among the risk profiles of the more than 9,000 insured institutions currently in the 1A category for deposit insurance. The most straightforward conceptual approach is for a bank to pay an amount equal to the expected loss the deposit insurer faces from providing deposit insurance to that bank. An "expected loss" pricing system would 1) reflect the differences in risk across banks and 2) generate revenue sufficient to pay for the costs of insuring deposits. The expected loss price for a bank would depend on three things:

- the probability of default for that bank;
- exposure; and
- severity, or loss given default.

At least in principle, every bank could be assigned something similar to a credit rating, with an associated range of default probabilities derived from experience. These default probabilities, combined with customized or standardized assumptions about loss given default, would yield the FDIC's expected loss per dollar of assessable deposits, and the appropriate premium, for that institution. Such an approach also would provide the raw material to construct hypothetical distributions of FDIC loss exposure using standard credit risk measurement tools, as discussed in the following text box.

Oliver, Wyman & Company Approach to Bank Level Pricing

Expected loss pricing has two key benefits: at the systemic level, setting the price for each bank equal to its expected loss ensures that the premium inflows to the fund are ultimately equal to average long-term loss. This ensures that the fund is self-financing over time. Additionally, risk-based pricing helps to relieve moral hazard problems: Banks that try to use the availability of insured deposits to increase risk will be penalized through higher premiums.

Under Oliver, Wyman's proposed pricing structure, expected loss would be calculated "bottom-up" at the level of individual banks. This can be done by breaking expected loss for each bank into its components: expected default frequency; exposure; and severity. Approaches for estimating each of these building blocks are suggested below:

Expected Default Frequency

Expected default frequency (EDF) is the most significant of the expected loss building blocks.[5] There are two basic approaches the FDIC could use to quantify the default

[5] EDF is "expected default frequency," or probability of default. The EDF is one of the three components that determine expected loss, which is described by the following relation:

Expected loss = (EDF) x (exposure) x (loss given default).

probability of individual banks. The first method is a fundamental analysis of a bank's condition, encompassing risk profile, financial strength, management, market position, and future prospects. The second method is to leverage the analysis of others by interpreting market price information.

Fundamental analysis

A private sector company that underwrote deposit insurance would need to have a process for evaluating the riskiness of each customer. This process would likely resemble that which large banks use in evaluating the risks of trading counterparties and correspondent banks. Typically, such an analysis incorporates a number of elements, including the risk profile of the institution (credit, trading, asset/liability, event, and business risks), its financial resources (capital, reserves, subordinated debt, unrealized gains, sellable goodwill) and the quality of its management.

The FDIC already has access to many of the factors that go into a fundamental analysis, either through Call Reports or through the examination process. A key difference from existing CAMELS ratings, however, is how this information is processed. In order to be useful for pricing purposes, the fundamental analysis needs to be summarized in a score or grade which, in turn, is directly calibrated to an absolute measure of default risk (EDF). At many leading institutions, this is done by mapping the results of fundamental analysis to the external agency ratings of rated financial institutions. This mapping is then used to calibrate all scores (for both rated and unrated institutions) to their EDF equivalents.

At a minimum, such an approach can be undertaken with the elements of the existing CAMELS ratings. Oliver, Wyman would, however, advocate that the resulting grades should be more granular and provide for a much greater dispersion of exposure than the current risk buckets.

Market analysis

As an alternative (or supplement) to fundamental analysis, the FDIC could also seek to leverage market price information. In so doing, the FDIC would be outsourcing counterparty evaluation to the credit markets, using the premiums they are charging banks as an indicator of risk.

A number of market instruments could be used as barometers of credit risk, including:

- (Uninsured) interbank deposits
- Senior debentures
- Subordinated debt
- Interest rate swaps
- Credit derivatives
- Equity

In addition, the FDIC could encourage the development of new products for the purpose of providing market price information tailored to FDIC's pricing needs. For example, banks could be required to purchase private deposit insurance in addition to that from the FDIC, either on a separate class of deposits, or as co-insurance to the FDIC. Recent proposals for a special class of subordinated debt could also serve as a market price indicator.

The main drawback to the use of market prices is that they are limited to banks that are large enough to attract an active market in their securities. While regulatory encouragement could increase the number of banks with appropriate instruments, it is likely that for the majority of smaller banks, even if they were to issue market debt, there would be little trading, and thus relevant price information. For practical purposes, a market-pricing regime would have to be limited to larger banks. Nevertheless, market prices could still be useful as external benchmarks of credit risk,

particularly to establishing relative risk on the bases of observed premiums.

Exposure

Exposure measurement is the most straightforward of the expected loss building blocks. For each bank, this should be the amount of insured deposits. An alternative would be to base exposure measurement on total deposits (insured plus uninsured) on the theory that this would also capture exposure in "too big to fail" (TBTF) cases. However, since TBTF coverage would presumably affect only an unspecified number of large banks, insured deposits remains the best single measure of exposure.

Severity

Severity is the size of the loss to the FDIC, as a percentage of the total defaulted exposure to all insured deposits. While important, differences in the expected severity among banks are smaller than differences in EDF. We would thus recommend a simpler treatment of severity estimation. The FDIC experience shows that the severity of loss from small banks is usually greater than that for larger banks. This should be priced into risk-based premiums, either directly, or by investigating the underlying drivers of this difference. Factors which might prove to be good indicators of severity differentiation include business mix, loan concentration, and the structure of liabilities.[6]

The FDIC faces some practical constraints on its pricing of deposit insurance. There are limits on the extent to which risk distinctions can or should be made using either objective or subjective measures. Within those limits, however, setting deposit insurance premiums based on expected loss is over the long term likely to minimize the distortions and moral hazard problems associated with deposit insurance, and minimize the cross subsidization of the weakest banks by the strongest.

Conceptually, the question of how deposit insurance is priced at a point in time can be viewed in two ways. As discussed in the preceding text box, a "bottom-up" view would set pricing at the individual bank level and let overall revenue result from the sum of payments across banks. A "top-down" view would instead attempt to estimate appropriate aggregate funding needs and then allocate prices across banks based on risk.

The next section of the paper takes an aggregate perspective and discusses how insurance losses are funded over time. This section deals with how to assess risk at the individual bank level; the discussion here is consistent with either a bottom-up approach to pricing or a top-down approach that features a base price with adjustments for individual banks based on differences in risk.

Options for moving toward expected loss pricing or otherwise differentiating among the risk profiles of institutions in the 1A category can be broadly classified into approaches that rely on supervisory judgment, those that rely on other information, and hybrid approaches. A few specific examples of how some of these approaches could be used to develop "expected loss prices" for individual banks are included for illustrative purposes. We have not attempted to derive expected loss prices for every risk-differentiation option, but in principle one could do this. One could derive historical failure rates and loss rates for groups of banks and use such information to form the first and third elements of the FDIC's expected loss discussed above. The third element, the

[6] Oliver, Wyman would normally recommend that the severity rates used in pricing be based on historical experience. However, the changes in early resolution brought on by FDICIA, if successful, should lower expected severity. Unfortunately, the experience of bank defaults since FDICIA is too limited to determine if this is the case, and if so, how much loss severity has been reduced.

proportion of loss borne by the FDIC, could either be based on a historical rule of thumb or, alternatively, could be based on a more sophisticated analysis tailored to an individual bank's liability composition. (See Attachment E-3 for a full discussion.)

Some of the risk differentiation methods we discuss below are not amenable to historical loss analysis because historical information does not exist. Examples would include using large bank supervisory risk matrices more explicitly, using a newly developed supervisory risk rating, or using elements of non-public bank-specific information that have not been collected in the past. In most of these cases, the risk differentiation methods discussed below are best viewed as tools to help allocate assessments on a risk-related basis. In some cases, for example, by differentiating risk based on specific elements of risk-related information, and depending on the information collected, one could conceivably develop estimates of expected loss at the bank level as described in the preceding text box.

Because all of the methods considered have the potential to distinguish more effectively among A-rated banks, the likely result regardless of the method selected would be that the safest banks pay less over the long run.

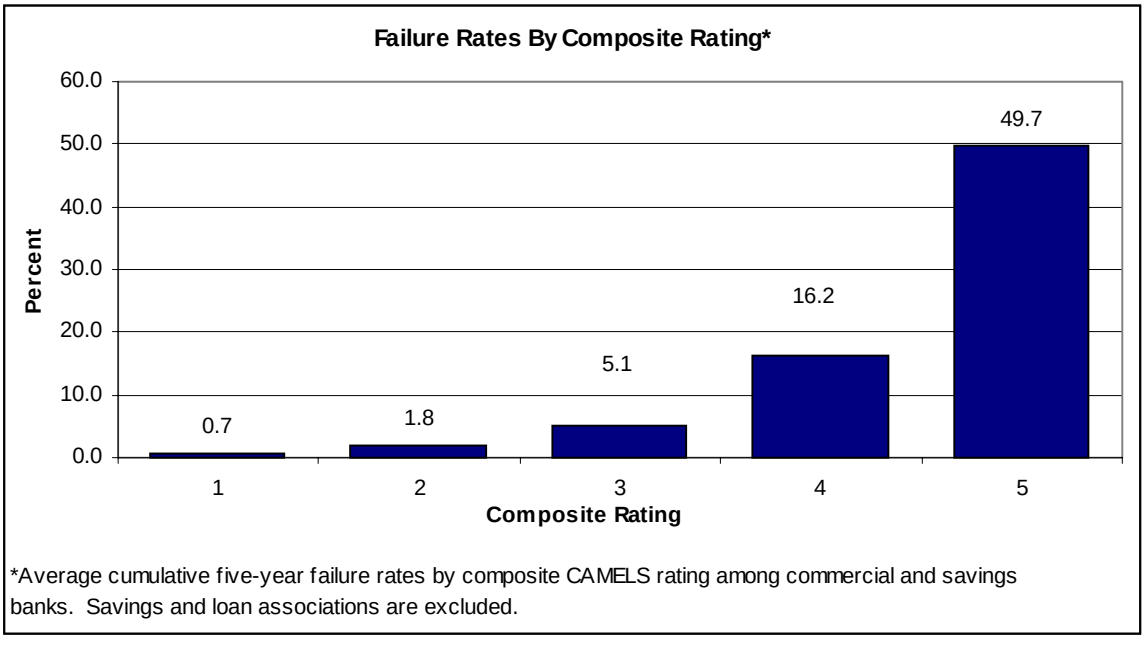
Options Relying on Supervisory Evaluations

The case for relying on supervisory judgment as the cornerstone of any attempt to enhance risk differentiation is easy to state: onsite examination provides the most in-depth information available. The options for such an approach include:

- Composite CAMELS ratings;
- Components of the CAMELS ratings;
- Risk matrix results; and
- Uniform risk management ratings.

Composite examination ratings. It would be quite simple to achieve additional risk differentiation by application of existing supervisory tools. Specifically, the FDIC could differentiate for insurance purposes between banks with examination ratings of 1 and 2. This would be clearly supportable from a risk

Chart 1



*Average cumulative five-year failure rates by composite CAMELS rating among commercial and savings banks. Savings and loan associations are excluded.

perspective given the relative historical failure rates of these two groups of banks. As shown in Chart 1, the 5-year failure rate for CAMELS 2-rated institutions since 1984 was more than two-and-a-half times the failure rate for 1-rated institutions.

Component ratings. Other currently used supervisory tools could readily be put to use for pricing deposit insurance. For example, the component ratings in the CAMELS system could play a greater role. The component ratings are ratings of the individual elements of the CAMELS acronym that are assigned in the examinations: capital, asset quality, management, earnings, liquidity and sensitivity to market risk. The component ratings range from 1 to 5, and 1 is the best rating. There is at least conceptual appeal to greater use of these ratings for setting premiums. Purely to illustrate the concept, one could imagine, for example, a rating of "2 minus" for 2-rated banks with a sufficient number of components rated 3 or worse.

Table 1

OCC Risk Matrix		
Risk Types	***Level***	***Direction***
Credit	High	Steady
Price	Moderate	Falling
Interest Rate	Low	Steady
Foreign Exchange	Moderate	Rising
Liquidity	High	Steady
Reputation	-	-
Transaction	-	-
Compliance	-	-
Strategic	-	-

For each of the nine risk types, the OCC risk matrix indicates the level (High, Moderate, or Low) and direction (Rising, Steady, or Falling) of the risk.

One concern with this approach is that greater reliance on subjective information could compromise consistency in determining premiums, and more so the finer the distinctions that supervisors are asked to make. This is a general concern that applies to all options involving supervisory information and is discussed further below.

Risk matrix results. For the largest banks, results from the Office of the Comptroller of the Currency (OCC) and the Federal Reserve Board risk matrices could be used more explicitly. As a supervisory tool, large complex banks supervised by the OCC and the Federal Reserve Board are assigned ratings for a variety of risk-management factors. Banks with the same composite CAMELS rating can have substantial differences in these risk ratings and these differences do not affect the premium paid by the institution. One could imagine assigning scores based on these matrices. Again, purely to illustrate the concept, a "2 minus" could be a bank with a sufficient number of high or rising key risk elements in these matrices.

An impediment to this approach is that there is a lack of uniformity at the agency level, with the OCC and Federal Reserve using different matrices and the FDIC and Office of Thrift Supervision not using a matrix approach. An example of the OCC's Risk Matrix is displayed in Table 1.

Uniform risk management rating. If we consider approaches that require more time to implement, the possibilities expand. For example, one could imagine an interagency effort to develop a uniform risk rating explicitly designed to differentiate among the levels of risk implicit in a 1 or 2 rating. Such a rating could consider such factors as the extent of credit concentrations and the quality of underwriting standards and internal controls—irrespective of the current financial performance and condition of the institution—

and would essentially gauge the institution's overall appetite for risk. This approach could be applied to all institutions, or, alternatively, only to the largest institutions. One concern here is that designing a uniform interagency risk-rating could take years.

There are arguments against basing risk differentiation on supervisory judgment. The examination process might require a greater degree of management discussion in order for examiners to work constructively with banks to obtain needed information, and bankers may have discomfort with additional supervisory discretion. Examiner judgments are subject to several layers of review and an elaborate appeals process, and one of the disadvantages of increasing the reliance on supervisory judgments for pricing deposit insurance could be an increase in the resources bankers and examiners might have to devote to such processes. It could also be argued that some of the tools described above—notably the individual component ratings and the large bank risk matrices—were intended as subjective supervisory tools that should not be put to uses for which they were not designed.

For the 99-plus percent of insured institutions that do not have a continuous onsite examiner presence, there also may be significant issues of timeliness in relying on examiners to differentiate the risks taken by the vast majority of well-performing banks. Most banks are examined on an eighteen-month cycle. The issue concerning the timeliness of onsite data is reduced in larger insured institutions that are subject to ongoing targeted examinations or a more frequent examination cycle.

Changes in risk profiles between exams presently are addressed using offsite monitoring tools, with an onsite exam or other supervisory review as needed; in particular, a downgrade of a bank to a 3-rating is generally validated with an onsite examination. If the premium system were structured to differentiate more among the 9,000-plus institutions not currently subject to heightened supervision, and if changes in an institution's risk category required an onsite supervisory review, resource demands on the supervisory process would increase.

Options Relying on Objective Factors

Another general method to consider would be "factual" or data-driven approaches. Several sources of information could feed such approaches: non-public bank specific information, bank Call Reports, or market information.

Non-Public Bank-Specific Information

The federal banking regulators have access to a significant amount of non-public information about insured institutions, information that may be a useful supplement to Call Report data for purposes of evaluating institution risk profiles. It may be possible to develop a basic package of objective information that would assist in the process of differentiating the risk profiles of the majority of strong-performing institutions. Much as premiums are now assigned based not only on supervisory evaluations of capital adequacy, but on the capital ratios themselves, one could imagine the FDIC differentiating risk profiles directly from non-public information provided by banks.

The Canada Deposit Insurance Corporation (CDIC) created a risk scoring system in 1999 that is based, in part, on regulatory reporting information and partly on information provided directly to the CDIC by its member institutions. The score incorporates information on a variety of risk-related factors including capitalization, significant credit concentrations, and self-certifications of the extent of adherence to

defined risk-management standards. The standards adherence information is submitted by the banks annually to the CDIC, with a copy provided to each institution's primary supervisor. CDIC assigns banks to one of four risk categories for insurance purposes based on both the supervisor's examination rating and the information banks provide. (Banks that do not provide information are put in the worst premium category.) The algorithm for assigning banks to categories based on the information provided is known to the member institutions. Attachment B-1 summarizes the major features of the CDIC risk scoring system.

The CDIC's experience has been that its scoring system provides a reasonable balance between qualitative and quantitative factors, and that it is relatively transparent and easily understood by member institutions. The doubling of premiums payable resulting from a drop from one category to the next appears to provide incentives to member institutions to either improve their financial results or their adherence to the standards.

The CDIC faces issues with its system that undoubtedly would be faced under any similar scoring system that might be devised. The selection of a particular scoring methodology creates the possibility that institutions focused on maximizing their scores could achieve the best premium category, but might still be considered risky by other measures that are not encompassed by the system. This issue, and the related question of how, and how often, the information the insurer receives is to be verified, are addressed in part through the supervisory examination process. The details of how that occurs are a subject of continuing discussion between the CDIC and the primary supervisor, as would likely also be the case if the FDIC were to implement such a system. There is also the tradeoff between reporting burden and comprehensiveness of results. For example, the quantitative part of the CDIC's system includes very little off-balance sheet information, as it was felt that such inclusion would require excessive filing requirements.

The CDIC's approach is one among many that could be devised along similar lines. The design of a risk scorecard could be exposed both to public comment and the expertise of industry practitioners in both small and large banks.

The advantage of this approach potentially would be in using more detailed risk-related information without imposing a regime where supervisors are asked to make subjective distinctions among healthy banks. Moreover, it could avoid the resource and timeliness issues, described above, that could arise if supervisors were asked to monitor inter-examination changes in risk profiles for over 9,000 banks along a more finely graduated scale than is now required.

Such an approach could raise concerns about the burdens of creating another layer of bank reporting. Those concerns might be allayed if the risk scorecard were either simple, or built on information that is readily available to a well-managed bank. In this regard, a comparison with developments in capital regulation may be appropriate. The momentum towards basing large-bank capital requirements on internal credit ratings accommodates differences in banks' internal ratings scales, provided those ratings can be mapped to a common rating scale. Thus it may allow for both flexibility at the bank level and analytical rigor in the setting of capital requirements. This new direction in capital regulation is an example of a systematic use of non-public bank-specific information for a significant policy goal. Deposit insurance pricing may similarly be able to benefit from such a systematic use of non-public information.

Bank Call Reports

Better differentiation of risks in the premium system using public financial reports would be conceptually straightforward. There is considerable variation in the financial characteristics of the 9,000-plus insured institutions in the highest assessment category. Using figures reported by banks for year-end 1999, Table 2 displays differences between 1A-rated banks in the top 10 percent on several performance factors and those ranked in the bottom 10 percent. (Attachment C explains the nine risk classifications currently used by the FDIC to assign premiums.) The table reveals substantial differences between these groups that are not reflected in their assessment ratings, since all are rated 1A and currently pay nothing for deposit insurance.

Table 2

	First Decile Average (%)	*Tenth Decile Average (%)*
Non-Performing Loans/Loans & Leases	0	3.2
Charge-Offs/Loans & Leases	0	10.2
Loan Yield	5.1	11.1
Commercial Loan Growth	-42.1	566
Volatile Liability Growth	-41.4	721
Total Equity/Assets	23	6

(See Attachment D-1 for more details on the dispersion of capital ratios for institutions rated 1A.) As described below, the difficult questions relate to choosing from a multitude of available approaches, and evaluating the usefulness of the results.

A number of financial ratios have been shown to be indicators of the potential for future financial distress, examination downgrade or failure.[7] An FDIC study of the banking crisis of the 1980s found that high loan concentrations, rapid loan growth and high dependence on volatile liabilities were significantly associated with higher probabilities of failure (FDIC, 1997).

Suppose we identify a set of ratios for which higher values often indicate higher risk, other things equal. One example of how to use these ratios for pricing would be to use peer analysis to identify outliers. (See Attachment D-2 for an example.)

As another example, a bank's financial ratios might be used as inputs to a statistical credit score designed to estimate failure probabilities based on historical experience of banks with similar characteristics. The resulting score could be used as an indicator for the bank's premium. Both examples are presented for illustrative purposes only, and represent only two among many potential methods for using reported financial information.

Using Call Report data to better differentiate the risks of the majority of strong-performing institutions has a number of attractive features. Such data are uniform in format and regularly available. At least in theory, such information is objective. And there is a vast body of analytical work to draw from that is expressly designed to measure risk of failure using such information.

One of the issues that would need to be addressed in applying Call Report ratios is whether to use peer comparisons or absolute ratio thresholds. Under the peer approach, an institution could be reclassified because it does poorly relative to its peers, even if all of its ratios are strong by historical standards. Moreover, using purely relative comparisons would make it difficult for bank managers to determine exactly where their institutions would be classified for insurance purposes prior to their actual classification. The alternative is to use absolute benchmarks based upon historical averages. This gives bankers explicit targets, should they choose to shoot for them, and ensures that more institutions move

[7] O'Keefe and Reidhill (1997); Demirguc-Kunt (1991); Gajewski (1989); Whalen and Thomson (1988).

into lower premium categories when the industry is stronger. (See Attachment D-3 for an example of this approach.)

On the other hand, to the extent that the goal of making additional risk distinctions is merely to ensure that higher-risk institutions bear a greater share of the costs of deposit insurance than lower-risk institutions, the purely relative comparisons accomplish this. In driving pricing off such peer-based ratio tests, however, attention should always be paid to the absolute levels of the ratios, in order to avoid making pricing distinctions based on negligible or economically insignificant differences in financial ratios.

Reported information at times has been notoriously inaccurate. The FDIC's most costly bank failures in recent years have occurred rather abruptly among institutions that had consistently reported strong earnings and capital. In these cases, an examination or another event ultimately revealed that reported earnings had been artificial and overstated while asset values had been inflated unrealistically. In some cases, Call Report-based offsite tools were indicating that these institutions should be candidates for upgrading from a CAMELS "2" to a "1" at the same time that examiners were placing the institutions on the problem list.

Another significant limitation of Call Report information is that it is not detailed enough to fairly compare the risk profiles of insured institutions. As a simple example, consider two institutions whose Call Reports indicate identical concentrations of consumer and residential mortgage loans. One of these institutions could be specializing in subprime loans, and the other in conservatively underwritten loans, but the Call Reports would not show the difference (except perhaps by inference based on loan yields or other indicators). One institution could have significant commercial lending concentrations to a few large counterparties, industries, or geographic areas, while another, with the same Call Report numbers, may be prudently diversified. Call Reports are useful in capturing some types of quantitative data, but despite past revisions, fail to capture certain qualitative factors that also merit consideration. Reported financial information does not provide a picture of the risk profile of the reported loans, the quality of internal controls, or, in some cases, the magnitudes of market-sensitive decisions management has made.

Market Information

More than 750 insured institutions or their holding companies, holding over 50 percent of all insured deposits, currently issue debt or equity instruments that are traded in organized financial markets. As indicated in Chart 2 (see next page), market prices for these instruments appear to reflect a changing aggregate risk profile over time as well as variations in risk across institutions.

Chart 2 shows the mean and distribution of subordinated debt yield spreads over U.S. Treasury securities with comparable maturities for the period from January 1997 to June 2000. The lower and upper bars of the graph represent the 10^{th} and 90^{th} percentile cutoffs, respectively, and are included to show the degree to which spreads are dispersed around the mean. Yield spreads increased significantly over the period, and were particularly volatile in 1998. These widening spreads, in part, may reflect growing investor uncertainty regarding credit risk. Moreover, the expanding spread between the yields at the 10^{th} and 90^{th} percentiles suggests that market participants have perceived an increasing disparity among individual institutions in recent periods. This is corroborated by the disparity in EDFs that are based upon asset price volatilities, in Chart 3 (see page 19).

