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Financial Stability and FDIC Insurance

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FINANCIAL STABILITY AND FDIC INSURANCE

I. Introduction.

The Federal Deposit Insurance Corporation (FDIC) was created over five decades ago for the purpose of increasing the stability of the banking system. Yet, as with all such regulatory agencies, the intended effects of its policies and the actual effects are likely to differ--and the difference is likely to increase with time. In this paper we identify the actual effects of the FDIC's pricing policies in the current banking environment. We conclude that, coupled with partial deregulation, these pricing policies are now destabilizing rather than stabilizing the banking system.¹

Section II presents a simple model in which the response of banks to the incentives they face can be conveniently discussed. Section III identifies the market forces traditionally held in check by regulatory constraints. Section IV deals with these same market forces in a partially deregulated environment, and relates the arguments to the currently high and increasing bank-failure rate. Section V argues that the interaction between remaining regulations and market forces is likely to create long-term, or structural, instability. Section VI summarizes our view.

II. A Simple Model

The rate of return to the banking system as a whole reflects the rates of return to individual banking firms. These individual rates of return can vary from negative rates that may lead to bankruptcy to positive rates that constitute supernormal profits--depending upon the quality of the bank's entrepreneurship and the particular environment in which it operates. It will be convenient to represent the profitability of the banking system as a whole--and hence the profit prospects for an individual bank-- with a distribution of returns to the asset portfolios held by the different banks.

A normal distribution, as used in Figure 1 and in all subsequent figures, can represent the rates of return to asset portfolios across the banking system for a given accounting period. The actual rate of profit for that period will depend upon several other factors as well. For each bank the capital base, the costs of borrowing, and other costs of operation all come into play. In order to focus attention on the asset portfolios of individual banks and of the banking system as a whole, none of these other factors are treated as stochastic variables in the present model.

In the absence of any specific knowledge of the differential abilities of the different banks, the location along the rate-of-return spectrum of any given bank will be attributed to random factors. The mean rate of return is consistent with the rates of profit in other industries. The variance of the distribution reflects the composition of the banks' portfolios. The

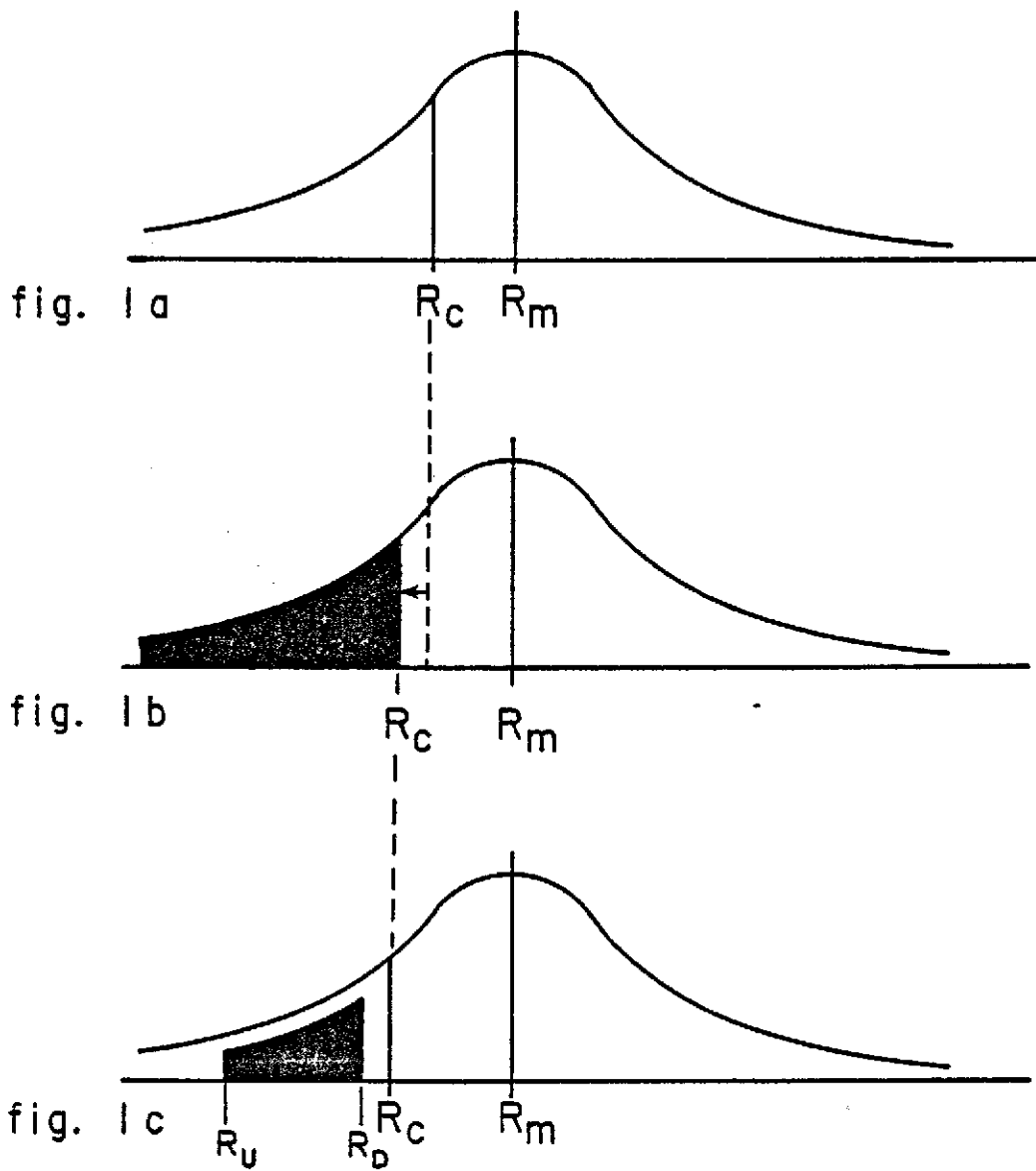


Figure 1

location of a given bank on the distribution represents the return to its own portfolio--which itself reflects a distribution of returns across the assets within that portfolio. Thus, Figure 1, as well as the subsequent figures, have two different, but complementary, interpretations. Ex ante, the distributions depict the prospects of a representative bank. (This perspective makes use of the familiar "representative-firm" construct.) Ex post, the distributions depict the portfolio rates of returns to the banking system as a whole.

Initially, we consider an unregulated banking system whose banks purchase deposit insurance from privately operated insurance companies. With due allowances for risk aversion and other non-pecuniary considerations, the mean rate of return, indicated by R_m in Figure 1a, allows for a normal profit rate equal to that of industry as a whole. Each bank operates from a capital base that allows it to experience below-average returns on its assets without jeopardy to the bank or to its depositors. However, if a bank's portfolio yields a rate of return below some "critical rate," R_c , the capital base is completely eroded and the bank faces bankruptcy. The difference, then, between R_c and R_m is a reflection of the bank's capital base. In the absence of deposit insurance, losses associated with rates of return below R_c would be suffered by the bank's depositors. (The general provision of limited liability, of course, would protect bank owners from losses that exceed the bank's capital.)