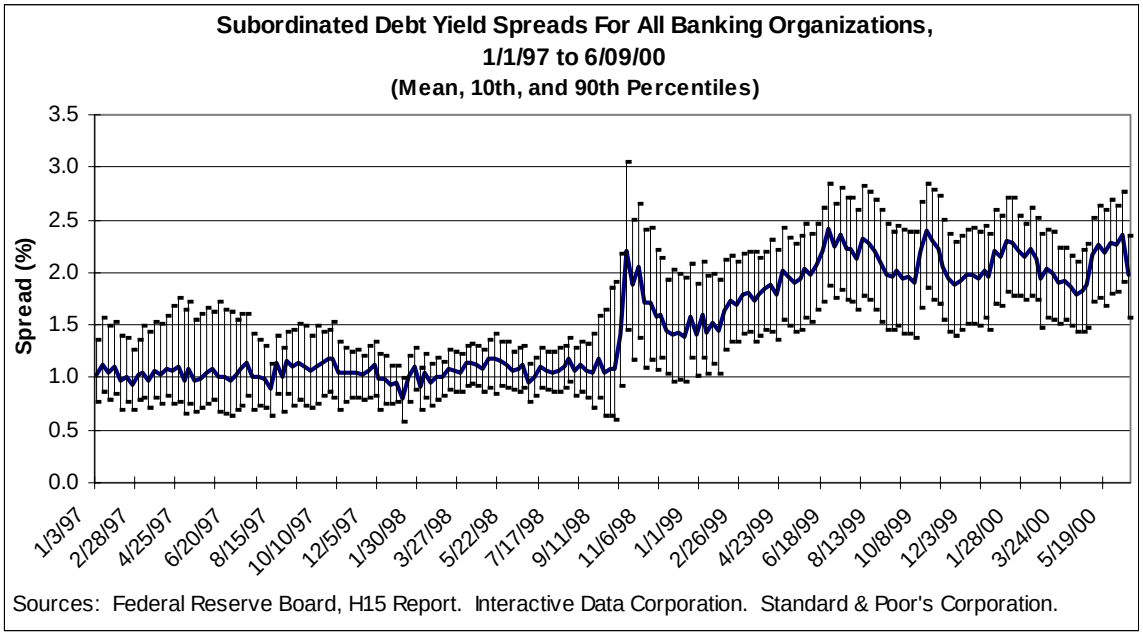
Yield spreads and EDFs can be useful because they convey information derived from prices paid in efficient markets. However, it is not always clear how to interpret these market signals. For example, the sharp increase in yield spreads and EDFs following the Russian bond default that occurred in August 1998 has been widely interpreted as a general shift in the level of risk aversion on the part of investors. Similarly, a perceived scarcity of Treasury securities due to decreased issuance in maturities longer than 3 years appears to have driven down long-term Treasury yields during the first half of 2000, even as short term interest rates were rising.

Conceptually, market prices or credit ratings could be used to identify the level or change in the default risk posed by the issuing institutions, thereby differentiating higher- and lower-risk institutions for the purpose of assigning premiums.

Credit ratings. Our earlier discussion of expected loss pricing was couched in terms of a credit rating framework. The natural question then becomes, why not use credit ratings directly to estimate expected loss deposit-insurance premiums for those institutions that have such ratings? (A discussion of this possibility is contained in Attachment E-1.)

If the goal is to differentiate among acceptable levels of risk, credit ratings are explicitly designed to do so. This is a plausible and straightforward approach but one that raises a number of issues. Not all institutions have credit ratings, but as described below, the FDIC has authority to establish separate insurance pricing mechanisms for large banks, which are most likely to be rated by one of the recognized rating agencies. There are other questions. For example, what debt instruments have payoff characteristics most closely resembling the FDIC's exposure? Does the credit rating reflect a belief in an implicit federal guarantee that may bias the rating upwards, and result in better ratings for the largest banks? The use of credit ratings from third parties may also raise issues about the appropriateness of a

Chart 2



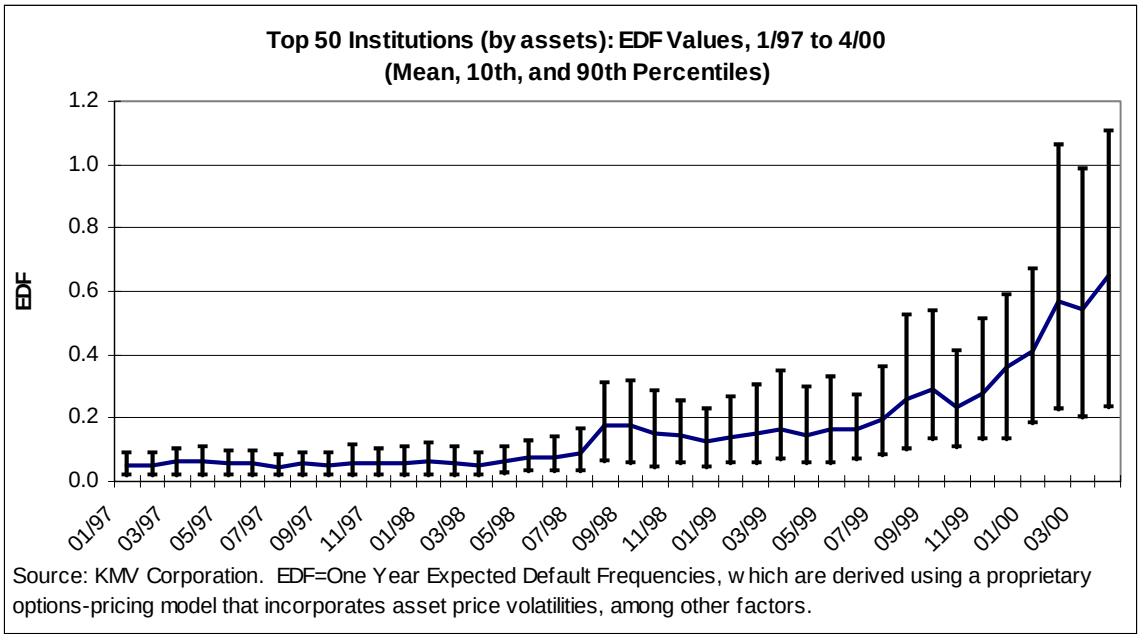
government agency relying on information provided by specific private firms for important public policy decisions, especially when those firms may have less information or experience than the government agency on which to base their judgments.

Subordinated debt. The FDIC currently monitors the spreads individual institutions pay over comparable U.S. Treasury obligations for various debt instruments. Referring again to Chart 2, page 18, it is clear that the mean yield spreads on subordinated debt vary over time and that the market differentiates observably among institutions in its pricing of subordinated debt. One could envision a system in which institutions with the highest spreads are classified into a higher-risk category for premium purposes. Attachment E-2 contains a discussion of this issue.

Subordinated debt has received considerable attention as an instrument that could enhance market discipline for large institutions and convey early warning signals to regulators. Subordinated debt is regarded as particularly attractive because the incentives of subordinated debt holders line up with those of the FDIC; these debt holders do not share in the upside from any gambles taken by bank management, and subordinated debt pricing tends to discourage imprudent risk-taking.

Owing to these characteristics, there have been several proposals to require large institutions to issue some minimum amount of subordinated debt on a regular basis. The Gramm-Leach-Bliley Act requires the Treasury Department and Federal Reserve Board to conduct a study of subordinated debt requirements, and the report is due to Congress on May 12, 2001. One of the primary arguments against a subordinated debt requirement is that it interferes with management decisions regarding the optimal liability structure for their institution. Subordinated debt is not widely issued at the bank level, and even where it is, it may be in amounts or on terms different from those that would be mandated by a regulatory requirement.

Chart 3



Source: KMV Corporation. EDF=One Year Expected Default Frequencies, which are derived using a proprietary options-pricing model that incorporates asset price volatilities, among other factors.

There are at least two broader sets of issues that arise in connection with the use of market data for deposit insurance premiums. One is that the use of market data would effectively create two pricing mechanisms for deposit insurance, one for larger, publicly traded institutions and another for smaller privately held institutions. The second issue is the difficulty of extracting the appropriate information from market prices. Price movements often reflect more than pure changes in the individual default risk of the issuing institution. For example, price changes can reflect developments in the broader economy or the financial markets that influence the supply or demand for many types of instruments. In analysts' terms, the "signal-to-noise" ratio associated with price changes is sometimes low, and extracting the true market signal regarding the institution may not be straightforward. In addition, even after the true market signal about an individual institution has been extracted, the result may not correspond to supervisory evaluations of that institution.

The differences between large and small institutions have been growing for some time. Large institutions have increasingly complex risk profiles, global operations, and expanding lines of business, and they are subjected to market scrutiny in an increasingly competitive environment. Small institutions remain more community-based, focused on a limited number of core businesses, and privately held. In recognition of these differences, FDICIA explicitly authorized the establishment of two distinct premium systems based upon the size of institutions. The FDIC has thus far not exercised this authority, given that the 1996 statutory constraint effectively precludes any meaningful distinctions. A well-established movement exists within the bank regulatory community toward separate approaches to supervision and capital regulation for large and small institutions, and it is time to reconsider whether a "one-size-fits-all" approach to deposit insurance pricing will remain suitable going forward.

Hybrid Approaches

We have differentiated between subjective and objective approaches. Our current pricing system uses both, namely examination ratings and capital ratios. (Attachment C provides an overview.) Market prices are likely to incorporate both subjective and objective information, as just discussed. Other hybrid approaches could be considered. For example, the subjective factor could continue to be based on the examination rating, with the objective factor being some type of risk score based on Call Report ratios, market risk indicators, or other non-public information.

All three types of information considered in the preceding sections could be combined into a scoring system for determining premium classifications. The approach used by the CDIC is another example of a hybrid approach. Attachment B-2 illustrates the results of applying a CDIC-style approach to U.S. institutions using a subset of variables. The CDIC system is more complicated than the FDIC system in some respects, but it is also simpler in that it contains only four premium categories.

Customized Financial Contracts

One possible way to use market information to differentiate risks without imposing a particular funding structure on insured institutions might be to go beyond simply monitoring capital markets and begin entering into financial contracts that price and share the risk of failure at individual institutions. The FDIC could enter into financial contracts that, in exchange for a premium paid to the holder, expose the holder to a defined risk in the event of the

failure of a specific institution or pool of institutions. The premium that holders require on such contracts provides information relevant to expected loss pricing.

In 1991, the FDIC was granted the authority to *"obtain private reinsurance covering not more than 10 percent of any loss the Corporation incurs with respect to an insured depository institution."*[8] The FDIC completed a study in June of 1993 that found that the conceptual attractiveness of a reinsurance program was offset by the complexity of the practical and public-policy issues that would first have to be addressed. Of particular importance was that a market for such risk did not exist at that time and, as a result, the terms under which such coverage could be obtained were not favorable to the FDIC.

In the last few years, however, financial innovation has greatly expanded the range of nontraditional alternatives in which the capital markets can be employed to finance risk. Examples that may be useful for the purposes of pricing deposit insurance include collateralized loan obligations, credit derivatives (default swaps) and other structured securities. The FDIC could work with market practitioners to explore the feasibility of using such instruments for price discovery, as an input to premium setting.

Making use of market information in this manner can address bankers' concerns regarding subjectivity, given that market prices reflect the collective judgment of diverse, informed parties with personal wealth at stake. Market prices also are inherently forward-looking, and they may serve as a check on any inefficiencies in the FDIC pricing process. For example, through market pricing the FDIC may learn that some reporting requirements have low value-added, given other information, and industry burden could be reduced by eliminating such requirements without sacrificing accuracy in price setting.

Similarly, market information could help to reduce the distortions that can arise when government-administered prices are introduced into otherwise competitive markets. Market participants can be expected to use both subjective and objective information from several sources to price risk—any information that contributes to more accurate pricing.

[8] 12 U.S.C.A § 1817(b)(1)(B).

III. FUNDING DEPOSIT INSURANCE LOSSES

Funding arrangements play a critical role in the design of a deposit insurance system. A well-designed system will ensure that adequate funds are readily available to respond to problems as they arise; inadequate funding can lead to delay in resolving failed institutions and significant increases in costs. The design of the funding arrangements will determine whether the industry is asked to pay for the costs of deposit insurance when the industry is healthy or when it is experiencing problems.

From 1934 until 1950, all FDIC-insured banks were assessed at an annual rate of eight-and-one-third basis points per dollar of domestic deposits. This revenue went into an insurance fund where it earned interest and was available to meet operating expenses and pay for the costs of insuring depositors. Under this fixed premium rate approach, the size of the fund depended on the extent to which revenues and interest income exceeded expenses. A key feature of this system was that banks were required to pay annually for deposit insurance. The fact that the premium rate was stable and the fund grew when the economy was healthy allowed the system to smooth the costs of deposit insurance over time.

One concern with a fixed-premium approach is that the premium rate might prove to be too high or too low. At an aggregate level, this could mean that over time the industry would either be over- or under-charged for deposit insurance. As it happened, in 1950 Congress addressed the industry's concern that the insurance fund had grown too large by requiring the FDIC to return a portion of excess premium revenue each year. Thus, the effective premium rate was tied to the current year expenses of the deposit insurance system, and could range from slightly more than 3 basis points to 8.33 basis points.

This system was in place until 1989, when the earlier concerns about over-charging were replaced by concerns about under-charging as the insurance fund declined. In the aftermath of taxpayers funding FSLIC losses, Congress addressed concerns about the viability of the surviving funds by significantly changing the assessment system. A DRR was established and premiums depended on whether the reserve ratio was above or below this target. Under this system, which for the first time gave the FDIC some discretion over rate-setting, the effective premium rate could range from 0 to 32.5 basis points, with increases in any one year limited to no more than 7.5 basis points. By 1991, the premium rate had reached 23 basis points.

As noted in the introduction of this paper, in 1991 FDICIA brought further changes by providing broad discretion to the FDIC to achieve two mandates: establishing a risk-based premium system and maintaining the funds at the designated reserve ratio.[9] The DIFA significantly curtailed that discretion when the funds are above their targets.

As a result of these changes, the original system with a focus on a steady long-term premium rate has been replaced by a system with a focus on a target fund ratio. The current

[9] FDICIA included additional mandates to help prevent future crises, such as "prompt corrective action" requirements for bank supervisors to ensure early supervisory intervention for deteriorating institutions, and a " least-cost resolution" requirement to control the costs of resolving bank failures. As with other provisions of FDICIA, these have not yet been tested by adverse economic conditions.

system has an adjustment mechanism whereby as banks' condition deteriorates, they pay more into the fund. Current arrangements reflect the desire to ensure that taxpayers will be protected from deposit insurance losses. At the same time, it results in what might be called a pay-as-you-go system. During good times, banks pay an insignificant amount; during bad times, the cost of bank failures are passed through to banks when they can least afford it. Losses are determined after the fact and survivors are asked to pay.

Another key question that drives the discussion of aggregate funding is whether banks should be able to receive disbursements from past premiums. If one views the government as bearing all the risk of bank failures with banks paying a "user fee" to compensate the government for doing so, then the answer is no. Another view is that if the government bears only extreme or catastrophic losses while the industry bears losses up to that point through a mutual arrangement, then banks should have some explicit claim on past premiums.

Thus, the options discussed below are organized under two broad headings: user fees and mutual arrangements. Under the user fee, there are two general approaches. The first relies on relatively steady average premium rates designed to equate premium revenue with insurance losses over a long-term horizon. The second alternative is to allow for more variation in the average premium rate by adjusting the rate based on current insurance losses or by linking the rate to the reserve ratio of the deposit insurance fund.

The options under the mutual arrangement heading include: 1) rebates tied to the reserve ratio; 2) a system in which banks hold explicit claims on the insurance fund; or 3) a system which more closely resembles private market provision of deposit insurance.

User Fee Model

As mentioned above, a user fee approach would view the government, not the banking industry, as the provider of deposit insurance and therefore the party responsible for bearing the risk of guaranteeing bank deposits. Under this approach, the industry would pay on a regular basis for access to the deposit insurance system. Because the payment would be viewed as in exchange for something of value, the industry would have no claim on previous payments. This is often compared to private insurance; a driver who does not have an accident does not get his money back.

Long-Term Premium Rates Based on Historical Experience

In the simplest case, the industry would pay a stable average premium rate either set in statute or subject to infrequent change at the discretion of the FDIC. If revenue needs (losses) in a given year exceeded the revenue collected, the government would be responsible for the difference. Likewise, excess revenues would accrue to the government.

One benefit of stable premium rates may be a lower cost of capital for the banking industry. If the volatility of deposit insurance losses were passed directly through to the industry, this would add volatility to bank earnings and the market may discount those earnings. Shaffer (1997) estimates that, based on past FDIC loss experience, steady premium rates could lower the banking industry's capital cost by $1 billion to $4 billion per year. This is equivalent to additional yearly premiums of 3 to 13 basis points for BIF-insured institutions on a pre-tax basis, or approximately $7 to $29 billion in potential lending that might otherwise occur.

Obviously, a key issue under the stable rate approach is the level at which average

premiums are set. The correct rate would depend on the risk of loss faced by the government over a long-term horizon. The main concern with an inflexible rate is that the correct rate will vary over time with changes in industry structure, regulatory regimes, and the competitive environment.

The practical implication of this approach is that policymakers must decide how to set the appropriate average stable rate. In the 1930s, the choice of 8.33 basis points was guided by a review of bank failures from 1865 to 1934. If we choose to look to historical experience as a guide in choosing the appropriate price, the key decision is what time period is most relevant. This is a subjective judgment about how the future will compare to past experience. Table 3 shows the rates necessary to cover operating expenses and insurance losses over various time periods for the BIF.[10]

Attachment F-1 compares the results of a fixed rate approach to actual results for the period 1982 to 1999.

Moving Average Approach

Instead of having Congress or the FDIC Board adjust the rate on an ad hoc basis, an alternative would be a mechanism for adjusting the rate incrementally over time to reflect experience or changes in expectations of future insurance losses.

Table 3

Insurance Rate Required to Equate Premium Revenue with Fund Expenses and Insurance Losses	
Time Period	***Required Overall Rate***
1934-1979	1.0 basis points
1980-1999	11.2 basis points
1934-1999	8.5 basis points

One method would be to use a long-term moving average of insurance expenses as the basis for setting the average premium rate. The moving average would allow premiums to reflect actual insurance expenses, while the long-term horizon would result in gradual changes in premiums over time. This approach has been suggested by Konstas (1992) and Shaffer (1997). Chart 4 (see next page) shows the moving average of insurance expenses over different time horizons.

The annual average premiums that would have prevailed over different periods using various moving averages are set out in Table 4.

Table 4

	10-Year Moving Average	***15-Year Moving Average***	***20-Year Moving Average***
1934-1979	1.1	1.1	1.2
1980-1999	11.9	10.3	9.1
1934-1999	4.4	3.9	3.6

One of the concerns with such an approach is that it will result in banks paying higher premiums as a result of banking problems that occurred far in the past. Moreover, this approach could result in extended periods over which the deposit insurance system is not self-financing, and it is unclear whether this would be politically acceptable.

[10] The table presents the rate that would need to be charged on total domestic deposits in order to make total insurance revenues equate to total expenses and losses over the specified time period. The calculations assume that there is no fund balance at the beginning of the time period and that the only income to the fund is assessments charged on deposits. Expenses include operating and administrative expenses plus estimated losses. Deposit and expense figures are taken from the FDIC Annual Reports. The experience of the FSLIC (the prior insurance fund for savings-and-loan institutions) is not included in this analysis. Data are incomplete. Moreover, the 1980s savings-and-loan experience is considered less relevant for today's banking and thrift industries, given the unique balance sheet structures of savings and loans in the earlier era, differences in accounting rules, and other factors that no longer apply to insured institutions.

Analytical Approaches

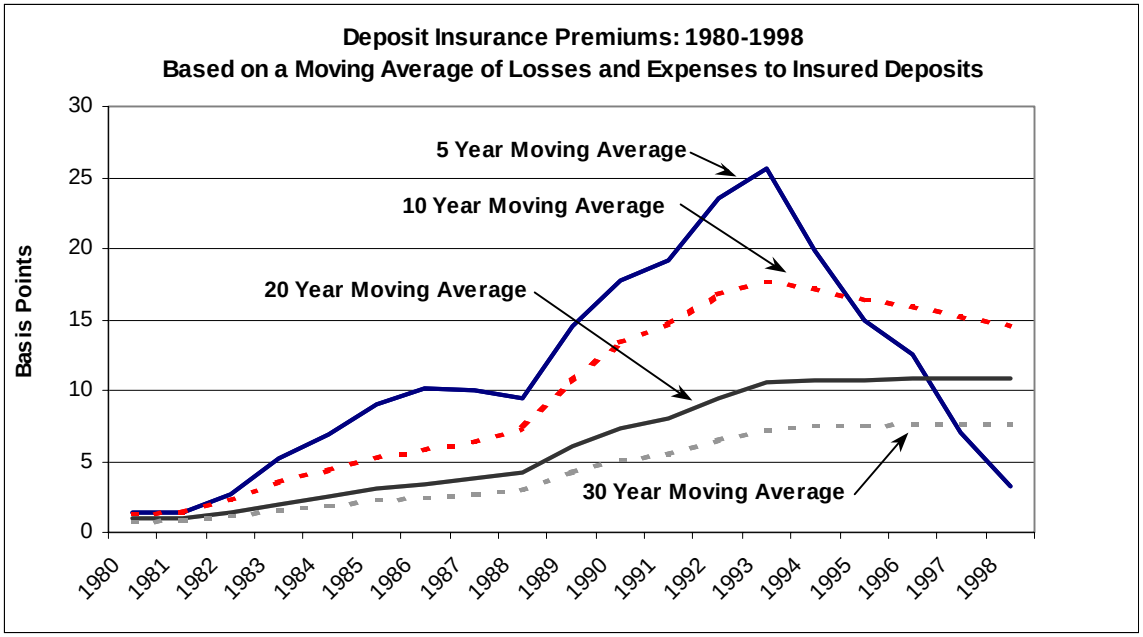
The moving-average approach relies on past performance to set the assessment rate. While this has the advantage of simplicity, it ignores relevant information about potential future losses. An alternative would be to incorporate relevant financial, supervisory, and market information. The previous section of this paper discussed how such information could be used to develop expected loss pricing at individual institutions and how such information could also serve as the basis for aggregate pricing. The very preliminary analysis contained in the Oliver, Wyman & Company report resulted in an expected loss figure for the BIF that translated into slightly more than 5 basis points of assessable deposits; again, this is a highly qualified result. (See the following text box.)

Oliver, Wyman & Company Analytical Framework

Oliver, Wyman's suggested approach for evaluating policy options is to apply analytical tools and methodologies that have been developed for analyzing risk and capital management in banks and other financial institutions to the deposit insurance system. The cornerstone of this approach is to model the loss distribution of the FDIC insurance funds. The loss distribution can then be used to evaluate the appropriate level of fund adequacy and reserving in terms of a stated confidence interval or solvency standard. Furthermore, this analytical approach can be applied to identify pricing options that are consistent with market practice.

While the proposed analytical framework may seem like a novel approach for evaluating the risk of the deposit insurance system, this approach is increasingly the best practice

Chart 4



among leading bank and non-bank financial institutions in the U.S. and abroad. In fact, efforts to set capital in relation to an explicit model of a financial institution's risk profile lie at the core of the current proposals for reform of the Bank for International Settlements' (BIS) capital rules. (See, for example, Jones and Mingo, 1998). Oliver, Wyman's approach applies the same types of methodologies that are under consideration by the BIS Models Task Force to the FDIC's own loss distribution for resolving similar questions of risk and capital management.

Modeling the Loss Distribution

The first step in analyzing the FDIC's risk profile is to recognize that the deposit insurance funds are portfolios of credit risks. These portfolios consist of individual exposures to insured banks and thrifts, each of which has a small but non-zero chance of causing a loss to the fund. Such a portfolio is similar to a bank loan portfolio, although the nature of the underlying risks in the FDIC funds raises unique issues.

Chart A shows the typical credit loss distribution for an insured bank. The distribution is characterized by the portfolio's level of average, or expected, loss; by the size or concentration of individual exposures; and by the correlation among loans in the portfolio. Unlike a normal distribution, the bank credit distribution is heavily skewed: It has a long right tail, meaning that most often, losses are relatively small, but there are cases in which large losses may arise. In order to protect against these losses, a bank is required by regulators (and by rating agencies, uninsured depositors, and other creditors) to hold capital to cover the potential for loss at a high degree of confidence. In this case, the bank holds capital up to the 99.9 percent confidence interval.