Because of risk aversion on the part of the banks' depositors, it will be in the interest of each bank to purchase deposit insurance. The cost of this insurance, if supplied

competitively, will reflect the portion of the rate-of-return distribution below R_c . In effect, the area of the distribution between minus infinity and R_c is "sold" to the insurer. The mean of the distribution remains unchanged; the purchasing of deposit insurance serves only to convert a portion of that distribution into its expected value. The capital base and deposit insurance, which are substitutes at the margin from the bank's point of view, are used in some combination to protect the depositors from losses. The capital base protects the depositors from minor losses that are likely to occur; deposit insurance protects them from catastrophic losses that are unlikely to occur. R_c marks the boundry between the two methods of providing this protection.

There will be a temporary upward adjustment in the overall rate of profit to the banking industry as a result of the deposit insurance: Risk-averse depositors will now be willing to accept a lower yield in exchange for the added security. But competitive forces will bring those higher rates of profit, which reflect the gains from pooling risk, back in line with profit levels in other industries. As shown in Figure 1b, the deposit insurance would result in a leftward shift in R_c (and hence an adjustment in the insurance premium), as lower borrowing costs would allow the banks to survive lower asset yields.

Apart from considerations of "adverse selection" and "moral hazard," no further adjustments to the purchasing of deposit insurance are called for. And these are problems that competitive insurance companies must cope with in all areas in which they offer insurance. The different banks are not equally

likely to have a return on their asset portfolios that lies below R_c . The likelihood of catastrophically low returns will depend, in part, upon the the individual bank's risk preferences--its willingness to accept risk in order to increase the expected return to its assets. Some banks are aggressive; others are conservative. Competitively supplied deposit insurance will involve a certain amount of adverse selection, that is, of insuring too many aggressive banks and too few conservative banks. Insurers will have an incentive to discover differences in risk-preferences among banks and to structure their insurance premiums accordingly, but--as with all other forms of insurance--innate informational differences between the insurerer and the insured may preclude a market outcome in which these differences are fully reflected in the structure of the premiums.

As a means of dealing with the problem of moral hazard, competitive insurance companies can be expected to stop short of providing full coverage. This will give the depositor an incentive to survey the policies of the various banks before choosing one particular bank and then to monitor the behavior of that bank with respect to its portfolio management. Such surveys and monitoring services may be provided by some (public or private) bank-rating agency. Figure 1c, in which insured losses are confined to the shaded area, suggests several ways in which the insurance companies might intentionally leave the banks' depositors exposed to some risk. First, the insurer pays nothing unless the return on the bank's portfolio falls a prescribed distance below R_c , say, to R_d . This uninsured loss, which constitutes a "deductible loss," may be spread among

depositors on a lump-sum basis. Second, over the range of portfolio returns, from R_d down to R_u , for which the insurer has liability, the coverage is less than 100 percent. The depositor² bears some percentage of the loss, say, 10 to 20 percent. And third, if the bank's actual portfolio return is below R_u , the upper limit of the coverage, the insurer covers only the loss associated with R_u . This aspect of risk exposure provides an incentive for depositors to avoid banks that engage in shoot-the-moon investment strategies, and hence it discourages banks from adopting such strategies.

Figure 1c illustrates a possible outcome of the interaction between banks, bank depositors, and deposit insurers. And such an outcome would be a stable one--stable, at least, with respect to the parameters discussed.³ That is, even in the absence of regulation, none of the agents involved can take advantage of the circumstances depicted by altering that part of his own behavior that gave rise to those circumstances. This result suggests that there are no internal inconsistencies or inherent perversities in the competitive forces that govern deposit institutions in their relationship to depositors and deposit insurers. The competitive solution also provides a point of departure for the discussion of deposit insurance that is not provided competitively. Policies adopted by the FDIC, for instance, create incentives that are inconsistent with the results depicted in Figure 1. The particular ways in which the banks and the banks' depositors react to these incentives depend upon the regulatory environment that they face. In the next two sections, we identify these

reactions and their consequences in first a regulated and then a partially deregulated environment.

III. Subsidized Insurance in a Regulated Environment.

The environment in which banks actually operate is substantially different from the one assumed in the discussion above. The actual environment is in some ways more favorable and in other ways less favorable to banks in comparison to a competitive environment. Because of the pricing policies of the FDIC, the banks are able to buy deposit insurance for a fee that is not established by some actuarial procedure. The fee actually paid, then, does not reflect the true risk assumed by the insurer. Because of a number of regulatory constraints, however, the banks cannot fully respond to the incentives created by the favorable premiums on deposit insurance. The regulatory constraints that come into play include (1) interest-rate ceilings, (2) entry restrictions, (3) asset restrictions, and (4) capital-adequacy requirements. The model developed in Section II can be used to discuss the incentives--and hence the market forces--created by subsidized deposit insurance in the context of these regulatory constraints.

At present the FDIC collects from each insured bank a yearly premium of one-twelfth of one percent of all domestic deposits. Under normal circumstances, sixty percent of this amount (after operating expenses are deducted) is rebated to the banks at year's end. For this premium, which is unrelated to the bank's lending policies, each bank buys statutory protection for the

first \$100,000 of each separate domestic account. In practice, however, the protection is not limited to the \$100,000. In cases of actual bank failures, the FDIC typically arranges for all the failed-bank's liabilities--both insured and uninsured--to be assumed by some other deposit institution. This practice is tantamount to the provision of full coverage. Until the failure in mid-1982 of the Penn Square Bank, N. A., in Oklahoma City, this policy of "Purchase and Assumption" had been the norm for dealing with the failure of large banks. Full coverage has not always been extended in this same manner to the smaller banks, but such banks are less likely to have deposits that exceed the \$100,000 statutory limit on insurance coverage.⁴

The premiums actually charged by the FDIC and the coverage actually provided are too complex to allow for a simple reckoning of the effective subsidy to deposit institutions. But by pricing the insurance independent of the banks' portfolio decisions and providing coverage beyond the statutory limit, the FDIC virtually guarantees that banks' risk-taking behavior is being effectively subsidized. Moreover, even if the FDIC were to introduce a variable-rate pricing scheme for deposit insurance, public choice theory predicts that bureaucratic incentives would stand in the way of its correctly pricing risk. Representatives of individual banks and of the banking industry would lobby against errors of overpricing. But there would be no lobbying against errors of the opposite sort. Thus, the incentives for avoiding the overpricing of risk would induce the FDIC to underprice it.⁵

Estimating the impact of the FDIC subsidy in quantitative terms would require a determination of the actuarial value of the risk

assumed by the FDIC and, in turn, a calculation of the dollar value of the subsidy. But in the absence of any specific knowledge of the subsidy's actual magnitude, its impact can be discussed in qualitative terms. Even in the event that the subsidy is negative in magnitude (a possibility that is at odds with our general understanding of the relationship between the regulator and the regulatee ⁶), the qualitative discussion--with appropriate modifications--would be relevant. In fact, a demonstration of the discussion's irrelevance would require a demonstration that the pricing policies of the FDIC are undifferentiable in any systematic way from the pricing policies of competitive insurers.