If the losses exceed this point, then the bank will become insolvent. To the extent that there are insufficient funds available to repay insured deposits, then the excess deposit losses will be borne by the FDIC.[11] Put another way, the FDIC assumes the residual "tail" risk of loss to insured deposits. For the individual bank considered above, the FDIC's risk profile is shown in Chart B. There is a high probability of no loss, and the residual tail probability of some loss to the fund.

The FDIC's exposure to individual banks can be added together to create a cumulative loss distribution. Just as with a bank's credit loss distribution, the FDIC's cumulative loss distribution will reflect the expected loss of the individual insured banks; the size of individual exposures; and the correlation of losses in the portfolio. Chart C shows conceptually what the cumulative loss distribution for the deposit insurance funds should look like. The distribution will be heavily skewed, with a high probability of very small losses to the fund, but a significant probability of large losses. The potential for large losses will result, in part, from the presence of large banks in the portfolio. The "lumpiness" in the distribution reflects the contribution of individual large banks, each of which imposes a discrete, non-zero probability of a sizeable loss to the fund.

[11] In the event of default, history tells us that some of the losses are "recovered." As such, the loss to the insurance fund may be a fraction of what the tail suggests. This is commonly referred to as "severity," or loss given default (LGD). The severity should be taken into account when we move from Chart A to Chart B.

CHART A: BANK RISK PROFILE

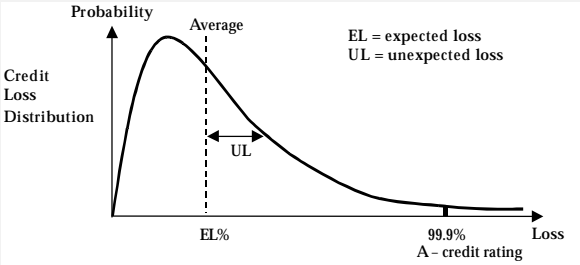
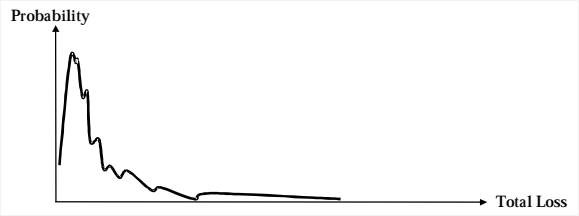


CHART B: FDIC PROFILE FOR SINGLE BANK

CHART C: FDIC CUMULATIVE LOSS DISTRIBUTION



Adjustments for Current Insurance Expenses

Whether a long-term pricing mechanism is based on past loss rates or forward-looking analytical techniques, the concern remains that the approach might lead to significant buildups of the insurance funds or prolonged periods of losses to the funds. One way to address this is to tie pricing more closely to current performance. As mentioned earlier, the premium system in effect from 1950 until 1989 featured a statutory rate of 8.33 basis points with a refund of a portion (60 percent) of excess revenue in a given year. The statutory rate was expressed as a maximum rate with downward adjustments for current performance.

A variation of this approach would be to allow an upward adjustment to premium rates in the event of a revenue shortfall. Had such a system been in effect, premium rates would have risen during the 1980s as insurance losses mounted. Table 5 (see next page) shows the rates that would have resulted assuming that any revenue shortfall up to 5 basis points could be charged in a given year. In other words, premiums could rise as high as 13.3 basis points to cover shortfalls or fall as low as 3.3 basis points to reflect the overage of collections above insurance expenses. The table also shows the assessment rates that would have resulted from the current assessment scheme had it been in effect as of 1982. A description of the simulation and methodology is contained in Attachment F-2.

Linking Premium Rates to the Insurance Fund

Under the approaches discussed thus far, the premium rate is based on a long-term view of expected losses, perhaps adjusted for current experience. With these approaches, the insurance fund is free to fluctuate in response to insurance losses, and movements in the fund do not trigger changes in the premium rate.

All the pricing methods above are subject to the concern that the rate-setting mechanism could be biased. If this were the case, over time the fund would come to reflect that bias: excessive rates would result in a fund that was "too large"; insufficient rates could result in a negative fund balance. One way to address the concern about a fund that is too large or too small is to link rates to the size of the insurance

fund relative to a measure of fund exposure, such as the reserve ratio.

At this point it is helpful to discuss what an insurance fund means under a user fee system in which the government bears the risk of losses in excess of current revenue. Some have argued that it makes little difference whether there is an insurance fund, given that the government is ultimately on the hook for losses. Feldman (1999) proposes a system in which the insurance fund is replaced by a standing appropriation authority.

On the other hand, there are practical reasons for the government to maintain an explicit insurance fund. The insurance fund helps to protect taxpayers from deposit insurance losses by creating a buffer paid for by the industry. The insurance fund also can be viewed as a federal budgeting mechanism to sequester deposit insurance resources from the normal appropriations process. This can help to do two things: first, ensure that adequate resources are readily available when problems arise, thus avoiding potentially costly delay; and second, help to smooth the costs of deposit insurance over time. The size of the fund and the loss distribution determine the probability that a special call on industry capital or an appropriation would be needed. These relationships are considered further in the accompanying text box (see next page).

Table 5

BIF Rates Under Different Assessments Schemes						
	BIF Rates If Assessments Had Varied Within a 10 Basis Point Range		*Comparison Results*			
	Rate (bp)	*Ratio (%)*	*Actual Assessment Rate (bp)*	*Actual Reserve Ratio (%)*	*Rates Under Current Scheme (bp)*	*Reserve Ratio Under Current Scheme (%)*
1982	11.6	1.25	7.7	1.21	11.70	1.26
1983	7.8	1.25	7.1	1.22	6.80	1.25
1984	11.9	1.25	7.7	1.19	12.50	1.27
1985	8.2	1.25	8.3	1.19	7.10	1.26
1986	13.3	1.23	8.3	1.12	15.40	1.27
1987	11.4	1.25	8.3	1.10	8.30	1.25
1988	13.3	1.00	8.3	0.80	23.80	1.14
1989	13.3	0.95	8.3	0.70	23.50	1.22
1990	13.3	0.47	12.0	0.21	24.00	0.87
1991	13.3	-0.20	21.3	-0.36	25.80	0.35
1992	13.3	0.04	23.0	-0.01	26.30	0.76
1993	13.3	0.59	24.4	0.69	5.90	1.24
1994	13.3	0.93	23.6	1.15	1.40	1.42
1995	13.3	1.10	12.4	1.30	0.50	1.42
1996	9.4	1.25	0.2	1.34	0.20	1.45
1997	3.3	1.34	0.1	1.38	0.09	1.48
1998	3.3	1.39	0.1	1.38	0.07	1.48
1999	3.3	1.41	0.1	1.37	0.10	1.46

Solvency Standard – Oliver, Wyman & Company

The cumulative loss distribution allows the potential for loss to be directly compared with the reserves and other resources available to the insurance funds.[12] This analysis can also be reversed to determine what level of resources—or reserve ratio—is required to reach a chosen solvency standard. A solvency standard is the desired minimum confidence that the fund will be sufficient to make payments on all its obligations. This can also be expressed in terms of a maximum default probability. One common way of describing solvency standards is in terms of the equivalent credit rating from a major agency. Table 6 shows the one-year default probabilities consistent with each of the rating categories from the two leading agencies, Standard & Poor's (S&P) and Moody's. For example, maintaining an investment grade status (BBB-/Baa3 or better) is equivalent to holding sufficient reserves to reduce the one-year default probability to below 0.32 percent. That is, an investment grade quality fund must be at least 99.68 percent confident of being able to meet all of its obligations in the coming year.

By creating an explicit link between the potential for loss and reserves, the FDIC can consider the appropriate level of fund adequacy in terms of both a stated confidence interval and market equivalents. For example, just as an individual bank chooses to capitalize according to a desired credit rating, so too can the FDIC choose to capitalize the insurance funds to a desired rating. This approach differs fundamentally from the current system, in which the DRR is set as a fixed percentage independent of the fund's actual loss profile.

Table 6

Ratings Calibrations			
Standard & Poor's Credit Rating*	One Year Default Probability*	Moody's Credit Rating*	One Year Default Probability*
AAA	0.01%	Aaa	0.01%
AA+	0.02%	Aa1	0.02%
AA	0.03%	Aa2	0.03%
AA-	0.04%	Aa3	0.04%
A+	0.05%	A1	0.05%
A	0.07%	A2	0.07%
A-	0.09%	A3	0.09%
BBB+	0.13%	Baa1	0.13%
BBB	0.18%	Baa2	0.18%
BBB-	0.32%	Baa3	0.34%
BB+	0.53%	Ba1	0.63%
BB	0.93%	Ba2	1.21%
BB-	1.57%	Ba3	2.25%
B+	2.64%	B1	4.21%
B	4.46%	B2	7.86%
B-	7.52%	B3	12.95%

*The calculated default probabilities reflect the methodology of Oliver, Wyman.

Setting a Hard Target for the Insurance Fund

A hard target for the insurance fund would mean that premium rates would adjust quickly to changes in the reserve ratio. This is similar to the current system, in that the premium rate effectively drops to zero when the fund is above the target, and rises to a high level, 23 basis points, if the reserve ratio is not expected to return to the target within a year.[13]

The advantage of keeping the reserve ratio at a target is that it helps to ensure that there is always an adequate buffer between deposit insurance losses and the taxpayer. It does this by giving the FDIC a call on this industry's capital to the extent necessary to maintain the fund ratio target.

The disadvantage is that it can result in long periods where deposit insurance is essentially free followed by short periods where premium rates are extremely high. This pattern makes it

[12] The first resource is the expected income from premiums and interest. In most cases, this will be more than sufficient to cover the losses and the fund will have a gain. The next resource is the current balance of the fund itself. If the losses in any period exceed the funds available, a backstop resource, such as a loan or grant from the Treasury, is required to ensure the payment of all obligations.

[13] *See* 12 U.S.C.A. § 1817(b)(2) (West Supp. 1999).

virtually impossible to implement a risk-based premium system with expected loss pricing.

Extended periods with zero premium rates also allow deposits to enter the system without contributing to the insurance fund. Some have suggested that this could be addressed by introducing a surcharge for rapid growth or large deposit flows. While this would address free-rider concerns, there are several drawbacks to such an approach. First is the practical question of deciding what constitutes rapid growth or large deposit flows. Applying surcharges on deposit growth in excess of some percentage or dollar volume will result in rather arbitrary distinctions and create incentives for manipulating the system.

Second, deposit growth will often simply reflect the healthy innovative behavior necessary to serve customers in a competitive market. This is true whether the growth is from newly chartered institutions, pioneers in electronic banking, or large financial services firms delivering the benefits of financial modernization. It may be difficult to structure surcharges that address concerns about fairness without inappropriately stifling such innovation.

Setting a Soft Target for the Insurance Fund

There could be funding arrangements designed to maintain a target reserve ratio over time without introducing volatile swings in premium rates. A soft target approach would allow the reserve ratio to return more slowly to the target, thus providing for more stable premiums. The premium rate could vary depending on how far the reserve ratio was from the target.

Attachment F-3 reports the results of a Monte Carlo simulation of a system with a 15 basis point cap and a 4 basis point floor. Premium adjustments do not take place unless the fund balance is ±21 basis points from the reserve ratio target. Premiums would then be adjusted by no more than ±11 basis points for a single change. Using data from 1980 to 1999, the fund balance remains positive in all 300 simulations. This suggests that there may be soft target approaches that reduce premium volatility compared to the current system without materially increasing the risk of fund insolvency.

Mutual Model

Under a user fee approach, the notions of rebates or banks holding claims on the insurance fund are ruled out. With an appropriate pricing mechanism, past premiums represent compensation for the government for bearing risk, not capital of the industry that is held in trust by the government. This section will discuss rebates, bank claims on the fund, and additional private-sector features that could be introduced into the deposit insurance system.

Rebates

The argument for rebates arises from the concern that the pricing mechanism could, over time, result in excessive charges to the industry. This may be a reasonable argument, given the uncertainty associated with deposit insurance losses. Rebate authority would allow the FDIC to price insurance at the margin for each bank, while providing a safety valve against an excessively large insurance fund.

The reserve targeting approach can be used as a mechanism for determining when rebates would be appropriate. One approach is to place a cap on the insurance fund and to rebate funds above that amount. Pending legislative proposals adopt this approach but direct the rebates toward payment of insured institutions' obligation to pay interest on Financing Corporation (FICO) bonds. An alternative is to

specify a range where some portion of excess funds is rebated to the industry.

If policymakers reach the conclusion that rebates are appropriate, the question still remains as to how to allocate the rebates. While premiums are based on the current assessment base held by banks, this is not likely to be an appropriate basis for distributing rebates. New institutions and those that had grown rapidly would be given a distribution of income from past premiums that they did not pay. A more equitable approach would be to base rebates on past premium payments, which requires a decision about the appropriate look-back period.

An important feature of mutual arrangements is that rebates could be distinct from premiums. Rebates would be appropriate when the probability of insolvency of the insurance funds becomes sufficiently remote, and would be allocated based on past payments. Premiums would be based on the risk a bank posed to the insurance fund; this would never be zero. The cash flow between a bank and the insurance fund would thus have two components, one reflecting past contributions and the other reflecting risk exposure. The net result of these cash flows might be positive or negative. Even if the net result were zero for many banks, this would still represent an improvement over the current zero-premium system. This is because banks would be protected from the possibility that the insurance funds may grow without limit, while still being charged at the margin for the risk they pose to the insurance fund; this is critical if premiums are to provide appropriate incentives.

Banks Hold Explicit Claims on the Mutual Insurance Fund

Rebates are not the only possible feature of a mutual deposit insurance system. Once the notion of tracking past contributions for the purposes of providing rebates is introduced, the system moves to a mutual system that involves explicit claims; this leads to a significantly different framework for funding deposit insurance.

The current federal credit union share draft insurance system is an example of a system in which insured institutions have explicit claims on the fund. Credit unions are required to maintain a one percent deposit in the insurance fund. When the fund is above a level determined (within bounds) by the deposit insurer, rebates are provided. Another feature is that on an individual institution basis, deposit growth must be accompanied by a proportional contribution to the insurance fund. The credit union model has been criticized for its accounting treatment because the deposits that a credit union must place in the insurance fund are counted as an asset on the books of the credit union and as part of the insurance fund. These and other features of the credit union system are reviewed in a 1997 study by the Treasury Department. On the other hand, Hendershott and Kane (1996) have argued that the credit union insurance model provides positive incentives for monitoring by member institutions.

Following the mutual model, banks also could be required to pay into the fund an amount proportional to deposits. If a bank's deposits grew, the bank would be required to "top up" its contribution to maintain it at the specified proportion. Likewise, a bank with deposit shrinkage would be entitled to a rebate or credit.

This feature could address the concern that banks are able to bring insured deposits into the system without having contributed to the insurance funds. The key decision here is whether the asset will be carried on the books of the insurance fund or of the bank.

If the asset is carried on the books of the insurance fund, the bank's payment can be thought of as an "initiation" fee to join the deposit insurance system. Presumably, under this approach, the current fund would be viewed as the accumulation of past initiation fees and existing banks would be given credit for past payments.

The problem with this approach is that the initial cost of chartering a bank or gathering deposits would be significantly increased, once again raising concerns about stifling innovation. Allowing the fee to be paid over time, however, could mitigate these concerns.

Alternatively, if the asset is carried on the books of the bank, the concerns about stifling innovation and growth are diminished. Under this approach, the bank's payment would be in exchange for a claim on the insurance fund. The accounting treatment and valuation of this claim would depend on the features of the claim.

As an example, the claims could be structured similar to shares of a mutual fund. In good years when assessment revenue and interest earnings exceeded operating expenses and insurance losses, the value of the shares would increase. Conversely, when insurance losses were high, the shares would lose value. This leads to the question of how changes in value would be realized—simply through accounting adjustments or through distributions from the funds. Finally, there is the question of whether the claims are redeemable if a bank chooses to leave the deposit insurance system.

There are many ways such claims could be structured, and the purpose of this discussion is to begin a dialog about the general implications of such an approach and the specific ways it could be structured.

Introducing Private Sector Features to the Deposit Insurance System

There have been proposals to have a system in which private sector firms provide deposit insurance to banks with the government backstopping catastrophic risk (Ely, 1998). The private sector approach was discussed during an FDIC conference in early 1998. Among the themes that emerged from the conference was the consensus view that the public wants and expects the U.S. government to stand behind insured deposits.

Another theme concerned the observed tendency for private schemes and systems without explicit coverage limits to turn into 100 percent government guarantee schemes in times of crisis. Explicit coverage limits, stated in advance by the government, provide a means to contain the federal safety net. Another common view expressed by the participants was that eliminating federal deposit insurance would not eliminate or materially reduce federal supervision and regulation of banking institutions.

An approach that incorporates private sector features is the use of loss-sharing arrangements. The risk of mispricing deposit insurance arises because of the inherent analytical difficulties in measuring the risk exposure of the FDIC. However, this concern also stems from the fact that the FDIC's pricing is not subject to the checks and validation of a competitive market process.

It may be possible to address this by looking for ways to price in the market some of the FDIC's risk. This could be done by having the FDIC enter into loss-sharing arrangements with market participants. The purpose of these arrangements would be to obtain a market perspective on the appropriate FDIC pricing, not for the FDIC to shed a significant portion of its risk.

Such an approach could be used for price discovery regarding the Treasury's "backstop" risk, or the risk reflected by pools of institutions, or other components of the FDIC's risk exposure. Depending upon the desired pricing information, this approach could involve the issuance of catastrophe-like securities (CAT bonds), or FDIC notes (Wall, 1997) or the writing of reinsurance contracts. Again, the FDIC would consult with market participants to explore the design of workable instruments or contracts.

Funding Systemic Risk

Congress has created a new and separate assessment system for recouping the costs of assisting or resolving very large insured institutions whose failure poses a systemic risk to the nation's financial system; this system has not yet been put into action. During the banking crisis of the 1980s and early 1990s, the FDIC sometimes granted assistance to open banks and often resolved large failing institutions in such a way that uninsured depositors and even all creditors were paid in full, a practice often referred to as "too big to fail." The FDIC recouped the resulting costs through regular insurance assessments.

By adopting the "least-cost test" in FDICIA, Congress prohibited protection of uninsured depositors and creditors if such protection would increase the cost to the FDIC. However, Congress provided a carefully framed systemic risk exception, which, if invoked, can override the least-cost test. If the Secretary of the Treasury, upon the recommendation of two-thirds of the Boards of the FDIC and the Federal Reserve, and after consultation with the President, determines that a threatened bank failure would pose serious adverse effects on economic conditions or financial stability, the least-cost requirements can be avoided.

If a systemic risk determination is made, FDICIA requires that the extra costs be recovered in a timely manner through special assessments. These special assessments are to be levied on all of the affected fund's member institutions based on "the amount of each member's average total assets . . ., minus the sum of the amount of the member's average total tangible equity and the amount of the member's average total subordinated debt."[14] Special assessments would not necessarily preclude regular deposit insurance assessments.

The funding arrangements for systemic risk pose several issues. First, they contribute to the pay-as-you-go nature of the current deposit insurance system. Second, the costs fall in part on the vast majority of smaller banks for whom it is virtually inconceivable that they would receive similar treatment if distressed. Finally, there are large complex financial institutions that conceivably could pose systemic risk but are not part—or are not wholly part—of the deposit insurance system. This raises the question of whether it makes sense to have significantly different mechanisms for addressing distress at groups of institutions that may, from a market perspective, appear quite similar.

Thus, there are at least three issues that arise from the current systemic risk funding mechanism. The first is whether systemic risk funding should be part of the deposit insurance system. One option is to remove the systemic risk exception provision from the Federal Deposit Insurance Act (FDI Act) and fund systemic risk involving banks the same way as systemic risk involving other financial service firms or other commercial firms.

The second issue involves measures to scale back the implicit guarantee. The banking agencies have been working together in recent years to ensure that if and when such an

[14] 12 U.S.C.A. § 1823(c)(4)(G)(ii) (West Supp. 1999).

occasion arises, there will be feasible options that do as little to undermine market discipline as possible.[15]

The third issue is how the costs of systemic risk are distributed. The current arrangement shifts the cost, relative to the normal assessment process, from smaller banks to large banks. Nevertheless, small banks pay, and the question remains whether a small bank benefits more from the special treatment of a large bank than do other small businesses or other large nonbank financial service providers.

[15] One explicit policy proposal in this regard has been offered by Stern (1999). This would alter the FDI Act to prevent the deposit insurance system from fully protecting uninsured creditors in the event of a systemic risk exception.

IV. COVERAGE LIMITS

Federal deposit insurance was established to protect small savers and prevent bank panics. By preventing bank panics, deposit insurance helps to maintain public confidence in and otherwise support the stability of the banking and financial system. Deposit insurance has also had the effect of helping to maintain the viability of community banks, thrifts and credit unions.

Federal deposit insurance has been successful in fulfilling these purposes. Since the inception of deposit insurance, bank panics have virtually disappeared. Bank failures have not had destabilizing effects on the nonfinancial economy. No depositor has ever lost a penny on a federally insured deposit as the result of a bank or thrift failure.

Nevertheless, deposit insurance can create moral hazard and increase the risk and cost of failure if deposit insurance premiums do not fully compensate the FDIC for increases in risk posed by particular banks and thrifts. By assuming the risk of loss that would otherwise be borne by depositors, deposit insurance eliminates any incentive for depositors who are fully insured to monitor bank or thrift risk, thus reducing what is known as "depositor discipline."[16] Management can therefore take greater risks without increasing the depository institution's cost of funds.[17]

The coverage limit represents a balance between the goals of deposit insurance, on the one hand, and the need to limit moral hazard and the risk to taxpayers and the insurance funds, on the other. The practical implication of this tradeoff is that coverage limits cannot be considered in isolation. As discussed in earlier sections, the current statutory link between the reserve ratio and pricing creates significant free-rider problems and makes the current system more vulnerable to moral hazard. These concerns become less of an issue if expected loss pricing is introduced. It can be argued that any dangers posed by higher coverage limits result primarily from the current pricing anomalies. In a system where pricing approximately reflects expected loss, raising or lowering the coverage limit would not have a major impact on systemic risk. From a risk management perspective, better pricing can make the level of coverage a matter of second-order importance.

The following sections will discuss the potential impact of higher coverage limits and the implications for moral hazard. A fundamental question is whether Congress wishes to continue providing the same level of deposit insurance protection for consumers in real terms or to allow the level of protection to erode in value by maintaining the status quo.

[16] To what extent depositor discipline plays or can play much of a role at banks is controversial. Some argue that depositors are unlikely to provide effective discipline, given the cost of obtaining appropriate information and the complexity of analyzing risk accurately. Others point out that, if depositors had stronger incentives to assess risk, specialized firms in the private sector would provide the information and expertise required for more effective depositor discipline. A contributing factor to moral hazard is that depositors at large banks still can receive full protection if the systemic risk exception is invoked. For more discussion of this topic see Hanc (1999).

[17] On the other hand, Keeley (1990) has argued that through much of the FDIC's history bank charters have held notable value and that much of the excessive risk taking supposedly created by deposit insurance has been counterbalanced by banks' desire to avoid risk that would erode their charter values. Deregulation and increased competition, however, appear to have eroded bank charter values.

Past and Current Coverage Rules

In 1934, Congress set the deposit insurance coverage limit at $5,000, raising it from the temporary limit of $2,500 that was in effect for the first six months of 1934. Congress has increased the limit in a series of ad hoc steps reflected in Table 7. The most recent increase occurred in 1980, when Congress raised the nominal value of coverage to $100,000, where it remains today.