The qualitative impact of the FDIC subsidy can best be modeled by considering the polar case in which full coverage is provided at no cost. In terms of Figure 1a, the depositors are insured against any losses associated with portfolio rates of return below R_c . In effect, the expected value of that portion of the distribution, which is negative in magnitude, is removed from the depositors' consideration at no cost to the banks. Had the banks paid an actuarially sound premium for the insurance, the mean rate of return to their portfolios--net of the insurance premium--would have remained unchanged. (This was the case depicted in Figure 1b.) With a subsidized insurance premium, a zero premium in the polar case being modeled, the effective mean is increased from R_m to R_s as shown in Figure 2. That is, even in the absence of any changes in the banks' portfolios, the relevant distribution of portfolio returns has been skewed to the

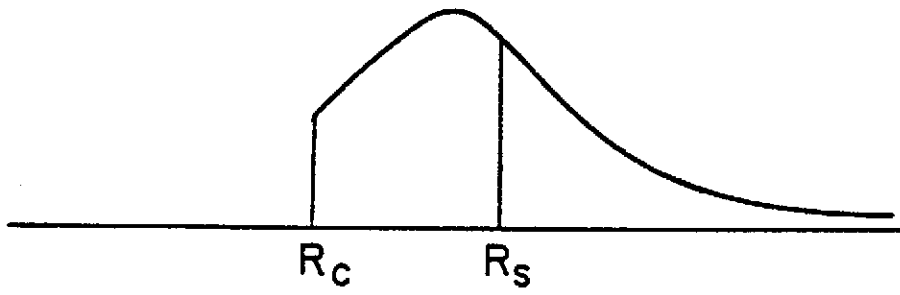


Figure 2

right and, correspondingly, the mean rate of return has been
increased.⁷

The new mean rate of return, R_s , reflects the skewness of the distribution and translates into supernormal profits to the banking industry. This is the direct effect of the deposit-insurance subsidy. To the extent that regulation prevents the individual banks from reacting to the subsidy and to the supernormal profits made possible by the subsidy, the banking industry is safer, less risky, than it otherwise would be. In effect, the FDIC insulates the banking community against market forces that could erode its capital base. The protection of the capital base and the consequent reduction of the actual number of bank failures is, in fact, the explicit objective of the FDIC. But the underpricing of the deposit insurance drives a wedge between the interests of the FDIC and the interests of the individual banks that make up the banking community. Only if these individual banks can be persuaded--or coerced--into acting in the interests of the FDIC rather than in their own individual interests, will the insulation endure through time. What remains to be shown are the specific relationships between individual regulations and the subsidy created by the underpricing of deposit insurance.

The various regulations that banks currently face, or that they have faced in the past, all have histories of their own. The actual imposition of some of these regulations may have been unrelated, or only tangentially related, to the incentives created by subsidized deposit insurance. But the purposes of the present discussion will be served if each particular regulation is treated as if its objective were to prevent the individual

banks from exploiting, or leveraging, the benefits of subsidized deposit insurance to the detriment of the banking system as a whole. (A summary of actual legislative acts from 1927 to present is provided in the Appendix.) The individual regulations can be itemized and identified in terms of the parameters of Figure 2. The following section will discuss the effects of deregulation in terms of these same parameters.

(1) Interest-Rate Ceilings. The supernormal profits made possible by subsidized insurance create an incentive for banks to bid for more funds from depositors in order to take fuller advantage of the subsidy. Regulation Q, which puts an interest-rate ceiling on bank deposits, keeps the subsidy from being passed on to the depositors as a result of this competitive process. To the extent that it can be enforced, Regulation Q holds down the cost of borrowing and hence holds down the portfolio rate of return needed to avoid bankruptcy. In terms of Figure 2, Regulation Q prevents competitive forces from nudging R_c rightward.

(2) Entry Restrictions. Those same supernormal profits attract new entrants into the banking industry. If the profit levels are to be maintained, entry must be artificially restricted. In terms of Figure 2, entry restrictions prevent new entrants from driving R_s , along with the entire distribution of portfolio returns, leftward. ⁸ It might be noted that the market forces impinging on R_c from the left and on R_s from the right are actually intertwined. More specifically, to the extent that banks can circumvent Regulation Q and thereby attract more funds

to invest, they will bid down Rs. And to the extent that new entrants increase the competition for loanable funds, they will bid up Rc. These effects would be completely absent only in the case that both Regulation Q and the entry restrictions were perfectly enforced. For heuristic purposes, however, it will be convenient to deal with Regulation Q in terms of Rc and entry restrictions in terms of Rs.

(3) Asset Restrictions. The fact that the price of the deposit insurance is unrelated to the riskiness of the banks' portfolios creates a moral-hazard problem. It is no longer in the interest of individual banks to limit their risk taking behavior to portfolios whose returns are described by the distribution in Figure 2. Banks have an incentive to assume increased risks. Asset restrictions imposed by the regulatory authority prevent banks from altering this distribution in their effort to take fuller advantage of the underpriced insurance. In effect, restrictions on assets restrain the market forces that determine the variance of the portfolio distribution.

(4) Capital-Adequacy Requirements. The distance between Rc and Rs is maintained largely by the capital base of the banking system. Because of their capital base, the individual banks can make losses without imposing costs on their depositors and without calling on the FDIC. But the insurance subsidy, along with regulations (1) and (2) discussed above, creates an incentive for the individual banks to decrease their capital-to-asset ratios. That is, if interest-rate ceilings stand in the way of attracting more funds, then the banks will take advantage of the supernormal profits by overextending their existing

capital base. This overextension will, in turn, reduce the spread between R_c and R_s for the banking system as a whole.

The conflict between the interests of the individual banks and the interests of the regulatory authority can be stated in terms of the market value of bank charters. The value of the charter, which reflects the present value of all future supernormal profits, is part of the bank's capital so far as the individual bank is concerned, but it is not part of the capital that counts towards capital adequacy so far as the regulator is concerned. The purpose of capital-adequacy requirements is to force the banker to take the regulator's point of view when making decisions that affect the bank's capital-to-asset ratio.

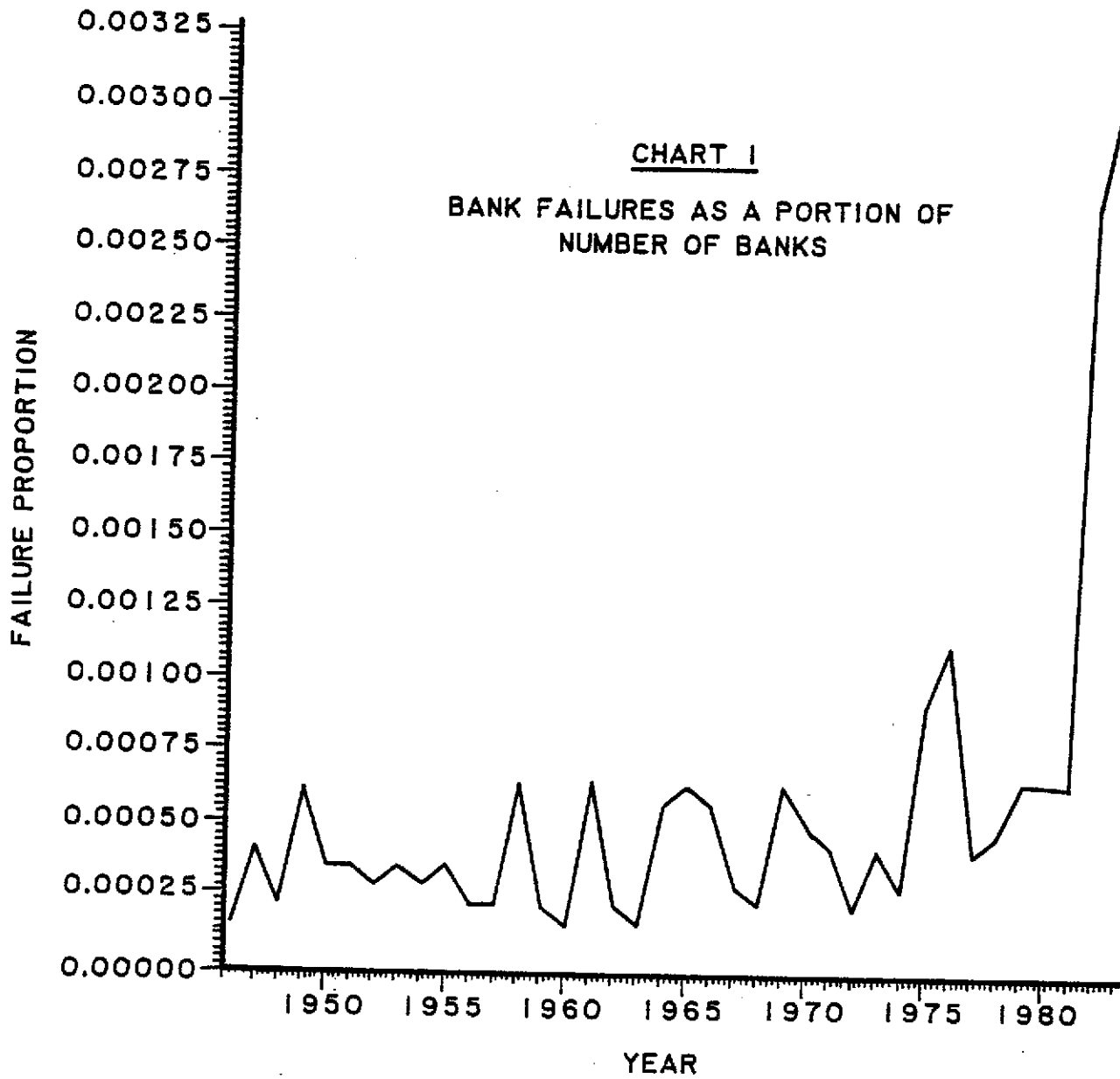
By discussing the various regulations in terms of the parameters of Figure 2, we have identified the incentives created by the deposit-insurance subsidy and the corresponding market forces kept in check by the regulations. The next step is to see what happens when some of these checks are removed in the process of deregulation. As we will demonstrate, the adjustment of the parameters to deregulation has implications about the risk (created and) assumed by the FDIC and about the long-run stability of the banking system.

IV. Subsidized Insurance Under Partial Deregulation.

The intended effect of any regulation is to hold in check some particular set of market forces. But the incentives underlying these market forces are not eliminated. In fact, to the extent that the regulation is effective, profit opportunities

that would exist--but for the regulations--will increase over time, and the corresponding incentives will grow stronger. If market participants are not allowed to respond directly to the incentives they face, then they will have an incentive to circumvent or eliminate the regulations that stand in the way. At this stage in the regulatory process, deregulation may become inevitable. The wholesale removal of all the relevant regulations, however, means an abrupt restructuring of incentives. Market forces held in check for a period of years are suddenly unleashed. While the market concerned may have been a stable one in the absence of regulation, the response of market participants to deregulation may create short-term instability. Further, if some--but not all--of the interrelated regulations are removed, the market process that adjusts the deregulated aspects of the market to the circumstances created by the remaining regulations can result in both short-term and long-term instability. This general result has a specific manifestation in the consequences of deregulating the banking industry while maintaining the subsidy on deposit insurance.

The accompanying Chart I, which traces the bank failure rate from 1946 to present, depicts the instability in a dramatic way. The divergence of this time series from its flat trend line during the last two years calls for an explanation. Although the origins of the problem can be traced at least as far back to the Banking Act of 1933, which created the FDIC, the proximate impetus can be found in developments in the business of banking over the last two decades and in the government's reactions to



SOURCE OF PRIMARY DATA: U.S. DEPARTMENT OF COMMERCE, BUREAU OF THE CENSUS

[Text to accompany CHART 1: BANK FAILURES AS A PORTION
OF NUMBER OF BANKS: 1946 TO PRESENT]

Econometric evidence corroborates the view that structural changes have occurred in the banking industry. In 1975 and again in 1982, the bank failure rate jumped dramatically. The series for the post-war period is presented in Chart 1. Prior to 1975, the series had no trend. Though the failure rate tended to increase in cyclical downturns, it declined again during the recovery. In 1975 it not only increased more than in earlier post-war cycles, but it did not revert to its old level. A statistically significant change in the failure rate occurred, with the rate moving to a permanently higher level. During the three years from 1979 to 1981, the annual rate of bank failures was higher than the failure rate which developed during the five cyclical downturns prior to the 1975 cycle. The failure rate in 1982 was more than double the 1976 rate, which had set a post-war record, and it rose further in 1983. Preliminary data on bank failures in 1984 indicate that the rate of failures will again increase this year.

these developments.

Beginning in the 1960s, rising inflation rates caused Regulation Q to become increasingly binding. The widening gap between the legally imposed interest ceiling and market-clearing interest rates created strong incentives to find ways of skirting such regulations. The result was financial innovations in various forms. The clearest and most conspicuous examples of skirting the regulations are the banks' practice of offering gifts to their new depositors as a means of bidding more for the funds that are subject to the lowest ceiling, and--more significant--the creation of a market for certificates of deposit (CD's), which were subject to higher ceilings. In addition to these domestic innovations was the growth and development of the unregulated Eurocurrency market where borrowing and lending could be transacted at market-clearing interest rates.

By the 1980s regulators and legislators began to adapt to the financial innovations. The Monetary Control Act of 1980 gave banks the authority to phase out (over a period of years) the interest rate ceilings on domestic bank deposits. This gradual process was then accelerated by the Garn-St. Germain Depository Institutions Act of 1982. By October of 1983, interest rate restrictions were removed on most domestic bank deposits.

The size of the banking industry, its collection of assets, and the cost of the funds for purchasing those assets are all now adjusting to this legislation which allowed for partial deregulation. The end result, however, will not be the one depicted in Figure 1c, where the interests of bankers, bank depositors, and deposit insurers are all brought into balance.

The result, instead, will balance the interests of bankers and bank depositors--given the insurance subsidy and the leverage made possible by that subsidy.

In dealing with the effects of regulation followed by deregulation, it is difficult to separate and categorize all the different market forces that come into play. Some regulations put checks on several different market forces; and some forces are checked by more than one regulation. All these interacting forces are able to work themselves out partly in spite of the regulation and partly because of the deregulation. Further, the legislation enabling deregulation has been spread out over time, and the market's reaction to the different aspects of deregulation requires different amounts of time. These considerations make it difficult to determine from an historical perspective--from the observation of the ongoing process--what the end result is likely to be. In order to make this problem a more tractable one, the relevant market forces can be categorized in accordance with the discussion in Section III. They will be dealt with, then, in an analytical rather than a chronological sequence. However, the relationships between the market processes discussed and the circumstances that currently characterize the banking industry should be apparent.