Table 7

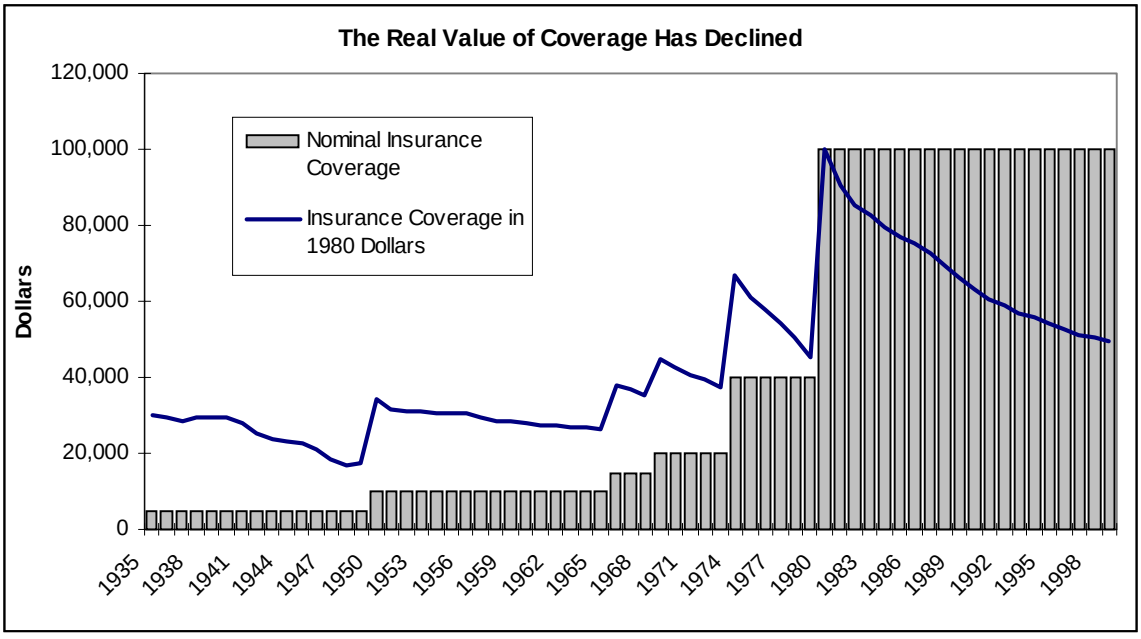
Coverage Increases	
Year	**Basic Coverage Amount**
1934	$5,000
1950	10,000
1966	15,000
1969	20,000
1974	40,000
1980	100,000

Most increases more or less reflected changes in the price level. The increase to $100,000, however, far exceeded the amount necessary to keep pace with inflation. In 1980, only time accounts with balances in excess of $100,000 were exempt from interest-rate ceilings. Many banks and thrifts, facing disintermediation because of high interest rates, had sizable amounts of large certificates of deposit outstanding. The new limit was partly intended to help them retain some of these deposits and attract new deposits to offset some of the outflows.

Since the nominal value of deposit insurance was increased to $100,000 in 1980, the real value has fallen by about half, based on the Consumer Price Index, as reflected in Chart 5. It is now below the real value of coverage in 1974, when the nominal coverage limit was $40,000. The real value of coverage today nevertheless remains higher by this measure than it was during the first 30 years of the FDIC's existence.

Although the nominal deposit insurance coverage limit is usually cited as $100,000 per

Chart 5



person per institution, complexities of the deposit insurance laws can make the limit much greater in practice, since an individual is insured up to $100,000 with respect to each right and capacity in which he or she owns deposit accounts. Because of these separate rights and capacities, a family of four, for example, can hold insured deposits of $2 million at a single institution by maximizing the coverage available in the five types of consumer accounts—single-ownership, joint, payable-on-death (POD), irrevocable trust accounts and retirement accounts. At the same time, while this level of coverage is provided for within the rules, it may be complicated to arrange in practice and requires depositors to share ownership rights and control of their money with others.[18]

Effects of Changing Coverage

The immediate effect of raising coverage on fund balances and risk to the funds is uncertain and the long-term effect even more so. The immediate effect would result from the automatic conversion of existing uninsured deposits into insured deposits. The long-term effect would depend upon whether an increase in coverage would cause a change in consumer and business behavior, resulting in a larger proportion of new wealth being placed in deposits or in a transfer of existing assets from other investments to deposits.

Immediate Effect

The American Bankers Association (ABA) conducted a survey in April 2000 to estimate the effect of raising the coverage level to $200,000. Extrapolating from 76 responses, the ABA reached a very preliminary conclusion that raising insurance coverage to $200,000 could add an additional $230 billion in insured deposits. This amount would reduce the combined BIF-SAIF reserve ratio from 1.38 percent to 1.28 percent. (All ratios reflect March 31, 2000, data.) The ABA plans a more detailed survey to obtain more refined projections.

The Federal Reserve Board has also estimated the initial effect of increasing the coverage limit to $200,000 on household deposits, using estimates from its 1998 Survey of Consumer Finances. The Federal Reserve Board estimates that the increase would add $143 billion to insured deposits of households. This would reduce the combined fund ratio to 1.31 percent.[19]

[18] To achieve $2 million in coverage at a single institution, a family of four could structure their accounts as follows: Each family member could set up an individual (single ownership) account ($400,000). The family could set up four joint accounts in the names of: the husband and wife; the husband and one child; the wife and the other child; and both children ($400,000). The family could set up a POD account in the name of the parents in trust for the two children ($400,000). The family could also set up an irrevocable family trust account with four beneficiaries ($400,000). Finally, one spouse could set up a Keogh account and the other spouse and each child could set up IRAs ($400,000).

For most families, setting up these accounts would require some family members to transfer funds to other family members and relinquish ownership of the transferred funds. The account arrangements would also have tax and other consequences, such as access to the funds while all family members were alive and disposition of the funds on the account holder's death. In addition, setting up an irrevocable trust account would usually require hiring a lawyer, since the trust agreement must be in writing to qualify for separate deposit insurance.

[19] Call Reports and Thrift Financial Reports do not contain sufficiently detailed information to project the immediate effect of an instantaneous increase in coverage on the amount of insured deposits. They do contain enough information, however, to develop a gross upper bound on the initial impact of a coverage increase to $200,000 to reflect consumer price inflation since 1980. Doubling insurance coverage would not increase insured deposits initially by more than $400 billion. Stated differently, the initial impact of a 100 percent increase in the coverage limit at most would be a 14 percent increase in combined fund exposure (based on

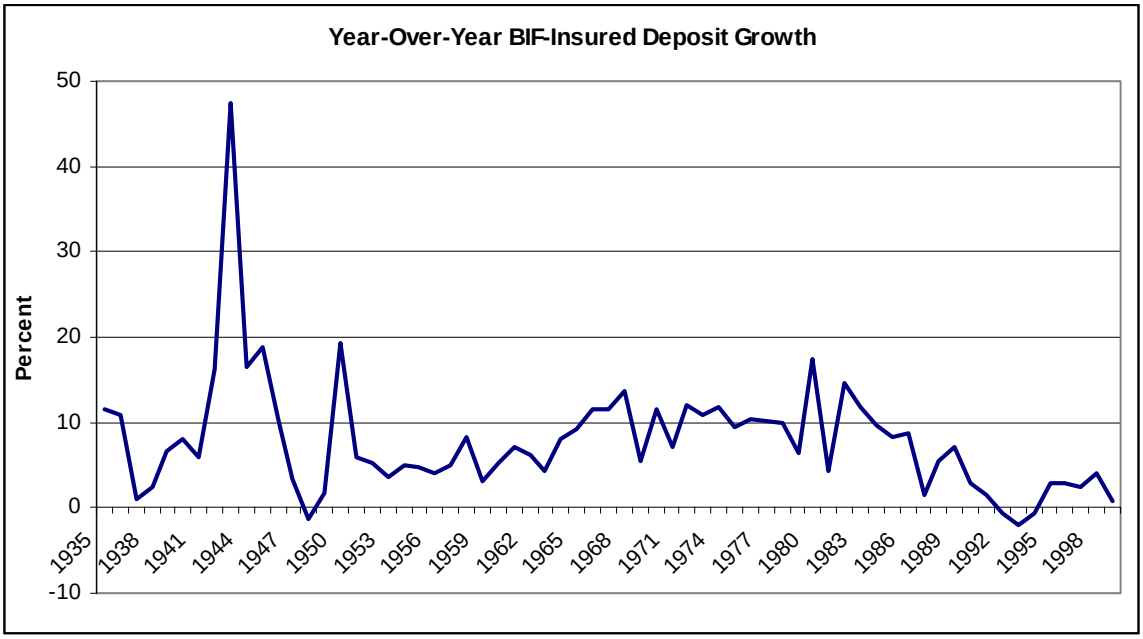
Longer-Term Effect

The longer-term effect of raising the coverage limit depends upon the reactions of consumers and businesses. Historical year-over-year deposit growth in Chart 6 suggests that previous increases in the coverage limit have had modest lasting effects. Preliminary statistical analysis conducted for the FDIC by Regional Financial Associates, Inc., suggests that a doubling of the coverage limit could increase BIF-insured deposits by 11 to 14 percent or $240 to $300 billion (90 percent confidence interval). The point estimate from this analysis is an increase of $270 billion. This projection results from modeling historical deposit growth as a function of GDP, interest rates on non-deposit instruments, and other variables, including changes in the coverage limit. However, the effects of past coverage increases are difficult to separate statistically from other possible explanatory variables, and these preliminary results require further investigation.

More generally, some factors suggest that the long-term impact of higher coverage is unlikely to be large, while other factors point to the possibility of significant effects. Additional analysis is required to weigh these competing factors appropriately.

One reason to believe that, in the long term, a coverage increase may not alter consumer behavior or the amount of insured deposits

Chart 6



March 31, 2000, insured deposits of almost $3 trillion). A 14 percent increase in insured deposits, if it occurred all at once, would reduce the reserve ratio of a combined BIF and SAIF from 1.38 percent to 1.21 percent based on March 31, 2000, data. The 14 percent is an upper bound in that it assumes no balances exceeding $100,000 are currently insured and that deposits are evenly distributed across accounts greater than $100,000, thus maximizing the potential effect. Many accounts over the $100,000 limit are fully insured through the pass-through rules on institutional deposits and similar arrangements.

significantly is that consumers already have the option of placing all of their assets in insured deposits, either by opening accounts in separate rights and capacities or in different insured institutions.

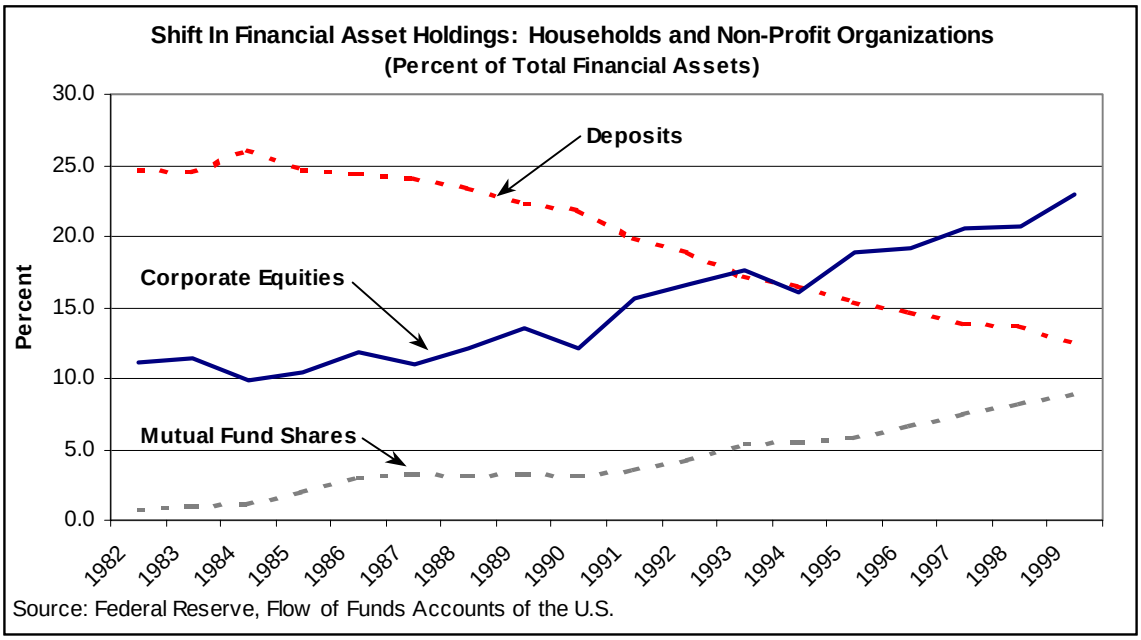
And data from the Federal Reserve's 1992 and 1998 Surveys of Consumer Finance suggest that consumers are using these options. In 1992, 97.9 percent of all households with deposits were fully insured. In 1998, 98.0 percent of households with deposits were fully insured.

Moreover, as Chart 7 reflects, while the volume of deposits in financial institutions increased over the period of 1982 to 1999, deposits as a percentage of total financial assets held by households and nonprofit organizations have declined steadily since 1984, from 26.1 percent to 12.4 percent in 1999. Although deposits rose from $1.9 trillion to $4.3 trillion between 1982 and 1999, mutual fund shares increased from $57.3 billion to $3.1 trillion and equity holdings (not including equities held in mutual funds) increased from $844 billion in 1982 to $8.0 trillion in 1999. Chart 8 (next page) shows that the growth of household liquid assets held outside banks has far outpaced the growth of household deposits.

On the other hand, it is useful to consider the earlier discussion demonstrating that opening deposit accounts in separate rights and capacities is not always simple. Increasing the coverage level will make it easier and more convenient for consumers to hold more than $100,000 in a single insured account. Those consumers who are now unaware of the possibility of establishing accounts in separate rights and capacities at a single institution may be more likely to learn of a higher nominal coverage limit. The question then becomes the degree to which this greater convenience and awareness will produce a net inflow of new insured deposits into the system.

While it may not seem likely that this greater convenience and awareness alone would cause a large shift in consumer preference, this should not be ruled out. From the preliminary results of its survey, the ABA estimated that 0.8 percent of all deposits fall between $80,000 and $100,000. Deposits in this range suggest that depositors may be deliberately maintaining the deposits within insured limits. Some

Chart 7



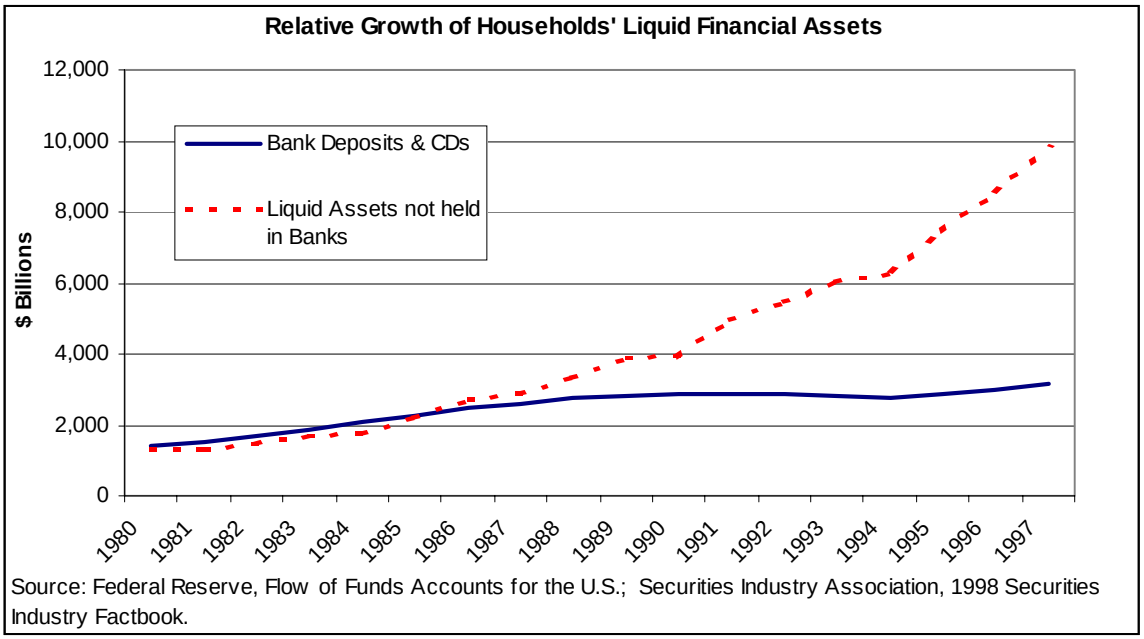
portion of these depositors may increase their deposits if the coverage limit increases, although some of the increase will undoubtedly represent deposit consolidation, rather than transfers from uninsured investments. The ABA has stated its intent to explore this issue further in a formal study.

And while the secular trend in deposit holdings by households has been downward, there is also a demographic component to consider. For example, some data suggest a stronger preference among older households for certificates of deposits (CDs) than among younger households, and this could be particularly important, given that the large baby-boom cohort is currently in transition from young to old. Data from the Federal Reserve Board's 1998 Survey of Consumer Finances indicate that deposits represent a larger share of total financial assets for households headed by individuals over age 65 than for households headed by those under 55 (21.1 percent versus 17.0 percent). Households headed by individuals over age 65 hold approximately one-half of the total dollar volume of CDs outstanding. The decreased issuance of Treasury securities may also contribute to higher demand for deposits going forward, particularly among elderly households.

Higher deposit balances also are more common among households experiencing various types of financial transitions, such as the sale of a home, an inheritance or an imminent large expenditure. The question is, what is the pattern and frequency of these transitions? Further analysis of such patterns and any likely changes in them due to other drivers of saving behavior are required to project the longer-term impact of higher coverage.

There also remains the possibility of a large shift of household assets into insured deposit accounts in the event of financial market volatility. The increase in insured deposits following the stock market crash of 1987 was significant but short-lived. In this episode, the stock market rebounded rather quickly. Deposit data relating to earlier stock market downturns are scarce, complicating any historical analysis. As noted earlier, there is currently more than $3 trillion outstanding in

Chart 8



Source: Federal Reserve, Flow of Funds Accounts for the U.S.; Securities Industry Association, 1998 Securities Industry Factbook.

U.S. mutual funds alone. It is uncertain how large the "flight to quality" could be in the case of a protracted bear market.

There also is presently little information on the possible effect that an increase in coverage may have on business deposits. Conventional wisdom suggests that small businesses may be more likely than large businesses to attempt to keep deposits within insured limits.

However, further study would be required to project the quantitative effect of a coverage increase on business accounts.

Finally, some believe there is an argument for raising coverage that does not depend upon its aggregate impact or a broad distribution of benefits. Those who typically suffer the most damaging losses in bank failures are among the most vulnerable in our society: individuals of modest means, who generally lack access to sophisticated financial advice. In many instances it is the elderly who are experiencing financial transitions like those mentioned earlier, and are caught with a substantial portion of their total net worth in uninsured funds. Some argue that it is precisely these individuals who are most in need and most deserving of protection, and that with the current cost of medical care, housing, and basic necessities during retirement, a $100,000 coverage limit may not be sufficient. In recent bank failures one can identify several cases in which losses were suffered by financially unsophisticated individuals, public service organizations or charities.

In summary, current predictions about the aggregate impact of raising coverage limits are, at best, educated guesses. Further analysis will help to reduce the uncertainty, but will not eliminate it. (See Attachment G.) If coverage limits were to be raised, the use of gradual increases would be one method of gauging and reacting to possible changes in consumer and business behavior. Beyond this, there are considerations as to which groups benefit the most from deposit insurance coverage when determining the advisability of higher limits.

Moral Hazard, Implicit Protection and Industry Structure

The 1980 increase in deposit insurance coverage to $100,000 is widely viewed as playing a role in the ensuing savings and loan crisis. The Depository Institutions Deregulation and Monetary Control Act of 1980 began the process of lifting the old Regulation Q ceiling on the interest rates that banks could offer depositors. Some insured institutions were having difficulty retaining deposits, given the rapid run-up of U.S. interest rates to record levels to near 20 percent. The increase in coverage to $100,000, combined with lifting Regulation Q ceilings at the same time, facilitated an influx of deposits into thrifts and perhaps elevated the liability of the FSLIC, which then insured thrift deposits. Many factors contributed to the saving and loan crisis, and it likely was the confluence of these factors that explains the magnitude of the crisis (FDIC, 1997).

However, there is a potential for higher coverage limits to facilitate deposit-gathering by institutions that engage in high-risk activities. Recent experience highlights the need to proceed carefully in this regard. The First National Bank of Keystone, Keystone, West Virginia, which failed in 1999, had obtained $280 million in brokered deposits. Deposit insurance plays a different role depending on economic circumstances. A healthy bank in a healthy economy will consider insured funds in a different light than a weak bank in a weak economy. In some respects, the importance of deposit insurance to banks will increase as the banks or the economy weaken. Banks that have the option of raising funds in the capital markets will find the availability of these funds diminished or the

cost increased in a weak economy, giving insured deposits a more prominent role.

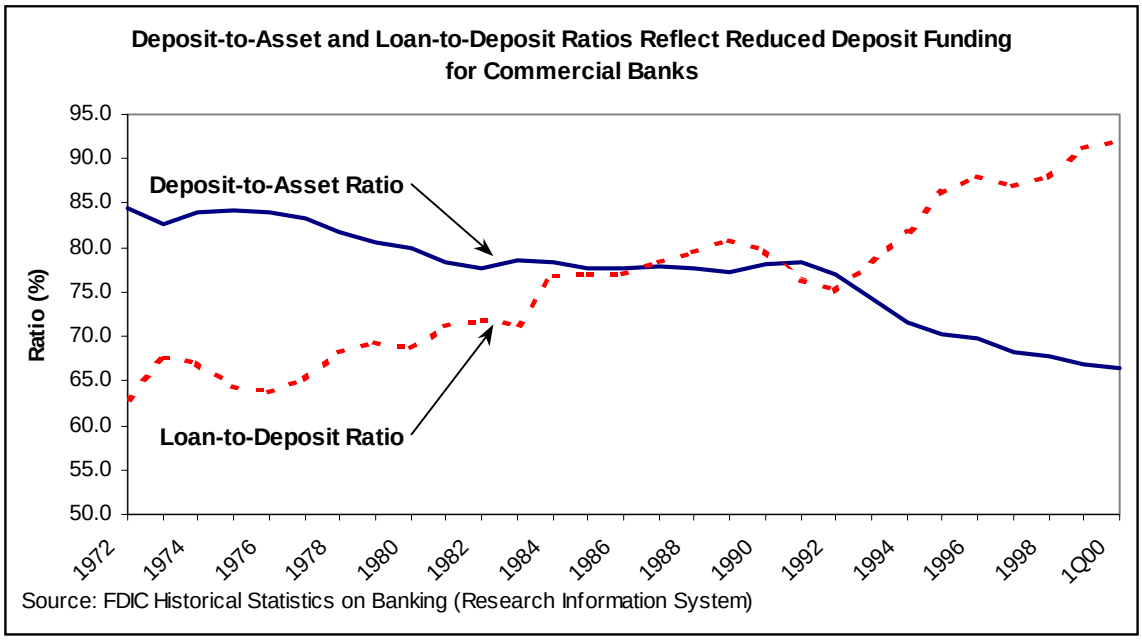
Does this suggest that adjusting coverage limits upward could materially increase systemic risk? A significant increase in systemic risk appears unlikely. There are two cases to consider. One is a breakdown in the deposit insurance system similar to what occurred in the savings and loan crisis. As previously mentioned, higher coverage limits could result in greater costs in this manner, but are not generally associated with widespread financial-market turmoil or macroeconomic disruptions.

The second case, which is more commonly associated with systemic risk, involves adverse events befalling the largest, global institutions with complex interconnections. It is impossible to say with certainty, but it would appear far less likely that higher coverage limits would significantly alter the magnitude of such risk. Given the differences in their liability structures, the effect of higher coverage on funding is likely to be more pronounced for smaller than for larger institutions (see Attachment G); and, for larger institutions, it is implicit guarantees, as opposed to explicit coverage limits, that represent the greater concern for high losses.

There is also the view that every country has deposit insurance—whether it knows it or not—and that meaningful, explicit coverage results in *lower* costs in the event of banking crises than would occur under negligible or implicit coverage. The argument is that little or no formal coverage may well turn into unlimited coverage in times of crisis, while a meaningful and explicit coverage limit is more likely to be adhered to. Proponents of this view would be more likely to recommend a coverage limit that adjusts over time to maintain the same relative importance in the financial system.