Figure 3a reproduces the distribution of portfolio returns depicted in Figure 2 with the lower tail added back in. The shading of the area below R_c indicates the range of portfolio returns over which the FDIC is responsible for accommodating depositors--through either a direct payout or the arrangement of

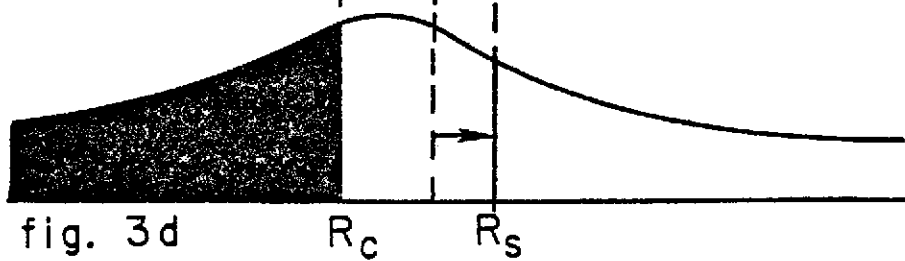
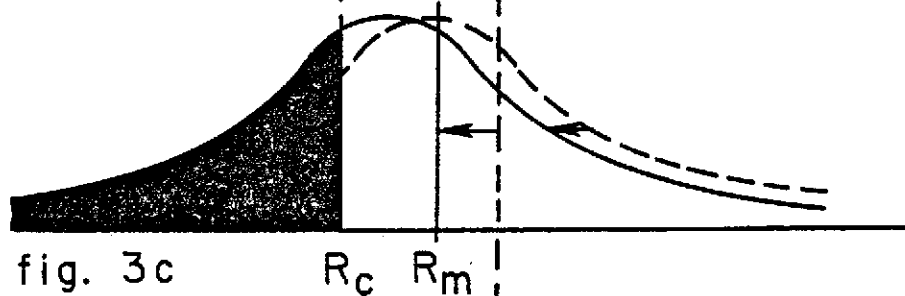
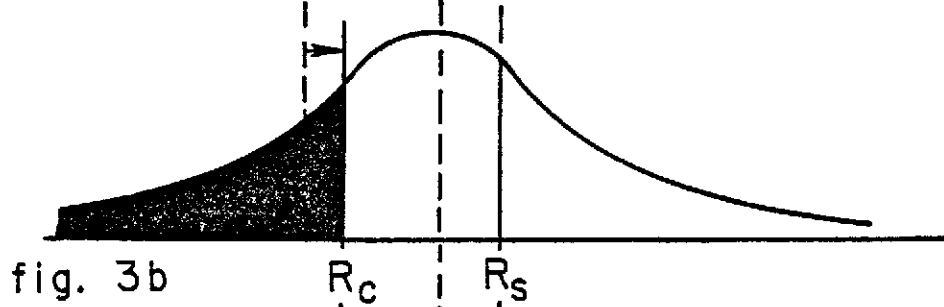
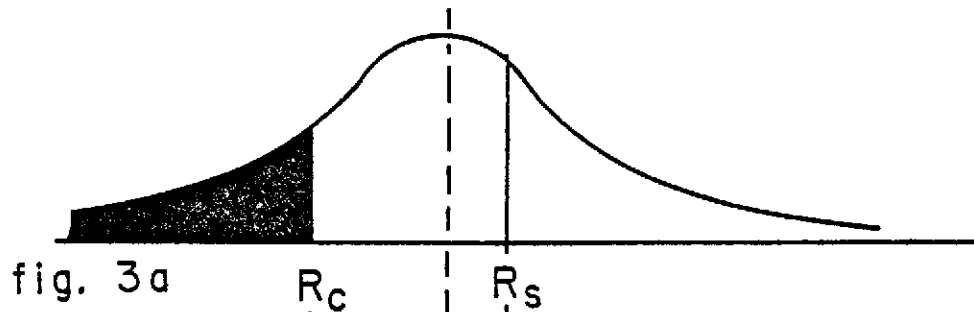


Figure 3

a Purchase-and-Assumption transaction. Because of the FDIC's assumption of this responsibility at a cost that does not depend on the banks' portfolio decisions, banks can continue to restrict their own attention to the unshaded area of the distribution. (Inattention to the shaded area does not imply that the banks are indifferent as to whether the returns to their portfolios are in the shaded or the unshaded area of the distribution. It simply implies that they are indifferent as to how the shaded area is distributed. That is, given subsidized insurance and limited liability, they are indifferent about potential losses in excess of the bank's capital. From the banks' perspective, any point within the shaded area is equivalent to R_c .) The effects of deregulation can be discussed in terms of changes in the size of the shaded area of the distribution. And the discussion of these effects can take advantage of the relationships, identified in Section III, between the various regulations and the parameters of the model.

Figure 3b shows the effect of eliminating the ceilings on interest rates that banks pay their depositors. As Regulation Q is phased out, banks bid up interest rates in their individual attempts to attract more funds. Because of the higher cost of funds, the rate of return on assets at which the banks just do survive is increased. Alternatively stated, with an unchanged capital base the now-smaller spread between interest paid and interest earned subjects the FDIC to a greater risk. In terms of Figure 3b, R_c shifts rightward, and the shaded area grows accordingly.

Figure 3c shows the effect of relaxing entry restrictions. The supernormal rates of return are made possible by artificially restricting the number of bank charters granted and by forbidding nonbank institutions from competing directly with chartered banks. The actual extent of the relaxation of entry restrictions varies from state to state since the individual states as well as the federal government have the authority to issue bank charters. But the supernormal rate of return can be competed away partly by the expansion of the banking industry itself and partly by competition from nonbank institutions, such as the money-market brokerage firms. Competing methods of amassing funds can allow nonbank institutions to bid for assets that may otherwise have been purchased by banks. The decreasing effectiveness of entry restrictions gets translated, at least in part, into decreasing rates of return to asset portfolios. In terms of Figure 3c, R_s , along with the entire portfolio distribution, is shifted leftward until the banks' rate of return on assets allows for no more than a normal rate of profit for the banking industry. A greater fraction of the entire distribution is thereby pushed into the shaded region reflecting an increase in risk exposure experienced by the FDIC.

Figure 3d shows the effect of relaxing asset restrictions. In a competitive environment, banks would tend to adopt the amount of financial conservatism consistent with the risk preferences of depositors. In a heavily regulated environment, banks come to be known as financially conservative institutions not because of their own or their depositors' risk preferences but because of the restrictions imposed by the regulatory

authorities on the banks' asset selection. Restrictions on asset selection, loan size, and credit standards have imposed binding constraints on banks' risk-taking behavior. As these aspects of banking become more deregulated, the banks become more aggressive, more adventuresome, in their asset selection.

Permitting such aggressiveness, in fact, was virtually mandated by the elimination of interest-rate ceilings and the relaxation of entry restrictions. Banks were caught in the squeeze between rising costs and falling rates of return on traditional bank portfolios. Easing asset restrictions allows the banks to increase their rates of return by taking on more risk--without paying higher rates for deposit insurance. Probably the most visible instances of such risk taking on the part of banks are the lending of venture capital for the development of alternative energy sources and the lending of large sums to foreign countries under circumstances in which the risk of default is substan-

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tial. In terms of Figure 3d, the increase in aggressiveness is represented by an increase in the variance of the distribution. Clearly the banks' chances for a high portfolio return are increased. R_s , the mean of the unshaded portion of the distribution is advanced to the right. But just as clearly the chances for a ruinous low return are increased as well. The shaded area has grown still larger.

It might be reiterated here that these effects, which have been separated graphically in Figures 3b through 3d and conceptually in the discussion of the Figures, are actually intertwined. That is, the nearly simultaneous removal of interest-rate ceilings, entry restrictions, and asset

restrictions will have both direct and indirect effects on the costs of borrowing, the price of assets, and the riskiness of asset portfolios. Lowered entry barriers, for example, may attract more adventuresome entrants who bid up the costs of borrowing in their efforts to take fuller advantage of the eased asset restrictions. Figure 3, then, is nothing more than a heuristic device for sorting out these combined effects. Also, the use of the normal curve, for which risk is measured by the variance, may seriously understate the risk that the FDIC is assuming. Subsidized deposit insurance coupled with deregulation could give rise to a shoot-the-moon investment strategy. Depending on world events and foreign affairs, the rate of return to a shoot-the-moon portfolio is likely to be either extremely high, in which case the bank profits handsomely, or extremely low, in which case the FDIC absorbs the loss. Thus, under some assumptions the distribution in Figure 3d may be a bimodal distribution with the hit-the-moon mode lying far to the right and the miss-the-moon mode lying far to the left.

Given the incentives created by the FDIC, the discussion of investment strategy rightly focuses on the behavior of the banks rather than the behavior of both the banks and their depositors. With deposits insured for a price that does not reflect risk, the depositor has little incentive to compare the investment strategies of different banks or to monitor the behavior of the bank in which his funds are deposited. The monitoring task has fallen largely to the regulatory authorities. As indicated in Section III, monitoring the banks' capital adequacy and enforcing

capital-adequacy requirements is one of the ways that the authorities may try to prevent the banks from further leveraging the insurance subsidy. Capital-adequacy requirements have not been discussed in the context of Figure 3 because this is one regulatory tool that has remained outside the gambit of deregulation. In fact, the regulation of this aspect of the behavior of banks has been stiffened in recent years as a means of partially offsetting the deregulation of the other aspects of the banks' behavior. The following section discusses this and other ways that regulatory authorities have coped--and may have to cope--with the long-term effects of partial deregulation.

V. Coping with the Long-Term Effects of Partial Deregulation

The incentives created by partial deregulation pit the immediate interests of banks against the immediate interests of the regulatory authorities. As is typical in this sort of environment, short-term expediency tends to take precedent over long-term stability. This trade-off between short-term and long-term stability can be seen in the efforts of the regulatory authorities to detect and ward off bank failures, to deal with the failures once they have occurred, and to correct the incentive structure that has given rise to the increasingly unstable banking environment. Coping with partial deregulation can be discussed under the headings of Capital Adequacy, Purchase and Assumption Agreements, Variable-Rate Insurance Premiums, and Privatization of Deposit Insurance.

Capital Adequacy. Capital adequacy is a measure of a bank's ability to withstand the losses that it potentially could incur. The standard indicator of a bank's capital adequacy is its capital-to-asset ratio. But this statistic, which leaves out of account the riskiness of the bank's asset portfolio, is a suitable measure of capital adequacy over time only if risk-taking behavior on the part of the banks does not vary over time. Thinking in terms of the parameters of Figure 3, we can judge the bank's capital adequacy more clearly by considering the variance of the portfolio distribution and the location of R_c . The greater the variance, the greater the potential losses; the further R_c lies to the right, the more likely that losses will be incurred.

Comparing Figure 3a with Figure 3d suggests that even if the capital-to-asset ratios were the same for the two cases, the latter would represent less capital adequacy than the former. Banks with riskier portfolios need higher capital-to-asset ratios. But as noted earlier, under partial deregulation, banks have an incentive to decrease rather than increase their capital-to-asset ratios.

The regulatory authorities have been aware of declining capital-to-asset ratios across the banking system. In their attempt to reverse--or at least to arrest--the trend, this aspect of banking is being subjected to stricter regulations than before deregulation. Beginning in late 1981, formal guidelines on capital adequacy were announced to replace the less formal, more discretionary, procedures that were then being used. Significantly, one of the objectives of the new capital guide-

lines was "to address the long-term decline in capital ratios, particularly those of the multinational group."¹³ This is the group of banks that have engaged heavily in foreign lending.

The formal guidelines, however, may be inconsistent with any ultimate solution to the problem. Because of the various categories of banks and their relationship to the different regulatory authorities, the actual guidelines are quite complex. The nature of the guidelines can be illustrated by considering those adopted by the Federal Reserve. Banks were divided into three groups: multinational banks, which consist of the 17 largest banks; regional banks, which consist of all other banks with more than \$1 billion in assets; and community banks, which consist of all banks with less than \$1 billion in assets. The minimum acceptable capital-to-asset ratio was set at 6% for community banks, and 5% for regional banks. It was initially unspecified for the multinationals and was presumably less than¹⁴ 5%. The inverse relationship between minimum capital-to-asset ratios and bank size would be justified if their portfolios differed only in size and not in composition. Larger banks, which automatically take fuller advantage of the pooling of risks, can make do with a relatively smaller capital base. But if the larger banks are more aggressively engaging in risk-taking behavior, such as through foreign lending, then their capital-to-asset ratios should be larger, not smaller. Further, the stair-stepped guidelines create an particularly perverse incentive for certain banks to decrease their capital-to-asset ratios. If a bank with assets just under \$1 billion fails to meet the guide-

line of 6%, it may be able to increase its assets to just over \$1 billion and meet the guideline of 5%.¹⁵

It is possible that the guidelines were tailored to match the actual capital bases of the different groups of banks at the time the guidelines were imposed. To have done otherwise, to have stipulated a capital-to-asset ratio independent of bank size or to have stipulated one that increases with bank size, would have induced major adjustments which, by themselves, could be destabilizing. It would have required the contraction of the larger banks, or invited the expansion of the smaller banks, or both. At best, the guidelines actually adopted will impede the further deterioration of the banking system's capital base. At worst, they will institutionalize an ultimately untenable set of circumstances created by the perverse incentives of partial deregulation.

Purchase and Assumption Agreements. In some cases the problem of capital inadequacy turns into the problem of bank failure. When the bank can no longer keep its doors open, the FDIC is legally bound to make good on all the bank's unmet obligations to depositors for an amount up to \$100,000 per account. But in most instances, the FDIC has provided full coverage to the depositors by arranging for the sale of the failed bank. Under its Purchase and Assumption policy, all liabilities of the failed bank, including uninsured deposits, are transferred to an assuming bank. If accomplished overnight, a Purchase and Assumption transaction avoids even the interruption in availability of funds to depositors.

Dealing with failures in this way is to the short-term

benefit not only of depositors, but also of the assuming bank and the FDIC itself. Even though the failed bank may have a negative present value net of "goodwill," the assuming bank is also the recipient of the "goodwill," an intangible asset which--especially in the case of a failed bank whose actual goodwill is minimal--reflects the discounted value of the bank charter. What the FDIC sees as negative capital value is seen by the assuming bank as positive capital value. But this difference in perspective persists only so long as entry restrictions are maintained. Thus, the FDIC's ability to meet its obligations to a failed bank's depositors by soliciting the cooperation of other banks will be diminished over time as deregulation eats away at the entry restrictions.