It is also relevant to consider that the present system of ad hoc adjustments to the coverage limit may change the way banks and thrifts obtain funding. Many banks and thrifts face increasing difficulty in funding their operations. The percentage of commercial

Chart 9



bank assets funded with deposits has declined steadily in the 1990s. Trends in household wealth accumulation, a declining savings rate, the availability of higher yielding investment alternatives, and demographic shifts are making it increasingly challenging for commercial banks to attract deposits. From 1992 through year-end 1999, commercial bank assets have grown at an average annual rate of 6.9 percent compared with a 4.6 percent average annual growth rate for deposits. As a result, traditional measures of liquidity for commercial banks reflect increasing reliance on equity or borrowings and record-low levels of deposit funding, as reflected in Chart 9.

Large commercial banks have traditionally made greater use of nondeposit funding alternatives than community banks, which typically have relied more on deposit funding. However, as a result of shifting funding trends, community banks increasingly have deposit growth rates that are insufficient to meet loan demand, causing them to seek more expensive and interest-rate sensitive funding sources, particularly borrowings.

We cannot today quantify the additional deposits community banks will be able to attract if the coverage limits are changed. But unless they find alternatives, they may be forced to rely even more heavily on forms of funding such as Federal Home Loan Bank (FHLB) advances. Since 1980, FHLB advances to thrifts have grown from 8.2 percent to 19.1 percent of liabilities. What this suggests is that the deposit insurance funds may not benefit from stronger depositor discipline by holding the line on the $100,000 limit. FHLB advances are fully secured, which means that they stand ahead of FDIC claims in liquidation.[20]

Thus, for all practical purposes, secured FHLB advances and insured deposits mean the same thing to the insurance funds when a bank fails—lost funds. To the extent that the lower coverage limit forces banks to substitute secured funding for deposits, this will not result in a lower risk exposure for the deposit insurance funds or taxpayers as compared to a system with a higher coverage limit.

A further consideration under the current pricing system is that the FDIC is compensated for the additional exposure when risky (non-1A) institutions expand their insured deposits, but not when they expand secured borrowings. A lower coverage limit will not translate into stronger protection for taxpayers given increased reliance on secured borrowings by such institutions.

The current funding problems faced by small banks are not unprecedented. Funding and competitive equity issues historically have been raised by both sides in debates over coverage (Golembe, 1984).

To the extent that a goal is to maintain a "level playing field" between large and small institutions, alternatives to raising coverage limits should also be considered. As noted previously, in FDICIA Congress created hurdles to providing protection for uninsured depositors and creditors and required that large banks bear most of the additional costs if such protection is extended. There are several

[20] While FHLB advances can provide banks with a cost-effective and safe means of replacing deposit funds if managed appropriately, they can also raise a financial institution's risk profile due to the complexities of advances as a funding source. It has been noted that many banks are taking advantage of embedded options in FHLB advances to lower their cost of funds. An example of this practice is a convertible advance offered by the FHLB system whereby the FHLB is sold an option allowing it to convert the advance from a fixed to a floating rate if interest rates rise. Convertible advances are increasing as a percentage of total advances issued by the FHLB, jumping from 13 percent at year-end 1997 to greater than 23 percent at year-end 1999. Furthermore, the call options associated with some FHLB borrowings have liquidity implications as some prepayment penalties may hinder banks' ability to unwind borrowing arrangements when most necessary.

proposals designed to proceed further along these lines and ensure that uninsured depositors and creditors always bear some loss (an appropriate "haircut") in the event of large-bank failures.[21] Another option is to further internalize the cost to the largest banks of any too-big-to-fail protections that may be extended going forward, thereby creating incentives for those banks as a group to avoid any special treatment. The pricing enhancements mentioned earlier, including greater reliance on subordinated debt, reinsurance or other customized contracts to price large-bank risk also address concerns regarding competitive balance.

Options

The following discussion sets forth several possible mechanisms for balancing the goals of deposit insurance with the need to limit moral hazard and the risk to taxpayers and the insurance funds.

Status Quo

Historically, Congress has, in effect, readjusted the balance on an ad hoc basis, periodically but irregularly increasing the coverage limit to account for inflation. One option is to continue the existing system of ad hoc statutory readjustments. The historical pattern of irregularly increasing the deposit insurance limit by statute has advantages as well as drawbacks. It subjects the limit to the political process and to political lobbying. Some would argue that this is a virtue, since it allows Congress to reset the balance between achieving the goals of deposit insurance and limiting risk as needed. Others may favor a more systematic approach, which maintains the same relative importance of deposit insurance in the economy over time, and would point to the 1980 increase to $100,000 as too large.

Table 8

Coverage Limits in the Past				*Corresponding Coverage Limits in 1998*		
Year	*Coverage Amount*	*As Multiple of Per Capita Income* [a]	*As Multiple of Average Home Price* [b]	*Earlier Year's Level Indexed to CPI*	*Earlier Year's Multiple of Per Capita Income Applied to 1998 Per Capita Income*	*Earlier Year's Multiple of Average Home Price Applied to 1998 Average Home Price*
1934	$5,000	10.57	Not	$61,000	$279,915	
1950	10,000	6.63	available	67,600	175,576	
1966	15,000	4.88	0.64	75,400	129,232	$111,631
1969	20,000	5.21	0.67	88,900	137,971	115,987
1974	40,000	7.05	1.06	132,000	186,698	184,468
1980	100,000	9.94	1.36	198,000	263,231	236,240

Source: a) Bureau of Economic Affairs, Personal Income Per Capita; b) Federal Housing Finance Board, Monthly Interest Rate Survey, Annual Summary, Rates & Terms on Conventional Mortgage Loans, Table 1: Annual National Averages, All Homes.

[21] Stern (1999); Flannery (1998).

Formal Indexing

Indexing the coverage limit is an alternative to the present system of ad hoc increases that approximate the effects of inflation. Instituting a formal indexing system would require choosing the index, the base year, and the adjustment mechanism. Determining the initial base limit could depend in part upon assumptions about the correct level of coverage in the past and the proper index to use to find a comparable level today.

Initial Base Limit

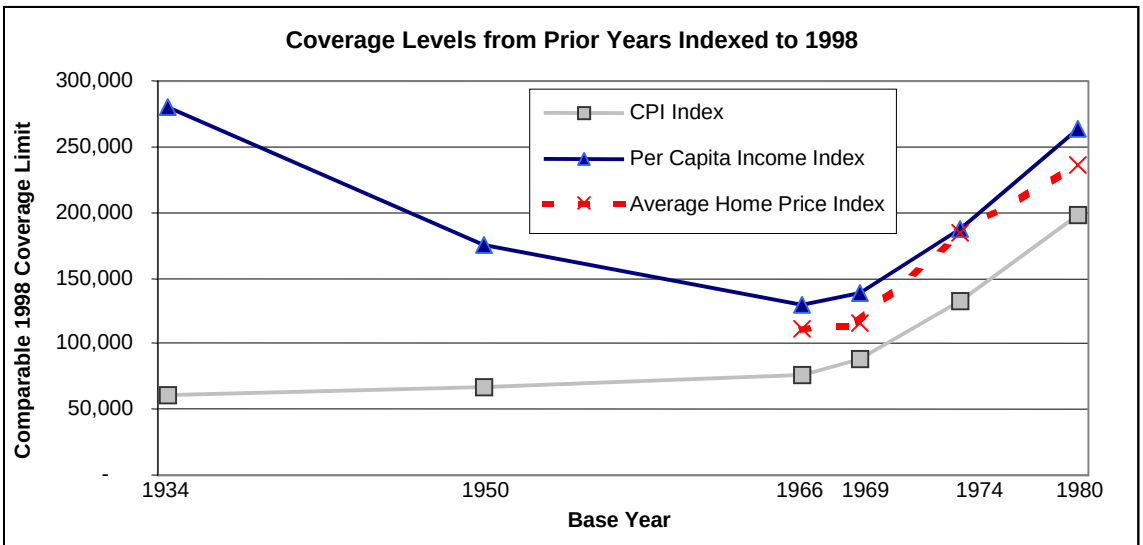
Differing assumptions lead to differing conclusions as to the proper base limit today. For example, using inflation as a guide, the $100,000 limit set in 1980 would be equivalent to approximately $200,000 today. However, the $40,000 limit set in 1974 would be equivalent to approximately $130,000 today.

Table 8 and Chart 10 use the limits of coverage from six earlier years and apply three different indices to illustrate possible comparable limits in 1998. Using just these six years and three indices, comparable limits today could range from a low of $61,000 to a high of $279,915. Of course, other measures of the proper limit are possible, as are other indices, such as wages, different measures of income (*e.g.*, household income), wealth, and mortgage size.

Adjusting Indices

Indexed adjustments could be automatically implemented, which would require some care in choosing the frequency and amounts of adjustments. If adjustments occur too often or in odd lots, this could lead to confusion among the public as to the operative insurance limit. If adjustments occur too infrequently, this could produce large increases in insured deposits and significant declines in the reserve ratio. Alternatively, the FDIC could be given discretion to determine whether to implement an increase, as some have suggested. A new coverage limit could be phased in gradually over time. The FDIC could be given the authority to defer the phase-in if it threatened to

Chart 10



For each base year, the plot points give the comparable 1998 coverage limit. Thus, for example, the plot points for base year 1966 in ascending order reflect what the 1998 coverage limit would be using: 1) a consumer price index; 2) a home price index; and 3) an income index.

reduce a deposit insurance fund's reserve ratio excessively, below whatever level is determined to be appropriate.

Simplification

Simplifying the deposit insurance rules offers another means of adjusting the balance between the goals of deposit insurance and the need to limit moral hazard and the risk to taxpayers and the insurance funds. The current complexities of the deposit insurance laws make the coverage limit much greater than $100,000 in practice. Simplifying them could alter the effective coverage limit.

Simplification is a desirable goal for its own sake. Over the last few years, the FDIC has adopted several rule changes to simplify the insurance rules. Nevertheless, the rules remain complex and bankers devote substantial resources toward training their staffs and providing information to the public about the coverage rules. Despite the banks' efforts, a number of surveys done by public interest groups and others have revealed that bank personnel often misunderstand the rules and provide erroneous advice to their customers.[22] When banks fail, depositors sometimes claim that bank personnel misinformed them about the extent of insurance coverage and that the erroneous information caused them to end up with uninsured funds.

A major simplification could significantly expand or contract the overall level of coverage. In fact, some simplification proposals could have potentially greater effect on the BIF and SAIF reserve ratios than simply increasing nominal coverage to $200,000. As a result, combining certain kinds of deposit insurance simplification with an increase in the nominal coverage limit would moderate the overall increase in the total amount of insured deposits.

The most straightforward option would be to simplify the rules to eliminate the separate insurance coverage that is currently provided for accounts held in separate rights and capacities. Under this approach, a depositor would be entitled to a particular level of coverage (such as $100,000) for his or her interests in all accounts at a single FDIC-insured institution. It is reasonable to expect that those who are less financially sophisticated might benefit disproportionately from such simplification. Accounts would be aggregated and there would be no separate insurance coverage provided for joint accounts, trust accounts, employee benefit accounts, or the like. Although this approach would eliminate the need to have separate requirements for different types of accounts, it would still be necessary to have rules allocating interests in particular types of accounts to particular parties (*e.g.*, in the case of a trust account, the amount that would be allocated for deposit insurance purposes to each trust beneficiary). Implementing this approach alone would likely reduce the total amount of insured deposits. Thus, it would likely moderate any increase in insured deposits when combined with a higher coverage limit.

Additional Coverage for Municipal and Other Public Deposits

Another option is to extend deposit insurance coverage for municipal and other public deposits. Proponents of this option argue that it would allow smaller banks to compete more effectively for public deposits and that it would reduce administrative burden for all insured institutions. Under current state laws, most banks are required to collateralize these deposits, which entails continuous reporting to each public entity, management of the assets serving as collateral, and associated administrative expenses.

Depending upon the amount of expanded coverage, this option could result in a large

[22] Cummings (1997); Farleigh (1998); Wiant (1998).

increase in insured deposits. As of the end of 1999, commercial banks held approximately $152.4 billion in public deposits, of which approximately $109.1 billion were uninsured and secured. Thrifts held approximately $4.6 billion uninsured, secured, public deposits, but the total amount of public deposits they held is not known. If public deposits became fully insured, the increase in insured deposits would be at least $113.7 billion, which would reduce the combined reserve ratio of the BIF and the SAIF from 1.38 percent to 1.32 percent (based upon March 31, 2000, data).

The actual effect on the BIF and SAIF reserve ratios could be somewhat greater. There are almost certainly additional uninsured public deposits that are unsecured. The FDIC cannot estimate the amount of additional deposits that might be attracted if public deposits became fully insured, but the amount could be substantial. According to the Federal Reserve Board's flow-of-funds data, state and local governments currently hold over $1 trillion in financial assets.

Some have suggested that full FDIC insurance for public sector deposits would not change the risk exposure of the insurance funds, because these deposits currently are secured by bank assets and already stand ahead of the FDIC in the priority of receivership claims. There is however, a difference between collateralized deposits and insured deposits. The requirement to pledge assets for security places a limit on the amount of public funds that could potentially be attracted by insured institutions, while 100 percent FDIC coverage for such funds would not. The two cases are more similar to the extent that additional FDIC coverage is less than 100 percent, and explicitly limited in some fashion.

Converting municipal and other public deposits from secured deposits to insured deposits could increase risk by increasing moral hazard. When an institution borrows from a public entity on a secured basis, as through a secured deposit, it must invest the principal amount of the loan in collateral acceptable to the public entity. The public entity monitors the risk taken by the institution with respect to the amount of the security. When an institution borrows instead through fully insured deposits, there is no incentive to monitor the risk behavior of the institution.

Insuring public deposits may also create a kind of moral hazard for the public entity. Because the entity will no longer need to concern itself with the security of its deposit, non-economic factors may influence the entity's deposit decision.

Finally, although coverage of public deposits might allow the banking industry as a whole to attract more public deposits, it is not clear that local institutions will be able to compete effectively for local deposits in today's environment of interstate banking, especially if higher coverage leads to a marked bidding up of interest rates.

To address this concern, one option would be to continue to provide higher coverage only for "in-market" municipal deposits that banks acquire. The total current coverage limit for in-state public deposits is $200,000 ($100,000 in time and savings deposits and $100,000 in demand deposits). The limit for out-of-state public deposits is $100,000. The difference in coverage limits historically between public and private sector deposits has been even larger. From 1974 to 1980, the limit on public sector deposits was two-and-a-half times the limit for private deposits. Raising the explicit coverage limit for in-state deposits of public units instead of providing full coverage for such deposits also would address concerns regarding moral hazard and the possible impact on the fund reserve ratio.

Optional Excess Coverage

Another alternative is optional coverage for deposits in excess of the insurance limit, so-called "excess" insurance. This kind of coverage could be either public or private.

Existing Private Excess Insurance

Private excess insurance already exists. In the event of the failure of an insured depository institution, depositors covered by excess insurance would be paid by the excess insurance carrier, which would then have a claim against the FDIC receivership for the amount it paid out to depositors.

A small number of private insurance companies have offered this type of insurance over the past decade. These companies generally limit coverage to $5 to $25 million per institution (*i.e.*, on a particular bond). Some limit the depository institutions that may apply for the insurance and at least one retains the right to cancel on 30 days notice. Premiums for coverage range from approximately 10 cents to 25 cents per $100 of deposits. The insurance companies bill the institutions, which sometimes pass the charge on to the depositor.

The advantage of private excess insurance is that to the extent it contributes to the goals of deposit insurance, it does so without increasing risks to taxpayers or to the deposit insurance funds. Institutions use excess coverage primarily to retain large individual accounts, although some use it to secure municipal and other public funds when applicable law permits. The insurers that offer private excess insurance describe demand as minimal to moderate, though some have stated that demand is growing. The number of depository institutions currently purchasing excess coverage is unknown. Among the some 300 institutions represented at FDIC outreach meetings in recent weeks, approximately one in ten indicated that they had purchased excess coverage. Survey information would be useful to get a clearer picture of the demand for this coverage.

FDIC Excess Insurance

FDIC-issued excess insurance. Given the scarcity of data from the private market for excess insurance, it is not clear whether optional excess insurance offered by the FDIC would fill an existing need. A key issue in this regard would be how to price the excess coverage and set limits to protect taxpayers and the insurance funds. One method would be to set the premium by formula. Presumably, this would involve a surcharge above the premiums charged for $100,000 per account. To obtain extra coverage, an institution would need to provide extra protection for the funds and the taxpayers in the form of higher premiums per dollar of excess coverage. This would involve a judgmental decision as to how much additional premium is enough.

FDIC-backed private excess insurance. Another option for excess insurance would be to continue to allow private insurers to issue excess insurance, but to create an FDIC guarantee of the insurance. This option would provide the guarantee of the federal government but retain a role for the market in setting the price. The FDIC would require the right to review the terms of the contracts and the condition of the insurer. The FDIC also presumably would have the right to refuse to guarantee private insurance if these were unacceptable. There would remain the issues of how to price the FDIC's guarantee of private excess insurance and the amount of FDIC resources that would be needed to properly oversee this area.

Coinsurance. Another possible means of reducing the moral hazard that would result from FDIC-issued excess insurance would be to institute coinsurance for deposits greater

than $100,000. Although it was never implemented, the initial permanent plan for federal deposit insurance, adopted as part of the Banking Act of 1933, provided for coinsurance of deposits above $10,000. The plan provided for full FDIC protection of the first $10,000 of each depositor, 75 percent coverage of the next $40,000 of deposits, and 50 percent coverage of all deposits in excess of $50,000. At least 16 other countries have coinsurance features in their deposit insurance systems, and coinsurance has been applied extensively in other insurance markets.

V. NEXT STEPS

The purpose of this paper has been to frame the issues confronted by the federal deposit insurance system and to begin the discussion of options for addressing those issues. The reader should keep in mind the possibility of combining the various options outlined in the paper. For example, a package of options that would move the deposit insurance system towards a mutual approach with greater private-sector elements might include explicit use of market information in risk-based pricing, bank claims on past premiums apportioned along the lines of a mutual fund, and coverage limits that adjust regularly over time. A different package might allow for better use of supervisory and non-public information in pricing risk, management of the insurance funds within a range rather than to a target ratio, and a deliberative process for adjusting coverage limits. Many other packages of options can be envisioned.

The next steps in the deposit insurance review involve additional analysis and discussion in light of feedback on the options paper, with the goal of developing concrete proposals. The FDIC is conducting an in-depth study of the issues outlined in the options paper and, in the coming months, will work with scholars, market participants and other outside experts to pursue several topics in more detail. These include:

- the expected-loss approach to pricing and the best use of supervisory, market and reported information;
- the possible roles for reinsurance or other loss-sharing contracts for price discovery;
- operational features of a mutual system;
- estimation of the FDIC's loss distribution for analyzing fund adequacy;
- the effects of raising coverage limits, including any impact on fund exposure;
- the operation of the current market for excess coverage; and
- related topics outlined in the options paper.

The FDIC welcomes any additional suggestions for topics to be included in the study.

For an overview of the FDIC's deposit insurance initiative and process going forward, including information on responding to the Internet survey or providing other comments on the options paper, please refer to pages 7 and 8 of the paper.

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Attachment A

THE BIF AND SAIF SHOULD BE MERGED

After many years of persistent attempts, Congress succeeded in modernizing many of the laws governing the financial services industry in the United States through passage of the Gramm-Leach-Bliley Act of 1999 (GLBA). In many ways, the legislation is forward-looking, creating new opportunities that will benefit the financial services industry, the U.S. economy and consumers well into the new century. GLBA also updated some laws to reflect the current marketplace, eliminating obsolete statutes that had been chipped away by subsequent legislative or regulatory measures or bypassed in whole or in part by innovation. Some of these laws, notably the Glass-Steagall Act, had lingered since the 1930s. However, there is one relic of the statutory framework established after the Great Depression that GLBA did not address—the existence of separate deposit insurance funds for banks and thrifts.

A Combined Fund Would Be Stronger and More Efficient

A merger of BIF and SAIF would ensure that the risks to the deposit insurance system are as diversified as possible. The more concentrated the risks—by numbers of institutions, by geography, by types of products—the more concentrated are the dangers and the greater is the likelihood that trouble in a single institution or in a small group of institutions would seriously impact a fund. FDIC-insured institutions are encouraged to diversify, and the same principle applies to the insurance fund.

With ongoing consolidation in the industry and the rise of the "megabank," the FDIC's risk is increasingly located in a few large institutions. From June 1990 to March 2000, the share of SAIF-insured deposits held by the three largest institutions rose from 8.7 percent to 15.0 percent. The BIF had a larger increase in concentration during this period, with the share of its three largest insured institutions rising from 5.0 percent to 14.0 percent. In a combined insured-deposit base, the three largest institutions would hold only 12.7 percent. A combined deposit insurance fund, with a balance of $40 billion and a reserve ratio of 1.38 percent, would be better equipped than either fund alone to address the increased concentration of the industry. A recent paper by an FDIC economist shows that, on the basis of historical data, a combined fund would have a lower probability of insolvency than either fund individually. (Oshinsky, Robert, "Merging the BIF and the SAIF: Would a Merger Improve the Funds' Viability?" Federal Deposit Insurance Corporation, Division of Research and Statistics. Working Paper Series 99-4.) This translates to better protection for taxpayers.

A combined fund also would be more efficient than the present structure. In 1995 and 1996, the BIF had recapitalized and the FDIC could lower its assessment rates substantially, while the SAIF remained undercapitalized and was required to maintain higher rates. Thus, identical products were available at different prices. When such a price disparity exists, consumers—in this case, banks and thrifts that pay deposit insurance assessments—naturally gravitate to the lower price. Despite moratoriums, exit and entrance fees, and bans on deposit shifting, market forces ultimately prevailed. Institutions wasted time and money trying to circumvent restrictions that prohibited them from purchasing deposit insurance at the lowest price. The DIFA led to the elimination of the disparity in deposit insurance assessment

rates that then existed between the BIF and the SAIF, but as long as there are two deposit insurance funds, whose assessment rates are determined independently, the prospect of a premium differential exists. A merged fund would guarantee that such a disparity would not recur in the future. It would have a single assessment rate schedule whose rates would be set solely on the basis of the risks that institutions pose to the single fund.

The FDIC has examined the mechanics of merging the funds, and has found that there are no significant obstacles to or expenses in such a merger. Indeed, a merger of the funds would result in lower costs and regulatory burden for approximately 842 institutions that hold both BIF- and SAIF-insured deposits (Oakar deposits) that must be tracked and assessed separately. Although these costs may not be large in absolute dollars, they represent unnecessary expenditures.

The Timing for a Merger Is Optimal

The arguments for a merger of the BIF and the SAIF are persuasive and the timing is optimal. Changes in the bank and thrift industries in recent years—and in the larger financial services industry—have been substantial. Many of the statutory differences between bank and thrift charters have been narrowed, bringing them into keener competition with one another. And in areas where differences remain, such as portfolio composition, risk diversity favors fund merger. In the 1930s, when the FDIC and the FSLIC were established, savings and loans were, in general, mutual institutions that primarily offered savings accounts and home mortgages for consumers. Because their charters were limited, savings and loans were not allowed to offer checking accounts, consumer loans, or commercial loans. Indeed, their loans were virtually all long-term, fixed-rate residential mortgages. Commercial banks, on the other hand, served mostly commercial customers. More than two-thirds of bank deposits were demand deposits and banks made very few residential mortgages.

Over time, the distinctions between banks' and thrifts' powers have become blurred. Each has encroached substantially on what was once the other's domain. Both offer essentially an identical array of deposit accounts. In addition, in the aftermath of the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994, both banks and thrifts can branch nationwide. While banks and thrifts still are quite different in their asset composition, from the point of view of the insured depositor, there is virtually no difference between the services they offer.

In 1996, the DIFA provided for a merger of the funds on January 1, 1999, if there were no savings association in existence on that date. It was thought at the time that a new charter that was common both to banks and thrifts would be developed, and the thrift charter would be eliminated. This did not occur. However, GLBA addressed what some believed to be an inequity in federal law that had permitted the combination of banking and commerce through unitary savings and loan holding companies. Such combinations were prohibited to bank holding companies. GLBA bans new unitary thrift holding companies from engaging in commercial activities or affiliating with commercial entities. Thus, while there remain separate charters, elimination of the unitary thrift holding company put to rest a significant impetus for conditioning merger of the funds on the merger of the thrift and bank charters.