Further, the reliance on Purchase and Assumption agreements for a short-term solution to the problem of bank failures is likely to aggravate the long-term problem for the banking system as a whole. Figure 3d suggests that subsidized deposit insurance, coupled with deregulation, increases the FDIC's exposure to risk. If the return on asset portfolios are increasingly likely--as deregulation proceeds--to fall below R_c , and if these portfolios are absorbed, as a matter of FDIC policy, by the surviving banks, then the surviving banks are even more likely to experience returns that fall below R_c . The image that comes to mind is one of a dozen lifeboats on the high seas. All are loaded to capacity, and some have leaks. When one leaky boat sinks, the occupants are transferred into the boats that are still afloat. This short-term solution to the problem of one

sinking boat may be irresistible--in spite of its compounding of the long-term problem. In an analogous way the Purchase and Assumption policy may be maintaining short-term stability at the price of long-term instability.

Variable-Rate Insurance Premiums. The FDIC does recognize the need to deal with the problem at its root, to change the incentives that the banks face so as to decrease the banks' willingness to engage in risk-taking behavior. Accordingly, the FDIC has recommended a system of variable-rate premiums based on three risk categories: normal, high, and very high. The vast majority of the banks would be classified as normal. Banks with high exposure to either interest-rate or credit risk would be classified as high-risk banks. And banks with high exposure to both interest-rate and credit risk, or banks with dangerously low capital ratios, would be classified as very-high-risk banks. Banks in the normal category would continue to receive the full 60% rebate of the their FDIC premium as discussed in Section III; banks in the high-risk category would receive half that rebate; and banks in the very high-risk category would receive no rebate.

The most noteworthy implication of the FDIC's proposal is that the FDIC understands the nature of the problem. Solving the problem requires that the deposit insurance be priced in accordance with the risk assumed by the insurer. But adopting variable-rate premiums is just one small step towards that solution. It is analogous to the adoption of a three-tier minimum wage as a solution to the problem of unemployment caused by minimum-wage legislation. The FDIC has no way of knowing that banks should be divided into three risk categories rather than

thirteen or thirty. It has no way of gauging the actuarial value of the insured risk of each of the categories. Thus, it has no way of calculating the appropriate insurance premium or of adjusting that premium as market conditions change. At best, variable-rate premiums represent an extremely crude approximation of a market solution to the problem.

Privatization of Deposit Insurance. The proposal of variable-rate premiums points the way toward one possible long-term solution to the problem: the privatization of deposit insurance. ¹⁶ The incentive structure inherent in the provision of deposit insurance by private agencies would fundamentally reconfigure the relevant market forces. Banks would choose among competing insurers; insurers would compete with one another on the basis of the coverage offered and the premiums charged. The market test of profit and loss would allow for the establishment of actuarially sound premiums for the coverage provided. And that same market test would allow for less-than-full coverage that, while acceptable to both the banks and their depositors, would hold the problem of moral hazard in check.

The long-term consequences of privatization are those depicted in Figure 1c. With complete deregulation, including the phasing out of the FDIC, market forces could bring into balance the interests of the banks, the bank's depositors, and the deposit insurers. But to opt for this long-term solution is to worsen the short-term problem. The period over which the banking system becomes adjusted to such a radically different set of incentives would undoubtedly be a turbulent period. Hence, the

trade-off between short-term and long-term stability is illustrated once more.

VI. A Summary View.

There is no reason to believe that the banking system is inherently unstable. Nor is there reason to doubt that the regulatory authorities may be able to create a set of interlocking and counterbalancing regulations that will maintain some sort of artificial stability for a period of years or possibly decades. But the current environment faced by the banking system, an environment in which some regulatory constraints are being eased or phased out, while other restraints are being maintained or even stiffened, is neither fish nor fowl. It does not require by law that the banks operate in the public interest, nor does it create the set of incentives that would entice the banks to operate in such a fashion. This hybrid environment of regulatory constraints and market incentives will almost surely lead to long-term, or structural, instability of the banking system.

Through the decades, the critics of intervention have argued that one regulation calls for another. There seems to be no resting place short of some comprehensive set of regulations. The arguments presented in the present paper suggest that this principle of regulation applies to deregulation as well. One piece of deregulation calls for another. If structural instability is to be avoided, there seems to be no resting place short of a thoroughgoing competitive market.

Notes.

1. For an earlier effort with similar objectives and conclusions, see John A. Kareken and Neil Wallace, "Deposit Insurance and Bank Regulation: A Partial Equilibrium Exposition," Journal of Business, vol. 51, no. 3 (1978), pp. 413-52. Kareken and Wallace employ state-preference theory to show, among other things, that "under an FDIC-type insurance scheme, the banking industry holds as risky a portfolio as regulators allow...." (p. 413).

2. Strictly speaking, the vertical gap between the shaded area and the normal curve is measured in frequency units. But for our purposes, the unwillingness to insure 10 to 20 percent of the bank failures should be interpreted instead as the unwillingness to insure 10 to 20 percent of the loss associated with each failure.

3. For a thorough treatment of the stability properties of competitive banking from both a theoretical and an historical perspective, see Lawrence H. White, Free Banking in Britain: Theory, History, and Debate (Cambridge, England: Cambridge University Press, 1984).

4. Since the Penn Square Bank failure in mid 1982, the FDIC has used a modified payout approach to settle some small-bank failures. With this approach the FDIC reimburses insured depositors in full, while uninsured depositors receive less than 100 percent payout, the shortfall being determined by the FDIC's estimate of the recovery value of the failed bank. The uninsured depositors receive payouts ranging from 40 to 60 percent of the actual value of their deposits.

The FDIC's response to the problems of Continental Illinois represents a departure from the norm in dealing with large banks.

Unable to arrange a Purchase and Assumption agreement, the FDIC implemented a rescue plan under which the FDIC itself became a major stockholder of the bank. However, two months before the rescue plan was implemented, the FDIC agreed to guarantee all Continental depositors and creditors of whatever size. The willingness to extend the guarantee to depositors prior to failure and to include creditors at all was a major policy innovation.

5. The FDIC asserts that "standards should be set to minimize the extent to which errors of overpricing risk occur." See Deposit Insurance in a Changing Environment (Washington, D. C.: Federal Deposit Insurance Corporation, 1983), ch. 2, p. 5.

6. See, for instance, George J. Stigler, "The Theory of Economic Regulation," Bell Journal of Economics and Management Science, 2 (Spring, 1971), reprinted in The Citizen and the State: Essays on Regulation (Chicago: University of Chicago Press, 1975); and Sam Peltzman, "Toward a More General Theory of Regulation," Journal of Law and Economics, vol. 19, no. 2 (August, 1976), pp. 211-48.

7. This result does not depend upon any special assumptions about market structure, liability rules, or risk preferences. It follows directly from the fact that the rate of return in this analysis is reckoned net of the insurance premium: An actuarially sound premium, considerations of risk preferences aside, leaves the mean rate of return unaffected; a premium of zero shifts the mean rate to the right of the mode.

8. The potential for banks, even collectively, having this effect on the rates of return was assumed away by Kareken and Wallace: "the banking industry is a monopoly supplier of deposit services, but is otherwise 'small'...." Kareken and Wallace, "Deposit Insurance and Bank Regulation," p. 413. The question of the empirical significance of this effect is addressed by neither Kareken and Wallace nor by the present authors.

9. The manner of characterizing the banking industry is consistent with a recent assessment by John Kareken. "To deregulate further and never do anything about the FDIC would be to invite a crash." John H. Kareken, "The First Step in Bank Deregulation: What about the FDIC?" American Economic Review, vol. 73, no. 2 (May, 1983), p. 203.