The composition of who holds SAIF-insured deposits has changed as well. The name "Savings Association Insurance Fund" connotes a fund that insures deposits at savings associations. When it was established in 1989, this was indeed the case. Virtually all SAIF-insured deposits were held by SAIF-member

savings associations. However, over the last decade, this changed dramatically. As of March 31, 2000, commercial banks (40 percent) and state-chartered savings banks (8 percent) held over 47 percent of all deposits insured by the SAIF. Indeed, 27 of the 50 largest holders of SAIF-insured deposits are BIF members, including First Union National Bank (ranked second) and Bank of America, N.A. (ranked third). The name "Savings Association Insurance Fund" has become a misnomer. The SAIF has become a true hybrid fund.

The current health of the bank and thrift industries and of the insurance funds also indicate that now is an ideal time to merge the funds. Despite recent indications of deteriorating credit quality, the condition of the bank and thrift industries reflects the current favorable economic environment, with high, broad-based profitability, sound balance sheets and low numbers of failures. With low levels of assets from failed institutions, both funds are highly liquid, with the preponderance of the funds' assets invested in interest-bearing U.S. government securities. As of March 31, 2000, the reserve ratio of the BIF was 1.35 percent, and that of the SAIF was 1.44 percent. A combined fund would have a reserve ratio of 1.38 percent, causing only moderate dilution of the SAIF. While favorable conditions have existed for several years, economic history indicates such conditions do not persist indefinitely. History also tells us that, when there exists a perception of disparity in the quality of one of the funds, the notion of merging them becomes controversial. Now is an excellent time to merge the funds, rather than when the industry or one or both of the funds come under stress.

Attachment B

CDIC-LIKE SCORING SYSTEMS

B-1. The CDIC System

Table B-1.1

Summary of Criteria or Factors and Scores	
Criteria or Factors	***Maximum Score***
Capital Quantitative:	
Capital Adequacy	20
-Assets to Capital Multiple	
-Tier 1 Risk-Based Capital Ratio	
-Total Risk-Based Capital Ratio	
Other Quantitative:	
-Return on Risk-Weighted Assets	5
-Mean Adjusted Net Income Volatility	5
-Volatility Adjusted Net Income	5
-Efficiency Ratio	5
-Net Impaired Assets (Including Net Unrealized Losses on Securities) to Total Capital	5
-Aggregate Counterparty Asset Concentration Ratio	5
-Real Estate Asset Concentration	5
-Aggregate Industry Sector Asset Concentration	5
Sub-total: Quantitative Score	**60**
Qualitative:	
-Examiner's Rating	25
-Extent of Adherence to CDIC Standards	10
-Other Information	5
Sub-total: Qualitative Score	**40**
Total Score	**100**

Table B-1.2

Premium Categories and Rates		
Premium Category	***Total Score***	***Premium Rate per 1% of Insured Deposits***
1	Total Score>=80	1/24th
2	Total Score>=65 but <80	1/12th
3	Total Score>=50 but <65	1/6th
4	Total Score<50	1/3rd*

*As a transition measure, for the first two years of the system, the Category 4 rate is the same as Category 3, i.e., 1/6th of 1% of insured deposits.

Table B-1.3

Results of the First Two Years of the CDIC		
	Number of Member Institutions	
Premium Category	***2000 Premium Year***	***1999 Premium Year***
1	76	75
2	20	24
3	5	8
4	1	2
Total	***104***	***109***

B-2. CDIC-Style Hybrid Approach

Table B-2.1

Premium Category	CAMELS Composite 1 # of institutions	CAMELS Composite 2 # of institutions	CAMELS Composite 3 # of institutions	CAMELS Composite 4 # of institutions	CAMELS Composite 5 # of institutions
1	3,924	238			
2	427	3,723	11	1	
3	4	1,111	233	3	
4		39	224	80	9

Table B-2.1 presents the distribution of institutions (BIF and SAIF) by composite rating in a four-premium category system based on a simple scoring model described below. This distribution is predicated on examination ratings, risk-based capital subgroup ratings, and reported financial data as of December 31, 1999. One hundred ninety-three institutions with missing data were deleted from the dataset. Under this model the majority of 1-rated institutions (over 90 percent) fall in the best premium category (premium category 1). However, unlike the current premium system, only 5 percent of the 2-rated banks are captured in the best premium category. The majority of 2-rated institutions (73 percent) fall in the premium category 2 (second best premium category), and 22 percent fall in the premium category 3.

Scoring Method

Institutions are rated on a number of different factors (quantitative and qualitative) and assigned a composite score that is used for risk/premium classification similar to the Canadian Premium System. One of the critical issues under this approach is the choice of risk factors (the appropriate number and mix of factors) to be considered and their relative weight (weight of individual measures as well as the relative weight of quantitative and qualitative factors). In this example we used the same six broad risk categories as in the Canadian system:

- Capital Adequacy
- Profitability
- Efficiency
- Asset Quality
- Asset Concentration
- Qualitative Factors

For simplicity only one measure/ratio was considered under each category in this hybrid approach compared to the Canadian system which includes several measures/ratios under most of the categories. For example, under the Canadian system the qualitative category includes regulatory or examination rating, Standards Adherence and other information that could include market data. However, the Composite rating is the only qualitative measure considered in this example. Another example is the asset concentration category. The Canadian system considers three types of concentrations—single counterparties asset concentration, industrial sector asset concentration and mortgage and real estate asset concentrations. The only measure of asset concentration considered in our example is the level of commercial asset concentration

as measured by the ratio of commercial loans plus commercial mortgages plus construction loans plus multi-family loans to total capital.

Although the specific measures/ratios used for each of the six categories in this hybrid approach are different from those used in the Canadian system, the relative weights assigned to the six broad categories are the same as the Canadian system, *i.e.*, the qualitative category has a total weight of 40 percent under both models. The factors/measures and scoring system used in this example are summarized in Table B-2.2.

Table B-2.2

Factors / Measures and Corresponding Scores		
Factors / Measures	***Range of Scores***	***Maximum Score***
Capital Adequacy		**20**
-Capital Subgroup=1	20	
-Capital Subgroup=2	13	
-Capital Subgroup=3	0	
Profitability		**15**
-Return on Risk-Weighted Assets>=1.15	15	
-Return on Risk-Weighted Assets>=0.75 but <1.15	9	
-Return on Risk-Weighted Assets<0.75 (including negative)	0	
Efficiency		**5**
-Efficiency Ratio<=60%	5	
-Efficiency Ratio>60% but <=80%	3	
-Efficiency Ratio>80%	0	
Asset Quality		**5**
-90+ Days Past Due and Nonaccrual to Total Capital<20%	5	
-90+ Days Past Due and Nonaccrual to Total Capital>=20% but <40%	3	
-90+ Days Past Due and Nonaccrual to Total Capital>=40%	0	
Asset Concentration		**15**
-Commercial Concentration to Total Capital<25%	15	
-Commercial Concentration to Total Capital>=25% but <50%	9	
-Commercial Concentration to Total Capital>50%	0	
Qualitative Factor		**40**
-Composite Rating=1	40	
-Composite Rating=2	29	
-Composite Rating=3	18	
-Composite Rating=4	6	
-Composite Rating=5	0	
Total Score		**100**

Establishing the appropriate number of risk/premium categories and thresholds for premium classification are critical decisions that require extensive analysis. However, for illustrative purposes, we adopted the Canadian system's four-category classification and the related scores. The premium categories and related scores are shown in Table B-1.2 (see page 56).

Attachment C

OVERVIEW OF THE RISK-BASED PREMIUM SYSTEM

The FDIC uses a risk-based premium system that assesses higher rates on those institutions that pose greater risks to the BIF or the SAIF. In order to assess premiums on individual institutions, the FDIC places each institution in one of nine risk categories using a two-step process based first on capital ratios (the capital group assignment) and then on other relevant information (the supervisory subgroup assignment).

Capital group assignments are made in accordance with section 327.4(a)(1) of the FDIC's Rules and Regulations, using the method agreed upon by the Federal Financial Institutions Examination Council (FFIEC) Surveillance Task Force for calculating capital ratios. The method uses data reported in an institution's Report of Income and Condition (Call Report), Report of Assets and Liabilities of U.S. Branches and Agencies of Foreign Banks, or Thrift Financial Report.

Capital Group Descriptions

Group 1 - "Well Capitalized." Total Risk-Based Capital Ratio equal to or greater than 10 percent, and Tier 1 Risk-Based Capital Ratio equal to or greater than 6 percent, and Tier 1 Leverage Capital Ratio equal to or greater than 5 percent.

Group 2 - "Adequately Capitalized." Not Well Capitalized and Total Risk-Based Capital Ratio equal to or greater than 8 percent, and Tier 1 Risk-Based Capital Ratio equal to or greater than 4 percent, and Tier 1 Leverage Capital Ratio equal to or greater than 4 percent.

Group 3 - "Undercapitalized." Neither Well Capitalized nor Adequately Capitalized.

Supervisory subgroup assignments for members of the BIF and the SAIF are made in accordance with section 327.4(a)(2) of the FDIC's Rules and Regulations, which provides as follows:

> *...each institution will be assigned to one of three subgroups based on the Corporation's consideration of supervisory evaluations provided by the institution's primary federal regulator. The supervisory evaluations include the results of examination findings by the primary federal regulator, as well as other information the primary federal regulator determines to be relevant. In addition, the Corporation will take into consideration such other information (such as state examination findings, if appropriate) as it determines to be relevant to the institution's financial condition and the risk posed to the BIF or SAIF.*

Supervisory Subgroup Descriptions

Subgroup A - This subgroup consists of financially sound institutions with only a few minor weaknesses and generally corresponds to the primary federal regulator's composite rating of "1" or "2."

Subgroup B - This subgroup consists of institutions that demonstrate weaknesses which, if not corrected, could result in significant deterioration of the institution and increased risk of loss to the BIF or SAIF. This subgroup assignment generally corresponds to the primary federal regulator's composite rating of "3."

Subgroup C - This subgroup consists of institutions that pose a substantial probability of loss to the BIF or the SAIF unless effective corrective action is taken. This subgroup assignment generally corresponds to the primary federal regulator's composite rating of "4" or "5."

The FDIC Board of Directors (Board) reviews premium rates semiannually. As of January 1, 1993, when the risk-based assessment system was introduced, each bank and thrift paid an annual assessment rate of between 23 and 31 cents per $100 of assessable deposits. After the BIF reached the DRR of 1.25 percent at the end of May 1995, the Board approved a reduction in assessment rates for BIF members to a range of between 4 and 31 cents per $100 of assessable deposits. In November 1995, the Board approved a new assessment rate structure for the BIF, with a range of between 0 and 27 cents per $100 of assessable deposits, effective January 1, 1996.

The DIFA provided for the capitalization of the SAIF at the target DRR of 1.25 percent by means of a one-time special assessment on SAIF-member institutions. In December 1996, the Board lowered SAIF assessment rates to a range of between 0 and 27 cents per $100 in assessable deposits, which is identical to the rate schedule previously approved for BIF members. The new rates were effective October 1, 1996, for Sasser and BIF-member Oakar institutions, and effective on January 1, 1997, for all other SAIF-insured institutions.

Attachment D

DIFFERENTIATING AMONG A-RATED INSTITUTIONS

D-1. Using Prompt Corrective Action Capital Ratios to Distinguish the Risk of Institutions within a Capital Subgroup

How much a financial institution pays for deposit insurance is a function of both its examination ratings and the adequacy of its capital. Using CAMELS composite scores and the four Prompt Corrective Action (PCA) capital ratios, the FDIC places each of the institutions it insures into one of the nine cells constituting the three-by-three Risk Related Premium (RRP) matrix.[23] Together, these two dimensions capture both the judgement of bank supervisors as to an institution's overall safety and soundness and the reality that, if all else fails, more capital is better then less.

Refining the RRP Matrix

Because the matrix is two-dimensional, there are also two ways of conceptualizing how it may be further refined to yield a more continuous and accurate measure of the risk that insured institutions pose to the FDIC. The first is to consider how Supervisory Subgroups might be more finely divided. This could be accomplished by expanding the number of subgroups from three to five—one for each of the five CAMELS composite scores. It could also be accomplished by breaking up the existing subgroups using some criteria that effectively discriminate among the different risk profiles found in financial institutions having identical Supervisory Subgroup classifications. A discussion of how this might be implemented appears in attachment D-2.

The second way is to consider how the Capital Groups might be subdivided to distinguish among institutions according to the size of their capital cushion. In practice, this second approach is not dissimilar to the first. Conceptually, however, there are two important distinctions. First, recognizing differences among institutions in Capital Groups—rather than in Supervisory Subgroups—respects the independent purpose of CAMELS ratings. Second, the Capital Subgroup is more direct and less subjective—that is, it depends directly upon the value of and interplay among just four measurable PCA capital ratios.

The Appeal of Capital-Based Refinement

Ideally, the criteria used to refine the existing RRP matrix should individually or jointly have certain characteristics. First, their relationship to the risk that a specific institution poses to the deposit insurance funds should be demonstrable. Second, they also should be widely dispersed within the cells of the current matrix. This means that there should be a sufficient range of values so that some differentiation of institutions based upon the criteria is possible. Finally, it follows from the first characteristic that the criteria should also be discrete across cells so that little or no overlap of values exists. If not, then the usefulness of the existing classification scheme becomes open to question.

[23] The four PCA capital measures are: 1) the Leverage ratio; 2) the Tier One Capital ratio; 3) the Total Capital ratio; and 4) the Tangible Capital ratio.

The four PCA capital measures that underlie the Capital Group rating meet these criteria. The relationship between more capital and less failure has long been accepted as axiomatic by bank supervisors, and a body of confirming research exists. Furthermore, as Table D-1.1 shows, the wide spread in ratio values in the most heavily populated RRP cell provides considerable opportunity for subdividing the very groups for which such subdivision would be most useful. Finally, there is little overlap in values across Capital Groups—from 1.8 percent to 6.8 percent of institutions depending on the ratio—not surprising since by definition an institution's ratios determine its capital group assignment.

Replacing Disincentives with Incentives

While linking deposit insurance pricing to a more granular assessment of capital adequacy is attractive on practical grounds, it has appeal on behavioral grounds as well. Under the current premium system, a bank or thrift will pay more for failing to meet a particular capital threshold. Once an institution meets the regulatory definition of well-capitalized, however, it cannot pay less no matter how much additional capital it holds. Therefore, there are incentives for managing capital to clear thresholds as closely as possible with the strength of the incentive dependent upon the severity of deposit insurance mispricing. At present, more than nine institutions out of ten find themselves in this situation—with the lowest possible deposit insurance premium and without the incentive of lower premiums to become better capitalized. For those already having excess capital with respect to the PCA threshold, they also are without incentive to maintain it. In short, the FDIC is not only unable to price based on actual risk but is similarly unable to provide insured institutions with a realistic and defensible choice between the costs of insuring their risk and the costs of reducing it.

Expanding the Framework

While this discussion has so far relied upon the general rule that more capital is always better than less, there is at least one weakness in this approach to pricing. Although holding more capital does generally mean a lower risk of failure, the degree of additional safety achieved at the margin is likely to diminish beyond some level—possibly a very low level if the time horizon over which the risk is being

Table D-1.1

Spreads Between the 99th and 1st Percentile Values for 1A-Rated Financial Institutions for Four PCA Ratios			
PCA Ratio	***95th Percentile (%)***	***5th Percentile (%)***	***Spread in Pctg. Points***
Leverage Ratio	18.7	6.6	12.1
Tier One Capital Ratio	37.6	9.3	28.3
Total Capital Ratio	39.0	10.5	28.4
Tangible Capital Ratio	18.7	6.6	12.1

Note: The 1A Risk Related Premuim matrix cell contains 9,188 financial institutions in Capital Group 1 and Supervisory Subgroup A. A rating of 1A means that an institution is well-capitalized for PCA purposes and has a CAMELS composite rating of either 1 or 2.

measured is short. Thus, a bank holding half of its assets in capital may not be significantly safer than one holding half that amount. If true, then the wide range of capital ratios that exist within the best RRP cell may not, when translated into a probability of failure, vary enough to differentiate among institutions as meaningfully as the widely dispersed raw ratios would suggest.

A possible response is to price each institution's risk not only as a function of its capital level but also of the volatility of its income statement. In other words, the raw capital measures can be enhanced by an options-type analysis that embeds the volatility of capital consumption within the calculation of how long existing capital is likely to last. This opens the door to the extension of capital adequacy pricing to include modern financial methods, but retains the direct link to capital adequacy measurement to which the regulators and the legislators have grown accustomed.

D-2. Peer Group Comparisons

Table D-2.1 contains examples of how institutions in the "A" insurance category might be classified under an expanded deposit insurance matrix, where the current supervisory subgroups are further divided into plus and minus categories. Classifications are made using troubled assets to total assets, mean operating income for the previous three years, and the volume of risk-weighted assets to total assets. The two tables in this attachment show the distribution based upon peer group comparisons.

The calculation includes all FDIC-insured institutions. Only those institutions that lacked the necessary financial or supervisory data were removed from the dataset. The risk-based capital group and supervisory subgroup classifications are based on data reported at year end, and as such do not necessarily correspond with the actual capital and supervisory subgroup rating which an institution received for the particular semi-annual period.

For the peer group comparison, institutions are ranked into deciles based on their values for each of the three ratios. Institutions having the best values are placed in the first decile, while institutions with the worst values are placed in the last decile. An institution falling into the top three deciles on any two of the ratios, and scoring within the top five deciles on the third ratio, was placed into the plus category. Likewise, an institution falling in the bottom three deciles on any two of the ratios, and within the bottom five deciles on the third ratio was placed in the minus catogory. Institutions meeting neither of these criteria remained in the "A" subgroup.

Most institutions remain in the "A" insurance subgroup under this hypothetical pricing matrix. Of those institutions reclassified into either the plus or minus category, in most years a greater number moved down into the minus category rather than upward into the plus category. However, the selection of reported financial information used in these examples represents only one possible set which might be used to reclassify institutions for insurance purposes, and many other structures and types of data could be tested.

Table D-2.1

Hypothetical Distribution of "A" Rated Insured Institutions Based on Peer Group Comparisons

Number of Institutions

Distribution of Banks under Revised Rate Matrix as of 12/31/99

Capital Group	Supervisory Subgroup			Total
	A+	A	A-	
1	1,707	5,241	2,323	**9,271**
2	10	107	71	**188**
3	1	4	2	**7**
Total				***9,466***

Percentage of Institutions

Distribution of Banks under Revised Rate Matrix as of 12/31/99

Capital Group	Supervisory Subgroup			Total
	A+	A	A-	
1	18.0%	55.4%	24.5%	**97.9%**
2	0.1%	1.1%	0.8%	**2.0%**
3	0.0%	0.0%	0.0%	**0.1%**
Total				***100.0%***

D-3. Historical Benchmarks

The following tables contain examples of how institutions in the "A" insurance category might be classified under an expanded deposit insurance matrix, where the current supervisory subgroups are further divided into plus and minus categories. Classifications in this attachment are made using the same financial ratios as in Attachment D-2, except that classifications are based on threshold levels rather than peer comparisons. The table below shows the total number and percentage of institutions in each category.

For "A" rated institutions, the plus category was assigned to any institution having a "1" CAMELS rating, having a troubled asset ratio of less than 1 percent, mean operating income greater than 1 percent, and risk-weighted assets generally less than 80 percent, depending on institution size. The minus category was assigned to institutions having a "2" CAMELS rating and a troubled asset ratio greater than 3 percent, or mean operating income less than 0.80 percent, or risk-weighted assets greater than 80 percent. All other institutions rated CAMELS "1" or "2" which did not meet either criteria remained in the "A" category.

Table D-3.1

Hypothetical Distribution of "A" Rated Insured Institutions Based on Threshold Financial Ratio Levels

Number of Institutions

Distribution of "A" Rated Banks Under Revised Rate Matrix as of 12/31/99

	Supervisory Subgroup			
Capital Group	A+	A	A-	Total
1	2,297	4,839	3,525	**10,661**
2	2	31	97	**130**
3	0	0	4	**4**
Total				***10,795***

Percentage of Institutions

Distribution of "A" Rated Banks Under Revised Rate Matrix as of 12/31/99

	Supervisory Subgroup			
Capital Group	A+	A	A-	Total
1	21.3%	44.8%	32.7%	**98.8%**
2	0.0%	0.3%	0.9%	**1.2%**
3	0.0%	0.0%	0.0%	**0.0%**
Total				***1***

Attachment E

EXPECTED LOSS PRICING

E-1. Incorporating Credit Rating Agency Information in Deposit Insurance Pricing

Efforts to refine the FDIC's deposit insurance pricing system center on more effectively differentiating among insured institutions based on the risk they pose to the insurance funds. Some industry observers have suggested using credit agency ratings and historical corporate bond default rates to project estimated losses in insured institutions. These projections in turn could be converted to deposit insurance assessment rates for banks in each of the various credit rating categories. The use of historical loss data in calculating these rates would provide at least some degree of actuarial rigor in setting premiums.

The following tables provide an example of how credit rating information and FDIC historical loss data might be combined to derive assessment rates. Historical default data are drawn from the Moody's and Standard & Poor's (S&P) annual corporate bond default studies published in 2000.

Average three-year corporate default rates for each letter rating are divided by three to derive a one-year default rate. This rate is then multiplied by the loss rate on the disposition of failed bank assets experienced by the FDIC over the period from 1986 through 1999 for banks with more than $5 billion in assets. In order to restate the loss rate in terms of domestic deposits (rather than total assets), the expected loss rate is divided by the ratio of total assets to domestic deposits for each size category. The rate can then be expressed in cents per $100 of deposits, the same unit used by the FDIC for stating deposit insurance assessment rates.

It should be noted that the default rates are drawn from all industries, not just the financial sector. Ideally, an assessment scheme relying on credit rating agency data would utilize data reflecting default experience among financial institutions only.

The three-year rate is used to ensure a sufficient volume of default data; one-year default rates are simply too low to be useful for this exercise, particularly in the several highest rating categories. Also dividing by three yields approximately the constant annual payment that would equate expected revenue and expected loss over three years. There is no single correct horizon, as there is a trade-off between premium stability and fund stability. A five-minute horizon would ensure that premiums cover every loss but would cause extreme premium volatility and would not be forward-looking. An infinite horizon would result in a fixed premium, but would cause extreme volatility in the fund.

Certain patterns in both the S&P and Moody's data are immediately apparent. Projected assessment rates are zero for the highest-rated categories and remain relatively low through the range of investment quality ratings (that is, through BBB- for S&P and Baa3 for Moody's.) Rates escalate sharply through the speculative grades, to a maximum of 120 basis points for S&P's CCC ratings and 124 basis points for Moody's Caa-C ratings. Both of these maximum rates are significantly higher than the maximum rate charged banks under the current risk-related premium matrix. However, at present, relatively few bank holding companies hold debt rated lower than investment grade; few if any banks would therefore be subject to extremely high premiums. In any case, it

seems likely that regulators would place a maximum limit on premium levels to ensure that assessments in themselves would not fatally undermine the viability of weak banks.

One problematic feature of both the S&P and Moody's data sets is that increases in historical default rates for the top few rating categories are not strictly consistent with decreases in credit ratings. For example, S&P's three-year default rate on AA- rated debt is 0.30 percent compared to 0.13 percent for lower quality A+ rated debt. Similarly, Moody's historical default rate for the A1 category is 0.33 percent, while debt rated A2 has a default rate of 0.14 percent. Clearly, a deposit insurance pricing scheme could not be tied directly to an historical default rate schedule if such a system would result in better-rated banks paying higher premiums than more poorly-rated institutions.

Moreover, when compared to premiums derived under alternative approaches in this attachment, the low assessment rates for the investment grades in Table E-1.1 raise the question whether a pure credit-rating approach is sufficiently forward-looking or may be overly biased in favor of large banks.