10. Interest-rate restrictions still remain on bank savings deposits (5 1/2 percent ceiling), on NOW accounts of less than \$2,500 for individuals and non-profit organizations (5 1/4 percent ceiling), and on time deposits of less than \$2,500 with maturity of 7 to 31 days. (5 1/2 percent ceiling). In addition, business customers, who are not eligible to hold either NOW-account or Super-NOW-account balances, are subjected to the ultimate restriction (0 percent ceiling) on their demand-deposit balances.

11. Energy loans figured heavily in the problems of both the Penn Square Bank and Continental Illinois; major money-center and regional banks have engaged extensively in foreign lending.

12. "Casual observation indicates that [investors] are very much aware of what money market fund balance sheets are, much more aware than of what bank balance sheets are. Nor is it accidental that

funds and banks differ so in their balance sheets." John H. Kareken, "Deregulating Commercial Banks: The Watchword Should Be Caution," Federal Reserve Bank of Minneapolis Quarterly Review (Spring-Summer, 1981), p. 4.

13. Larry D. Wall, "Will Capital Adequacy Requirements Slow the Development of Interstate Banking?" Economic Review, Federal Reserve Bank of Atlanta (May, 1983), p. 47.

14. These guidelines were gleaned from Wall, "Capital Adequacy Requirements," p. 47. The Fed has recently moved to subject the multinationals to an explicit 5% requirement.

15. Wall notes this perversity in the context of holding-company expansion. "Community banking organizations that grow into regional banking organizations can meet the guidelines with 0.5 percentage points less total capital... If the guidelines are taken literally, a holding company with assets of \$950 million and the exact minimum total capital to classify as a Zone 1 community bank could finance the purchase of a \$51 million bank with debt and still emerge with total capital exceeding Zone 1 guidelines as a regional holding company." Wall, "Capital Adequacy Requirements, p. 47.

16. For a discussion of the possibility of private deposit insurance and of making the transition from FDIC to private insurers, see Eugenie Dudding Short and Gerald P. O'Driscoll, Jr. "Deregulation and Deposit Insurance," Economic Review, Federal Reserve Bank of Dallas (September, 1983), pp. 11-22.

APPENDIX

MAJOR BANKING ACTS IN THE UNITED STATES: 1927 TO PRESENT

I. The McFadden Banking Act (1927), "an act to further amend the national banking laws and the Federal Reserve Act, and for other purposes."

A. Asset Powers

- (1) to place limits on the maximum percentage of a national bank's capital and surplus invested in the obligations of one issuer or loaned to one issuer.
- (2) to allow national banks to make real-estate loans.

B. Branching

- (1) to permit national banks to acquire state banks and keep the branches if the acquisition would be lawful under state law.
- (2) to permit national banks to branch in states where such branching is lawful,
 - (a) subject to regulations limiting branching in smaller cities and towns, irrespective of more liberal state laws.
 - (b) subject to the descretion of the Comptroller of the Currency.

II. The Banking Act of 1933, "an act to provide for the safer and more effective use of assets of banks, to regulate interbank control, to prevent the undue diversion of funds into speculative operations, and for other purposes."

A. Asset Powers

- (1) to prevent member banks from being affiliated with any firm engaged in the securities business.
- (2) to establish limits on the loans made by banks to affiliates, including to holding-company affiliates.

B. Liability Powers

- (1) to prohibit the payment of interest on demand deposit accounts.
- (2) to empower the Federal Reserve Board to regulate interest rates paid on saving and time-deposit accounts.

C. Deposit Insurance

- (1) to establish the Federal Deposit Insurance Corporation (FDIC).
- (2) to require all member banks to become stockholders of the FDIC.

III. The Bank Holding Company Act of 1956, "an Act to define bank holding companies, control their future expansion, and require divestment of their nonbanking interests."

A. Definition: to control any company directly or indirectly holding 25 percent or more of two or more banks.

B. Asset Powers

- (1) to prevent bank holding companies from acquiring additional banks without permission from the Federal Reserve Board.
- (2) to prevent banks from acquiring businesses unrelated to banking (but exempting businesses "of a financial, fiduciary, or insurance nature").

- (3) to regulate the process of divestiture of nonbank assets by bank holding companies.

IV. The Bank Holding Company Act Amendments of 1970, "legislation to amend the Bank Holding Company Act so as to bring one-bank holding companies under the control of the Federal Reserve Board."

A. Definition: to retain the 1956 definition of what constitutes a permissible bank-related activity for bank holding companies (but to change the language of the definition).

B. Asset Powers

- (1) to give greater discretion to the Federal Reserve Board in determining when a company controls a bank.
- (2) to include a provision against a tie-in of services provided by banks even if the banks are not part of a holding company.

V. The Deregulation and Monetary Control Act of 1980, "an act to facilitate the implementation of monetary policy, to provide for the gradual elimination of all the limitations on the rates of interest which are payable on deposits and accounts, and to authorize interest-bearing transaction accounts, and for other purposes."

A. Asset Powers

- (1) to authorize federally chartered savings-and-loan associations to make real-estate and construction loans and consumer loans for personal, family, or household purposes; to engage in credit card operations and exercise trust powers.
- (2) to authorize federally chartered mutual savings banks to make commercial, corporate, and business loans up to \$

percent of the bank's assets within the state where it is located or within 75 miles of the bank's home office.

B. Liability Powers

- (1) to provide the orderly phaseout and elimination of interest rate ceilings on deposits and accounts as rapidly as economic conditions warrant, but within a six-year period.
- (2) to establish the Depository Institutions Deregulation Committee (DIDC) to implement the phaseout of interest-rate ceilings.
- (3) to permit all depository institutions to offer Negotiable Order of Withdrawal (NOW) accounts to individuals and nonprofit institutions.

C. Deposit Insurance: to raise from \$40,000 to \$100,000 the insurance on insured accounts provided by the Federal Deposit Insurance Corporation (FDIC), the Federal Savings and Loan Insurance Corporation (FSLIC), and the National Credit Union Share Insurance Fund (NCUSIF).

VI. The Garn-St. Germain Depository Institutions Act of 1982.

A. Asset Powers

(1) Banks

- (a) to raise the lending limits of member banks on loans not fully secured from 10 percent to 15 percent of unimpaired capital and surplus. (An additional 10 percent of capital may be lent to the same borrower if the loan is fully secured.)
- (b) to eliminate or modify restrictions on real-estate

lending by national banks in favor of limitations established by the Office of Comptroller of the Currency (OCC), and to eliminate restrictions on national banks' acting as real-estate brokers.

- (c) to allow one or more banks, even though not members of a holding company, to form a bank-service corporation to provide services to banks or non-banks, and to establish limits on the percentage of capital and assets of banks so invested.
- (d) to amend the Bank Holding Company Act to state that the provision of insurance as a principal, agent, or broker is not "a closely related banking activity," and to make certain exceptions to this prohibition.

(2) Savings and Loans

- (a) to authorize commercial loans up to 10 percent of their assets.
- (b) to authorize non-residential real-estate loans up to 40 percent of their assets.
- (c) to authorize consumer loans up to 30 percent of their assets.

- B. Liability Powers: to enable all depository institutions to offer a money market deposit account "directly equivalent to and competitive with money market mutual funds."
- C. Geographic Deregulation: To enhance FDIC and FSLIC powers to deal with troubled financial institutions by, among other things, permitting them under limited circumstances to effect interstate and cross-industry mergers.