Table E-1.1

Assessment Rates Derived From Historical Default Rates and Losses on Assets

Moody's Credit Ratings

	Credit Rating	Loss Rate On Assets (>$5 billion)	3-Year Default Rate	1-Year Default Rate	Expected 1-Year Loss Rate	Expected Loss as a Percentage of Domestic Deposits	Assessment Rate (bp)	Annual Assessment Per $10 Billion Of Assessable (thousands)
Investment Grade	Aaa	8.00%	0.00%	0.00%	0.00%	0.00%	0.0	0
	Aa1	8.00%	0.00%	0.00%	0.00%	0.00%	0.0	0
	Aa2	8.00%	0.06%	0.02%	0.00%	0.00%	0.2	217
	Aa3	8.00%	0.19%	0.06%	0.01%	0.01%	0.7	686
	A1	8.00%	0.33%	0.11%	0.01%	0.01%	1.2	1,191
	A2	8.00%	0.14%	0.05%	0.00%	0.01%	0.5	505
	A3	8.00%	0.25%	0.08%	0.01%	0.01%	0.9	902
	Baa1	8.00%	0.52%	0.17%	0.01%	0.02%	1.9	1,877
	Baa2	8.00%	0.60%	0.20%	0.02%	0.02%	2.2	2,166
	Baa3	8.00%	1.34%	0.45%	0.04%	0.05%	4.8	4,837
Sub-Investment Grade	Ba1	8.00%	3.86%	1.29%	0.10%	0.14%	13.9	13,932
	Ba2	8.00%	5.05%	1.68%	0.13%	0.18%	18.2	18,227
	Ba3	8.00%	11.89%	3.96%	0.32%	0.43%	42.9	42,915
	B1	8.00%	14.81%	4.94%	0.39%	0.53%	53.5	53,455
	B2	8.00%	20.28%	6.76%	0.54%	0.73%	73.2	73,198
	B3	8.00%	27.27%	9.09%	0.73%	0.98%	98.4	98,427
	Caa1-C	8.00%	34.23%	11.41%	0.91%	1.24%	123.5	123,548

Standard and Poor's Credit Ratings

	Credit Rating	Loss Rate On Assets (>$5 billion)	3-Year Default Rate	1-Year Default Rate	Expected 1-Year Loss Rate	Expected Loss as a Percentage of Domestic Deposits	Assessment Rate (bp)	Annual Assessment Per $10 Billion Of Assessable (thousands)
Investment Grade	AAA	8.00%	0.04%	0.01%	0.00%	0.00%	0.1	144
	AA+	8.00%	0.00%	0.00%	0.00%	0.00%	0.0	0
	AA	8.00%	0.00%	0.00%	0.00%	0.00%	0.0	0
	AA-	8.00%	0.30%	0.10%	0.01%	0.01%	1.1	1,083
	A+	8.00%	0.13%	0.04%	0.00%	0.00%	0.5	469
	A	8.00%	0.17%	0.06%	0.00%	0.01%	0.6	614
	A-	8.00%	0.27%	0.09%	0.01%	0.01%	1.0	975
	BBB+	8.00%	0.54%	0.18%	0.01%	0.02%	1.9	1,949
	BBB	8.00%	0.80%	0.27%	0.02%	0.03%	2.9	2,887
	BBB-	8.00%	1.01%	0.34%	0.03%	0.04%	3.6	3,645
Sub-Investment Grade	BB+	8.00%	3.03%	1.01%	0.08%	0.11%	10.9	10,936
	BB	8.00%	4.32%	1.44%	0.12%	0.16%	15.6	15,592
	BB-	8.00%	6.71%	2.24%	0.18%	0.24%	24.2	24,219
	B+	8.00%	11.10%	3.70%	0.30%	0.40%	40.1	40,064
	B	8.00%	21.48%	7.16%	0.57%	0.78%	77.5	77,529
	B-	8.00%	22.68%	7.56%	0.60%	0.82%	81.9	81,860
	CCC	8.00%	33.35%	11.12%	0.89%	1.20%	120.4	120,372

Examples:

Bank	Moody's Credit Rating	Domestic Deposits (millions)	Assessment Rate (bp)	Annual Assessment Amount (thousands)
A	Aa2	5,402	0.22	117
B	Aa3	39,595	0.69	2,715
C	A1	132,285	1.19	15,756
D	A2	19,390	0.51	980
E	A3	3,961	0.90	357
F	B1	3,737	53.45	19,977

E-2. Using Default Risk Premiums on Subordinated Debt To Estimate Banking Organization Expected Loss

Risk premiums on banking company unsecured, subordinated debt over comparable maturity Treasury securities, with no call features or liquidity premiums, are considered the reflection of the market's assessment of the likelihood of default over the maturity of the debt. For example, the yield to maturity of a three-year maturity, Baa rated, bank subordinated debt might carry a specific premium over a three-year maturity Treasury security of 2.0 percent. This premium will represent investors' views as to the minimum required yield over the default risk-free yield that ought to be offered to compensate them for the default risk they are undertaking. Assuming that investors behave as if they are risk neutral and price all debt over time on an expectations basis, the likelihood of default over a given period can be derived from the yield spread observed in the market.[24]

Using these assumptions, the future value of one dollar invested for one year at the zero-coupon, default risk-free debt yield factor of (1+y) will be equal to the expected future value of a zero-coupon, default risky security with the same maturity yielding a value of (1+k). The expected value of the default risky security is the likelihood of not defaulting over the year (p) times the yield factor of (1+k). Taking the default risky bond as worthless if it defaults, the equilibrium is:

$$(1+y) = p(1+k)$$

Since there are only two possibilities—survival or default—the likelihood of default is one minus the likelihood of not defaulting (1-p) and can be derived from the above relationship as:

$$(1-p) = 1 - \frac{(1+y)}{(1+k)}$$

and the spread (k-y) is:

$$(k-y) = (1-p)(1+k)$$

Table E-2.1 (see next page) shows various average one-year probabilities of default as derived from three-year maturity, zero coupon yields and spreads for various Treasury yields.[25] The range is large, from 0.28 percent to 2.83 percent.

Assuming that if a bank defaults on its subordinated debt it will also fail, the likelihood of default on its subordinated debt over the next year is also the likelihood that the bank will fail. The expected loss to the FDIC based on bank assets can be calculated by multiplying the likelihood of default (Table E-2.1) by the expected loss given default for the bank. These latter values are estimated from historical loss rates experienced by the FDIC for banks of

[24] In practice, zero coupon yields can be found for Treasury securities from the Treasury STRIPS market or from forward yields derived from the Treasury curve. However, for banking company subordinated debt things become more difficult because there are few traded zero corporate securities of multiple year or short-term maturities. Therefore, other means of estimating zero coupon yields of longer maturities (3 year) must be used.

[25] This approach has been used in the banking industry in loan and bond pricing as described in published studies. For example, see A. Ginzberg, K. Maloney and R. Wilner, "Risk Rating Migration and Valuation of Floating Rate Debt," Working Paper, Citicorp, March 1994; R. Litterman and T. Iben, "Corporate Bond Valuation and the Term Structure of Credit Spreads," *Journal of Portfolio Management*, November 1989, p. 52-64 (in reference to Goldman Sachs); and A. Saunders, *Credit Risk Measurement: New Approaches to Value at Risk and Other Paradigms*, John Wiley & Sons, Inc., New York, NY, 1999, p. 67-81.

different sizes (Table E-2.2, column 2). The computed expected loss to the FDIC, as a ratio to bank assets, for hypothetical spreads are given in Table E-2.2 in terms of basis points. The 3 percent Treasury yield was used for this example; using higher Treasury yields would tend to decrease these values slightly.

These results indicate that for banking organizations with substantial risk premiums (3 percent), based on a three year cumulative likelihood of default, the expected loss rate ranges widely from 22.6 basis points to 68.9 basis points. Banking organizations with more moderate risk premiums (1.1 percent) have expected loss rates of 8.5 basis points to 25.4 basis points, still a significant size differential. For the banks that are the primary issuers of subordinated debt, those with assets greater than $5 billion, the loss rates on assets vary from 2.3 basis points to 22.6 basis points. It is interesting to note that this range is very similar to the range of historical average premiums, from a low of 3 basis points to 23 basis points, that have been charged since 1933. Of interest also is that the largest value for the riskiest banks is 67.9 basis points, only slightly greater than the estimated 62 basis points banks would have had to pay in 1991 if the BIF were operated on a strict pay-as-you-go system.

Table E-2.1

Average 1-Year Likelihood of Default from the Cumulative 3-Year Likelihood Using Risk-Neutral Pricing (%)

3-year Treasury Yield (%)	Spread over 3-Year Maturity Treasury Zero-Coupon Securities (%)												
	0.3	0.5	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	3.0
3.0	0.29	0.48	0.68	0.87	1.06	1.25	1.44	1.62	1.81	2.00	2.18	2.37	2.83
3.5	0.29	0.48	0.67	0.86	1.05	1.24	1.43	1.62	1.80	1.99	2.17	2.36	2.82
4.0	0.29	0.48	0.67	0.86	1.05	1.23	1.42	1.61	1.79	1.98	2.16	2.35	2.80
4.5	0.29	0.48	0.67	0.85	1.04	1.23	1.42	1.60	1.79	1.97	2.15	2.34	2.79
5.0	0.28	0.47	0.66	0.85	1.04	1.22	1.41	1.59	1.78	1.96	2.14	2.33	2.78
5.5	0.28	0.47	0.66	0.85	1.03	1.22	1.40	1.59	1.77	1.95	2.13	2.31	2.76
6.0	0.28	0.47	0.66	0.84	1.03	1.21	1.40	1.58	1.76	1.94	2.12	2.30	2.75
6.5	0.28	0.47	0.65	0.84	1.02	1.21	1.39	1.57	1.75	1.93	2.11	2.29	2.74
7.0	0.28	0.47	0.65	0.83	1.02	1.20	1.38	1.56	1.74	1.92	2.10	2.28	2.73
7.5	0.28	0.46	0.65	0.83	1.01	1.19	1.38	1.56	1.74	1.92	2.09	2.27	2.71
8.0	0.28	0.46	0.64	0.83	1.01	1.19	1.37	1.55	1.73	1.91	2.09	2.26	2.70

Table E-2.2

Expected Loss as a Percent of Assets Based on the Average 1-Year Likelihood of Default Using Risk-Neutral Pricing and Historical Rates of Losses Given Default by Bank Asset Size (Basis Points of Assets)

Institution Size (Assets)	Loss Rate on Assets (%)	Spread over 3-Year Maturity Treasury Zero-Coupon Securities (%)												
		0.3	0.5	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	3.0
$1 - $5 billion	12.0	3.5	5.8	8.1	10.4	12.7	15.0	17.2	19.5	21.7	24.0	26.2	28.4	34.0
>$5 billion	8.0	2.3	3.9	5.4	6.9	8.5	10.0	11.5	13.0	14.5	16.0	17.5	19.0	22.6

E-3. Proportion of Insurance Loss Borne by the FDIC

The third item that influences the FDIC's loss is the proportion of the loss that is borne by the FDIC. This is determined by the structure of the bank's liabilities and the amount of bank capital at failure. The National Depositor Preference statute in the Omnibus Budget Reconciliation Act of 1993 governs the priority of the claims of creditors if a bank fails. The statute requires that creditors be paid in the following order:

1. Secured claims (up to the value of the collateral)
2. Administrative expenses of the receivership
3. Domestic deposit liabilities
4. General creditor claims (including unsecured borrowing and foreign deposits)
5. Subordinated claims
6. Cross-guarantee claims (if any)
7. Stockholders

The volume of claims at each level can have a profound effect on the FDIC's cost if a bank fails. For example, assume three banks with identical assets but different liabilities and capital (Table E-3.1).

Table E-3.1

Balance Sheet for Three Example Banks (Dollars in Millions)	Bank A	Bank B	Bank C
Total Assets	$100	$100	$100
Liabilities:			
Secured claims	2	42	2
Domestic deposits	90	50	83
Unsecured claims	2	2	2
Subordinated claims	0	0	3
Total Liabilities	94	94	90
Capital	6	6	10

If we assume further that each bank's assets declined in value to $85 million, and there were no other changes, these banks would fail. The cost would be borne in the reverse order of the list above, as shown in Table E-3.2.

Table E-3.2

Loss Distribution If Three Example Banks Failed (Dollars in Millions)	Bank A		Bank B		Bank C	
	Loss	% Total	Loss	% Total	Loss	% Total
Stockholders	6	40%	6	40%	10	67%
Subordinated claimants	0	0%	0	0%	3	20%
Unsecured claimants	2	13%	2	13%	2	13%
FDIC/unsinsured depositors	7	47%	7	47%	0	0%
Total Losses	15	100%	15	100%	15	100%

Thus, the amount of bank capital, subordinated claims and unsecured claims directly reduces the cost borne by the FDIC and the uninsured depositors on a dollar-for-dollar basis. The failure of Bank C, with strong capital plus some subordinated debt, costs the FDIC nothing, whereas the FDIC bears a large portion of the loss for the other two banks.

More generally, bank capital reduces the FDIC's losses at failure. In addition, banks that carry substantive amounts of subordinated debt and unsecured claims—provided that they do not flee the bank prior to failure—will be less costly to the FDIC than banks with similar assets but with fewer such liabilities. Conversely, the quantity of secured claims (or unsecured claims that would exit the bank prior to failure) has no mitigating effect on the FDIC's loss.[26] Thus Bank B costs the FDIC the same as Bank A, even though Bank B has fewer insured deposits.

In fact, under the current assessment scheme, the FDIC's risk exposure is much higher for Bank B than for Bank A or Bank C. Bank C would have the lowest assessment rate because of its stronger capital position. The FDIC's risk exposure would be the same for Bank A and Bank B, but Bank B's assessments would be 44 percent lower than

[26] Except in the rare cases when losses exceed the sum of domestic deposits and all creditor classes paid after domestic deposits.

Bank A because it held fewer domestic deposits.

This also has implications at the fund level. The DRR is based upon domestic deposits, regardless of the composition of depository institutions' balance sheets. Thus, if the banking industry as a whole increases its use of secured borrowing, the BIF and the SAIF are exposed to higher levels of risk. If the industry's capital levels increase, the BIF and the SAIF are exposed to less risk. These influences are not incorporated in the funding requirements for BIF and SAIF, leaving the FDIC vulnerable to significant changes in risk exposure.

Through most of the FDIC's history, over 90 percent of FDIC-insured banks' liabilities were domestic deposits; therefore, distinctions unrelated to capital (which is already part of the risk matrix) mattered little. However, by the 1970s, banks were beginning to rely on other funding sources, and by 1990, domestic deposits made up only 74 percent of total liabilities of BIF-insured institutions. As of year-end 1999, domestic deposits were down to 60 percent of total liabilities for BIF-insured institutions. Even so, only 27 percent of FDIC-insured institutions had domestic deposits of less than 90 percent of total liabilities. Large institutions are more likely to rely on non-deposit sources of funds. As of December 1999, the average FDIC-insured institution with assets over $1 billion held 72 percent of total liabilities in domestic deposits, whereas the average institution under $1 billion held 93 percent. Thrifts are also more likely to rely on non-deposit sources of funds. As of year-end 1999, there were 398 thrifts, or 29 percent of SAIF members, with domestic deposits of less than 80 percent of total liabilities; 716 BIF members (8 percent of all BIF members) held domestic deposits in amounts less than 80 percent of liabilities.

Attachment F

SIMULATIONS

F-1. Steady Premium System

The following table illustrates the difference between a steady premium system and actual fund performance since 1982. Table F-1.1 (left side) simulates a steady premium of 8.33 basis points for the period 1982 to 1999. (The FDIC's historical flat assessment rate of 8.33 basis points actually remained in effect until 1980.) Table F-1.1 (right side) shows what actually occurred.

In actuality, premiums varied from .08 basis points to 24.4 basis points, much more than in the steady premium simulation. The steady premium simulation and the actual reserve ratio reached similar negative lows (-0.57 percent and -0.36 percent, respectively), but the BIF actually recapitalized in 1995, while in the steady premium simulation the BIF had reached only a 1.04 percent reserve ratio by 1999.

A complete description of the simulations and methodology is set forth in Attachment F-2.

Table F-1.1

Bank Insurance Fund, 1982 - 1999

(Dollars in millions)

	BIF Simulation Results: Risk-Related Assessments					BIF Actual Results				
	Assessment Scheme (bp)	Assessment Revenue	Net Income	Fund Balance	Reserve Ratio	Effective Rate (bp)	Assessment Revenue	Loss Provisions	Fund Balance	Reserve Ratio
1982	8.33	1,015	1,527	13,774	1.21%	7.7	1,013	126	13,771	1.21%
1983	8.33	1,116	1,727	15,501	1.22%	7.1	1,051	675	15,429	1.22%
1984	8.33	1,224	997	16,498	1.19%	8.3	1,322	1,633	16,529	1.19%
1985	8.33	1,412	1,405	17,902	1.19%	8.3	1,433	1,569	17,957	1.19%
1986	8.33	1,545	326	18,228	1.12%	8.3	1,517	2,869	18,253	1.12%
1987	8.33	1,695	48	18,276	1.10%	8.3	1,696	2,997	18,302	1.10%
1988	8.33	1,739	(4,276)	14,000	0.80%	8.3	1,773	6,298	14,061	0.80%
1989	8.33	1,852	(886)	13,114	0.70%	8.3	1,885	3,811	13,210	0.70%
1990	8.33	1,993	(10,064)	3,050	0.16%	12.0	2,855	12,133	4,044	0.21%
1991	8.33	2,055	(14,292)	(11,242)	-0.57%	21.3	5,160	15,476	(7,028)	-0.36%
1992	8.33	2,030	3,470	(7,773)	-0.40%	23.0	5,588	(2,260)	(101)	-0.01%
1993	8.33	2,018	9,359	1,587	0.08%	24.4	5,784	(7,677)	13,122	0.69%
1994	8.33	2,022	5,038	6,625	0.35%	23.6	5,591	(2,873)	21,848	1.15%
1995	8.33	1,972	2,642	9,266	0.47%	12.4	2,907	(33)	25,454	1.30%
1996	8.33	2,064	3,453	12,720	0.63%	0.24	73	(325)	26,854	1.34%
1997	8.33	2,200	3,682	16,401	0.80%	0.08	25	(504)	28,293	1.38%
1998	8.33	2,317	3,674	20,075	0.94%	0.08	22	(38)	29,612	1.38%
1999	8.33	2,488	2,324	22,400	1.04%	0.11	33	1,169	29,414	1.36%
Average	8.33	1,820				9.90	2,207			
Total		32,758					39,727			

F-2. Simulation of Risk-Related Premiums, 1982 to 1999

The FDIC constructed a spreadsheet-based model to simulate the effects on the BIF if risk-related premiums had been in effect for the entire period of 1982 through 1999. Risk-related premiums actually were implemented at the beginning of 1993. In the BIF's experience, bank failures and insurance losses accelerated through the 1980s and early 1990s, driving the BIF balance to a negative $7 billion at year-end 1991. The FDIC's historical flat assessment rate of 8.3 basis points remained in effect until 1990, when a series of increases eventually raised the rate to 23 basis points for 1992. In 1993, risk-related premiums ranged from 23 to 31 basis points, falling to 4 to 31 basis points in 1995 when the BIF was recapitalized, and then to 0 to 27 basis points since the beginning of 1996.

The model generally operates under today's assessment statutes, barring the FDIC from assessing 1A-rated institutions if the BIF reserve ratio is at or above the DRR of 1.25 percent, and requiring a minimum assessment rate of 23 basis points if the reserve ratio falls below 1.25 percent.

The major assumptions and caveats are summarized below, followed by a discussion of the model's results.

Assumptions

Assessment ratings. In years prior to 1993, when risk-related premiums were implemented, assessment ratings were determined using the most recent examination composite rating for the supervisory subgroup and the examination rating for the capital component for the capital category. In each case, exam ratings of 1 and 2 are in category 1, 3s are in category 2, and 4s and 5s are in category 3. The decision to use the exam capital rating was based on an analysis of the distribution of capital ratings in the risk-related premium matrix when it was first implemented on January 1, 1993. Rather than imposing current capital standards retroactively, the use of historical examination ratings provides contemporary standards for prior years. The model shows somewhat more lower-rated institutions for the years 1982 to 1992 than there actually were in 1993 through 1999, but this, at least in part, reflects the relative health of the industry during the two time periods.

Assessment rates. Under current assessment authority, the FDIC can raise rates to a maximum range of 9 to 36 basis points without a rulemaking. This rate matrix is shown in Table F-2.1. The highest rate ever charged to 1A institutions was 23 basis points, which is also the statutory minimum when the fund faces an actual or projected shortfall below the DRR (1.25 percent). The maximum rate range used in the model is 23 to 36 basis points, as seen in Table F-2.2.

Table F-2.1

Highest Rate Schedule Under Existing Assessment Authority			
Capital Category	*Supervisory Subgroup*		
	A	*B*	*C*
1	9	12	26
2	12	19	33
3	19	33	36

Table F-2.2

Highest Rate Schedule Used in the Simulation			
Capital Category	*Supervisory Subgroup*		
	A	*B*	*C*
1	23	24	31
2	24	28	35
3	28	35	36

Table F-2.2 preserves the same proportional increases for each cell as in Table F-2.1, rounded to the nearest basis point. For example, in Table F-2.1 the increase from 1A to 1B is 3/17ths of the increase from 1A to 1C. This proportional increase was applied in Table F-2.2. Intermediate schedules (10 to 36, 11 to 36, etc.) were calculated in this manner, which is necessary because the overall spread, from 1A to 3C, compresses from 27 basis points in Table F-2.1 to 13 basis points in Table F-2.2.

Income statement. The FDIC's operating expenses, loss provisions and other income (from sources other than assessments and investment earnings) are unadjusted. Investment earnings are adjusted to reflect changes in the size of the portfolio if simulated assessment revenue is greater than or less than actual assessment revenue. The portfolio yield is the average annual yield of five-year U.S Treasury securities.

Miscellaneous. The model is based on annual and year-end data. Annual assessment revenue is based on the prior year-end assessment base. Assessments actually were collected semiannually prior to 1995 and quarterly thereafter. Insured branches of foreign banks (IBAs), which currently hold $1.3 billion in BIF-insured deposits, were excluded from the model because of missing data in earlier time periods.

Caveats

When risk-related premiums are in effect, incentives to avoid higher premiums can affect institution behavior. Applying standards retroactively is likely to overstate assessment revenue because many institutions likely would have acted as necessary to meet higher standards in order to reduce their assessments.

If some banks had raised their capital to meet assessment standards, fewer failures may have resulted. On the other hand, if banks did not raise capital and were charged higher premiums, more failures could have resulted. This model makes no attempt to measure these dynamic, offsetting effects. Rather, it is assumed that banks would not make changes to reduce their assessments and that changes in assessments would not affect BIF losses.

The FDIC's average investment portfolio yield would be expected to vary due to liquidity needs and portfolio balance, but no adjustments were made to reflect this in the model.

Summary of Results

Subject to the assumptions and caveats discussed above, the model shows that had risk-related premiums been applied for the entire period 1982 to 1999, the collection of substantially higher assessment revenues would have started in 1986 rather than 1990, and BIF insolvency would have been avoided. In the simulation, the BIF reserve ratio bottoms out at positive 0.35 percent in 1991, and recapitalization essentially is achieved by year-end 1993. In actuality, the BIF reserve ratio reached a low of negative 0.36 percent in 1991, and the fund was not recapitalized until 1995.

By law, the FDIC was limited to charging assessment rates of 8.3 basis points through 1989 and 12 basis points in 1990. The FDIC used its discretion to increase the rate to 19.5 basis points at the beginning of 1991, the maximum permissible increase, and again to 23 basis points at mid-year 1991, where it remained through 1992. Risk-related

premiums, ranging from 23 to 31 basis points, were implemented in 1993. In the simulation, maximum rates (23 to 36 basis points) were charged earlier, from 1988 through 1992, as the industry and the insurance fund were deteriorating. BIF rates actually did not reach 23 basis points until 1991, the year the fund became insolvent.

In the model's 18-year span, total assessment revenue was $41.5 billion and the weighted-average annual assessment rate was 10.33 basis points. In the BIF's actual experience during this period, assessment revenue totaled $39.7 billion and the weighted average assessment rate was 9.90 basis points. With a higher maximum assessment rate of 36 basis points, the model's annual assessment revenue peaked at $6.4 billion in 1992, compared to an actual peak of $5.8 billion in 1993, when a maximum rate of 31 basis points was in effect. The model's higher assessment revenue also is attributable to greater numbers of institutions in the higher rate categories from 1982 to 1992 than in later years, when actual risk-based incentives were in place.

In the model, the reserve ratio jumps from 1.24 percent to 1.42 percent in 1994 because the fund essentially had been recapitalized in the preceding year but the BIF had a substantial reversal of loss reserves—$2.9 billion—in 1994. In the model, premiums were set at the minimum range of 0 to 27 basis points for 1994, but the negative loss provision greatly boosted net income and caused the overcapitalization. In actuality, the BIF's largest recoveries of loss reserves were completed prior to the fund's recapitalization in 1995. In both the simulated and actual results, post-recapitalization increases in the reserve ratios were attributable to high investment earnings and low insurance losses.

In maintaining the reserve ratio at 1.25 percent in the years 1982 through 1987, the model shows considerable volatility in assessment rates, as one would expect in a "pay-as-you-go" assessment scheme. In most other years of the simulation, rates were at the maximum or minimum permitted levels.

Simulation results and actual results are summarized in Table F-2.3. It is important to reiterate that it was assumed that (1) institutions would not have behaved differently in years before the actual implementation of risk-related premiums in

Table F-2.3

Bank Insurance Fund, 1982 - 1999
(Dollars in millions)

	Simulation Results: Risk-Related Assessment Scheme						Actual Results				
	Assessment Schedule (bp)	Effective Rate (bp)	Assessment Revenue	Net Income	Fund Balance	Reserve Ratio	Effective Rate (bp)	Assessment Revenue	Loss Provisions	Fund Balance	Reserve Ratio
1982	11 - 36	11.7	1,494	2,037	14,283	1.26%	7.7	1,013	126	13,771	1.21%
1983	5 - 32	6.8	956	1,558	15,841	1.25%	7.1	1,051	675	15,429	1.22%
1984	10 - 36	12.5	1,979	1,798	17,639	1.27%	8.3	1,322	1,633	16,529	1.19%
1985	4 - 31	7.1	1,255	1,240	18,879	1.26%	8.3	1,433	1,569	17,957	1.19%
1986	13 - 36	15.4	2,988	1,821	20,700	1.27%	8.3	1,517	2,869	18,253	1.12%
1987	5 - 32	8.3	1,707	60	20,760	1.25%	8.3	1,696	2,997	18,302	1.10%
1988	23 - 36	23.8	5,129	(743)	20,017	1.14%	8.3	1,773	6,298	14,061	0.80%
1989	23 - 36	23.5	5,415	2,828	22,846	1.22%	8.3	1,885	3,811	13,210	0.70%
1990	23 - 36	24.0	5,830	(6,066)	16,780	0.87%	12.0	2,855	12,133	4,044	0.21%
1991	23 - 36	25.8	6,326	(9,864)	6,917	0.35%	21.3	5,160	15,476	(7,028)	-0.36%
1992	23 - 36	26.3	6,390	7,964	14,881	0.76%	23.0	5,588	(2,260)	(101)	-0.01%
1993	2 - 29	5.9	1,427	8,753	23,634	1.24%	24.4	5,784	(7,677)	13,122	0.69%
1994	0 - 27	1.4	331	3,291	26,925	1.42%	23.6	5,591	(2,873)	21,848	1.15%
1995	0 - 27	0.5	118	727	27,652	1.42%	12.4	2,907	(33)	25,454	1.30%
1996	0 - 27	0.20	52	1,379	29,032	1.45%	0.24	73	(325)	26,854	1.34%
1997	0 - 27	0.09	24	1,438	30,470	1.48%	0.08	25	(504)	28,293	1.38%
1998	0 - 27	0.07	19	1,317	31,787	1.48%	0.08	22	(38)	29,612	1.38%
1999	0 - 27	0.10	30	(201)	31,585	1.46%	0.11	33	1,169	29,414	1.36%
Average		10.33	2,304				9.90	2,207.08			
Total			41,470					39,727.45			

1993, and (2) changes in assessments did not cause more or fewer failures in any given year. Table F-2.4 presents simulation results for the same time period for a flat-rate premium of 8.33 basis points. It shows the fund reaching a deeper deficit in 1991 (negative 0.57 percent) and failing to recapitalize by the end of 1999.

Table F-2.4

Bank Insurance Fund, 1982 - 1999
(Dollars in millions)

	Simulation Results: Steady Premium					Actual Results				
	Assessment Rate (bp)	Assessment Revenue	Net Income	Fund Balance	Reserve Ratio	Effective Rate (bp)	Assessment Revenue	Loss Provisions	Fund Balance	Reserve Ratio
1982	8.33	1,015	1,527	13,774	1.21%	7.7	1,013	126	13,771	1.21%
1983	8.33	1,116	1,727	15,501	1.22%	7.1	1,051	675	15,429	1.22%
1984	8.33	1,224	997	16,498	1.19%	8.3	1,322	1,633	16,529	1.19%
1985	8.33	1,412	1,405	17,902	1.19%	8.3	1,433	1,569	17,957	1.19%
1986	8.33	1,545	326	18,228	1.12%	8.3	1,517	2,869	18,253	1.12%
1987	8.33	1,695	48	18,276	1.10%	8.3	1,696	2,997	18,302	1.10%
1988	8.33	1,739	(4,276)	14,000	0.80%	8.3	1,773	6,298	14,061	0.80%
1989	8.33	1,852	(886)	13,114	0.70%	8.3	1,885	3,811	13,210	0.70%
1990	8.33	1,993	(10,064)	3,050	0.16%	12.0	2,855	12,133	4,044	0.21%
1991	8.33	2,055	(14,292)	(11,242)	-0.57%	21.3	5,160	15,476	(7,028)	-0.36%
1992	8.33	2,030	3,470	(7,773)	-0.40%	23.0	5,588	(2,260)	(101)	-0.01%
1993	8.33	2,018	9,359	1,587	0.08%	24.4	5,784	(7,677)	13,122	0.69%
1994	8.33	2,022	5,038	6,625	0.35%	23.6	5,591	(2,873)	21,848	1.15%
1995	8.33	1,972	2,642	9,266	0.47%	12.4	2,907	(33)	25,454	1.30%
1996	8.33	2,064	3,453	12,720	0.63%	0.24	73	(325)	26,854	1.34%
1997	8.33	2,200	3,682	16,401	0.80%	0.08	25	(504)	28,293	1.38%
1998	8.33	2,317	3,674	20,075	0.94%	0.08	22	(38)	29,612	1.38%
1999	8.33	2,488	2,324	22,400	1.04%	0.11	33	1,169	29,414	1.36%
Average	8.33	1,820				9.90	2,207			
Total		32,758					39,727			

F-3. Optimal Fund Size and Premium Adjustment Simulations

This attachment provides a summary and recommendations of a more extensive, ongoing analysis that explores mechanisms for moderating premium volatility by tolerating larger swings in the reserve ratio.

The foundation used in this analysis to develop a minimum optimal fund size (MOFS) is taken from the contingent claims modeling of Robert Merton. This approach provides a natural methodology to determine the size a fund or risk capital ought to be in order to provide support for expected losses to the FDIC arising from bank failures. Conceptually, the MOFS is the present discounted value of the expected losses to the FDIC in perpetuity—this is the actuarially fair value of the losses indefinitely. Assuming that the rate of growth of deposits, rate of return on investments in Treasury securities, and long-run expected loss rate are constant in perpetuity, a simple relationship for a MOFS rate can be derived. Representative values for MOFS are presented in Table F-3.1 for a variety of deposit growth rates and expected loss rates.

The MOFS presents a conceptual solution to the problem of fund size, but does not address how the FDIC should manage the fund and premium assessments from year to year, as bank failures and attendant losses ebb and flow. To address this problem, the study provides a Monte Carlo analysis of the fund balance relative to domestic deposits. It assumes a constant premium on deposits of 8.33 basis points, a constant ratio of expenses to domestic deposits, a 6 percent return on investments, a lognormal distribution for the losses to total deposits using the mean and standard deviation based on observations from 1980 to 1999, and a normal distribution for the domestic deposit growth rate assuming a 2 percent average and standard deviation.

Two adjustment rules were simulated: the first with a 23 basis points cap and the second with a 15 basis points cap with both having a 4 basis points floor. In both cases, premium

Table F-3.1

MOFS per Domestic Deposits (%) (6 percent risk-free rate)								
Premium	*Deposit Growth Rate (%)*							
(bp)	*-2.0*	*-1.0*	*0.0*	*1.0*	*2.0*	*3.0*	*4.0*	*5.0*
1	0.12	0.14	0.17	0.20	0.26	0.34	0.52	1.05
2	0.25	0.28	0.33	0.40	0.51	0.69	1.04	2.10
3	0.37	0.42	0.50	0.61	0.77	1.03	1.56	3.15
4	0.49	0.57	0.67	0.81	1.02	1.37	2.08	4.20
5	0.61	0.71	0.83	1.01	1.28	1.72	2.60	5.25
6	0.74	0.85	1.00	1.21	1.53	2.06	3.12	6.30
7	0.86	0.99	1.17	1.41	1.79	2.40	3.64	7.35
8	0.98	1.13	1.33	1.62	2.04	2.75	4.16	8.40
9	1.10	1.27	1.50	1.82	2.30	3.09	4.68	9.45
10	1.23	1.41	1.67	2.02	2.55	3.43	5.20	10.50
11	1.35	1.56	1.83	2.22	2.81	3.78	5.72	11.55
12	1.47	1.70	2.00	2.42	3.06	4.12	6.24	12.60
13	1.59	1.84	2.17	2.63	3.32	4.46	6.76	13.65

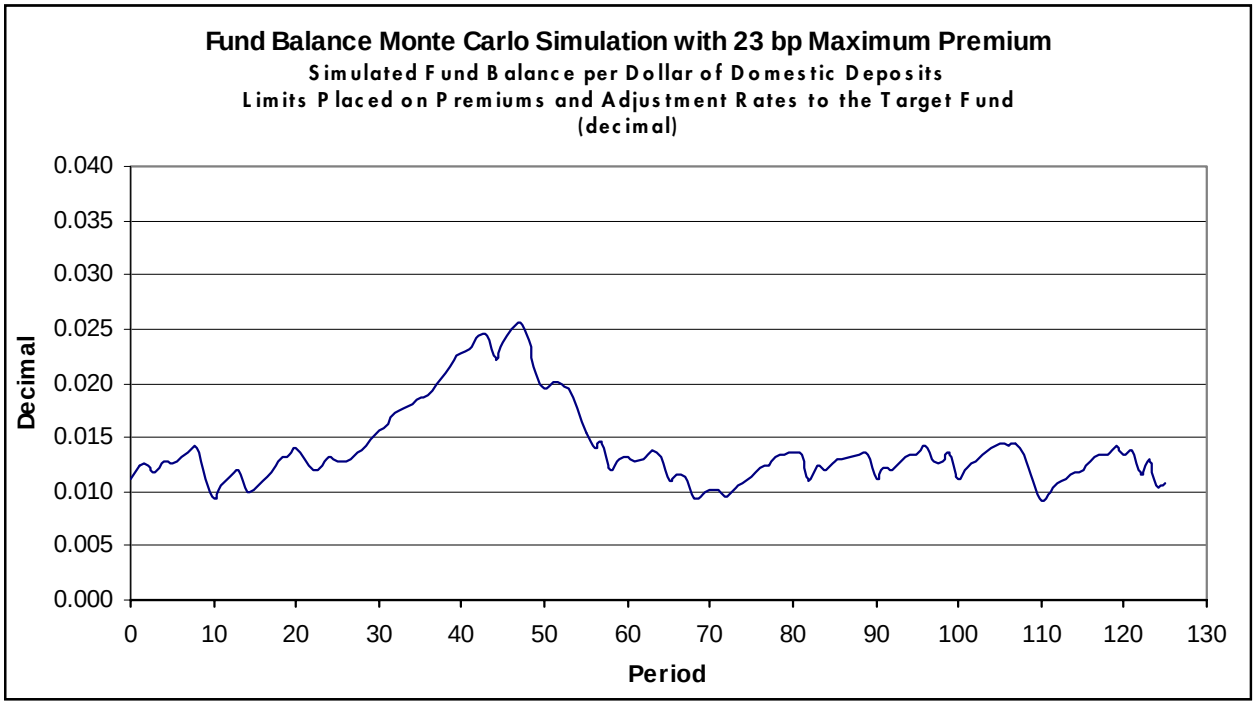
Note: The BIF ratio of domestic deposits as of March 31, 2000, was 96 basis points, or .96 percent.

adjustments will not take place unless the fund balance relative to domestic deposits is ±21 basis points from the fund target of 100 basis points (near the 1999 value) and will move by only ±11 basis points for a single change. Premiums can go no lower than 4 basis points when the fund balance is less than 11 basis points from the target. If the fund balance is within the ±11 basis points range, the premium will revert to its initial value of 8.33 basis points. For each simulation, there were 300 runs of 120 periods (years).

The results for the 23 basis point rule are that, over 300 simulations of 125 periods each, premiums average 7 basis points to 8.21 basis points. In addition, premium changes are not frequent and tend to be clustered when there are large changes in the fund balance due to losses. Furthermore, under this rule the fund balance never falls below or reaches zero. (Chart F-3.1 shows a typical simulation outcome.)

For this rule, the adjustment properties of the fund balance are asymmetric. That is, when the fund is below the target the adjustment is more rapid than when it is above. Additionally, the fund at times, for the 90 percent of the simulations that show a stable fund balance over 60 periods (years), will rise to large values in the neighborhood of 250 basis points of domestic deposits. This asymmetric behavior strongly suggests that, without a zero premium or rebate system, the fund balance will need to be allowed to migrate to comparatively high levels such as 250 basis points of domestic deposits because, as the simulations show, low premiums combined with possible serious distress in the banking system, will tend to bring the fund balance back to the target. However, by following this approach, as this rule does, it may take years for the fund to return to the target level when it exceeds it by significant amounts.

Chart F-3.1

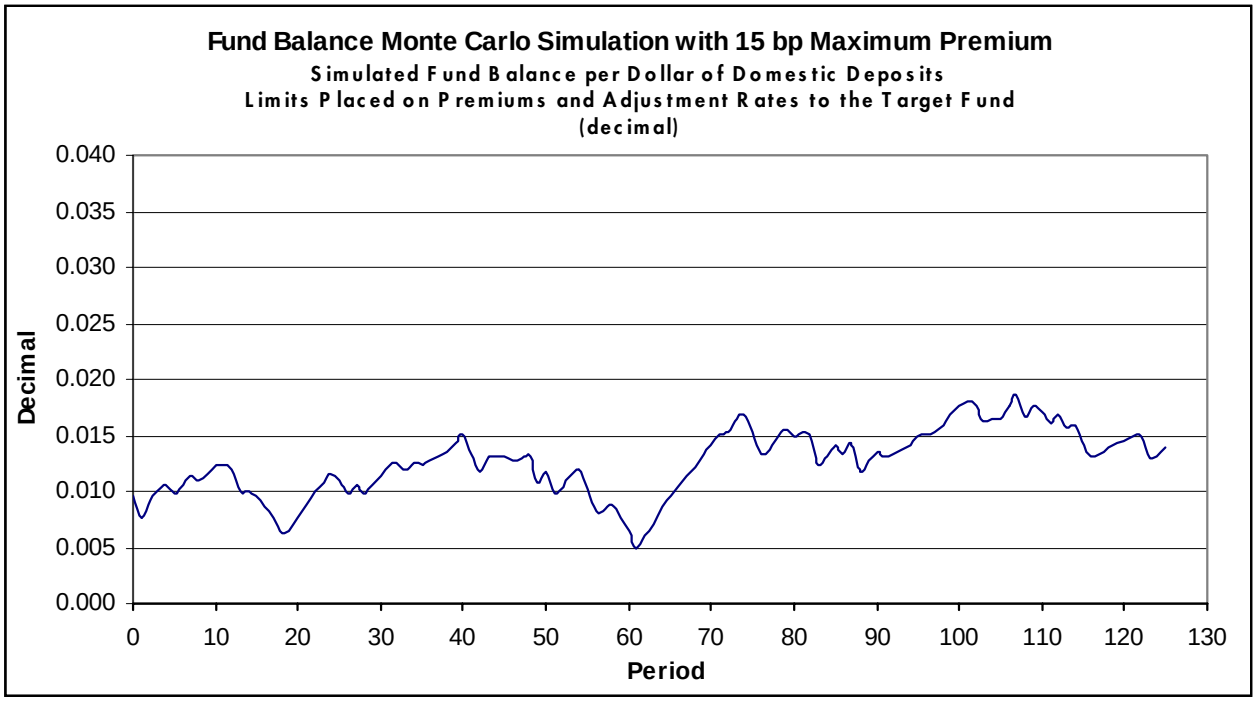


The second rule sets the maximum premium at 15 basis points, while maintaining the minimum at 4 basis points and the same adjustment process as for the first rule. A typical result is shown in Chart F-3.2. Generally, the results of the over 300 simulations of 125 periods each are that premiums average much closer to the initial 8.33 basis points and do not as frequently reach as low as 4 basis points than with the first rule. In addition, premium changes are more frequent than for the 23 basis points maximum rule and tend to be clustered when there are large changes in the fund balance due to losses. Like the first rule, the fund balance never falls below or reaches zero.

Compared with the first rule, the adjustment properties of the fund balance with the 15 basis point maximum premium are less asymmetric. As expected, when the fund is below the target for the 15 basis points maximum rule it adjusts less rapidly than when it is above, but at a much slower rate than for the 23 basis points maximum rule. Additionally, the fund, for 93 percent of the simulations, shows a stable fund balance over 60 periods (years) that will rise to values of about 180 basis points, much less than the 250 basis points values reached under the first rule. Like the first rule, this asymmetric behavior strongly suggests that, without a zero premium or rebate system, the fund balance will need to be allowed to migrate to comparatively high levels such as 180 basis points of domestic deposits. As the simulations show, low premiums, combined with possible serious distress in the banking system, will tend to bring the fund balance back toward the target. However, by following this approach, as the rule does, it may take years for the fund to return to the target level when it exceeds it by significant amounts.

Based on these simulations and the analysis of a single premium adjustment rule, a long-run strategy to manage the BIF, with positive premiums and without large and/or frequent

Chart F-3.2



changes in premiums, is to let the fund balance rise or fall without regard to size. The asymmetry of the fund balance adjustments of the proposed rule is due to the ability to charge 23 basis points when the fund falls severely below the target. One option is to reduce this upper limit to some smaller value such as 15 basis points. As shown by the simulations, this option slows the return of the fund to its long-run average when it falls below the target compared to the 23 basis points maximum rule, reduces the burden on banks when the fund is "under-capitalized," and reduces the number of periods the fund is over twice the target balance. In any event, the results of this Monte Carlo analysis are suggestive of more experiments that might be conducted to better understand the effects on the fund of alternative premium adjustment rules so as to choose the one that may best fit the many economic and political constraints. Without question, however, these results clearly demonstrate that, based on the most recent twenty years of loss experience, a rule can be established that can always charge positive premiums, avoid a negative or zero fund balance, and avoid frequent or large premium changes.

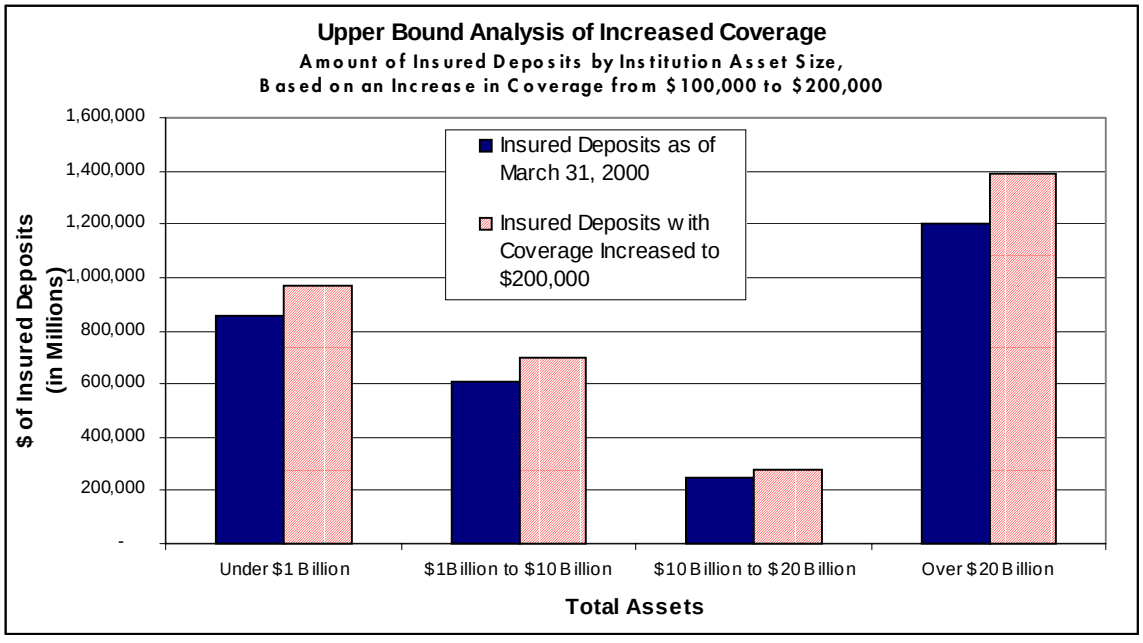
Attachment G

EFFECT OF A COVERAGE LIMIT INCREASE TO $200,000 ON BANKS OF DIFFERENT ASSET SIZES

An increase in coverage from $100,000 to $200,000, in order to reflect consumer price inflation since 1980, would affect financial institutions differently, depending on the number and amount of uninsured deposits held. Doubling insurance coverage would not increase insured deposits initially by more than $400 billion. This $400 billion amount is an upper bound. It assumes no balances exceeding $100,000 are currently insured and that deposits are evenly distributed across accounts greater than $100,000, thus maximizing the potential effect. The best estimate of the impact of doubling coverage is that it would increase insured deposits by $270 billion, as reported in the options paper. The $400 billion upper bound is used in what follows only because it is more amenable to analysis.

The $400 billion upper bound is obtained from March 31, 2000, bank Call Reports. On a bank-by-bank basis, uninsured deposit amounts were divided by the number of large deposit accounts to produce an average uninsured amount per account per bank. If the average uninsured amount was over $100,000 (meaning the average large account balance was over $200,000), it was assumed that an increase in the coverage limit to $200,000 would increase insured deposits by $100,000 multiplied by the number of such accounts. There were 3.5 million such accounts. For banks where the average uninsured amount was under $100,000 (meaning the average large account balance was between $100,000 and $200,000), the average uninsured amount per account was used. It was assumed that an increase in the coverage limit to $200,000 would increase insured deposits by the average uninsured amount per account times the number of such accounts at these banks. There were approximately one million such accounts.

Chart G-1.1



For illustrative purposes, if we use the $400 billion upper bound, and the average uninsured amounts per account per bank, we can calculate the impact of an increase in coverage on banks of different asset sizes. Applying the average to all accounts obviously is a potential source of error but, again, the intent is only to illustrate the upper extreme, and not to estimate the real impact.

Chart G-1.1 (see previous page) shows the level of insured deposits for banks and thrifts broken down by asset size. The chart compares insured deposit levels as of March 31, 2000, with the amount that would be insured if the doubling of the coverage level resulted in a $400 billion increase in insured deposits under the above assumptions. Based on an absolute dollar amount, banks with total assets over $20 billion would receive the largest increase in insured deposits, but not the largest percentage increase.

Chart G-1.2 illustrates the relative impact of an increase in coverage on financial institutions by asset size. The chart shows that small banks would receive a disproportionate share of the benefits of an increase in coverage limits. Banks with total assets under $1 billion hold 17 percent of uninsured deposits as of March 31, 2000, but would receive 27 percent of the additional insurance coverage in this "upper bound" exercise. Conversely, banks with total assets over $20 billion hold 55 percent of uninsured deposits, but would receive only 45 percent of the additional coverage amount. This difference in the effects of higher insurance coverage is a function of the composition of these banks' deposits. Smaller banks, in general, have lower average balances per large account, which means more of the accounts, relatively speaking, will benefit from increased coverage. Large banks have much higher average balances in their large accounts, so there are proportionately fewer accounts that are receiving an increased benefit.

This analysis suggests that small banks will be more favorably affected than large banks by an increase in the coverage limit, at least in the near term.

Chart G-1.2