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DISSERTATION

AN EVALUATION OF THE IMF BEST-PRACTICE DEPOSIT INSURANCE SYSTEM: LESSONS FROM THE UNITED STATES EXPERIENCE

Submitted by

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In partial fulfillment of the requirements

for the Degree of Doctor of Philosophy

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COLORADO STATE UNIVERSITY

November 2, 2000

WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY AHMED MOHAMMED ALSALEM ENTITLED AN EVALUATION OF THE IMF BEST-PRACTICE DEPOSIT INSURANCE SYSTEM: LESSONS FROM THE UNITED STATES EXPERIENCE BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

Committee on Graduate Work

Adviser

Department Head

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ABSTRACT OF DISSERTATION
AN EVALUATION OF THE IMF BEST-PRACTICE DEPOSIT INSURANCE SYSTEM: LESSONS FROM THE UNITED STATES EXPERIENCE

Many countries have experienced slow economic growth as a result of financial instability. In response to this problem, many countries have established deposit insurance systems (DIS). However, deposit insurance systems often suffer from three fundamental problems moral hazard, adverse selection, and the agency problem. Any well-designed DIS must seek to minimize these problems.

As an international lending institution, the IMF is concerned with the problem of financial instability, and its preferred solution has been the creation of DIS. Gillian Garcia of the IMF has proposed a model for a best-practices DIS which IMF authorities have adopted for countries that are about to establish such a system. However, the Garcia- IMF model is based only on post-1991 U.S. experience and recent experiences of other countries. It omits the long and rich pre-1991 experience of the individual U.S. states, the FSLIC, NCUSIF, and pre-1991 FDIC.

When the Garcia-IMF model was applied to all countries that have explicit DIS, the results were unrealistic. Countries with well-developed financial systems were rated as "poor", and countries with less-developed financial systems were rated as "good". When the model was applied to the pre-1991 U.S. bank insurance programs the results

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were again unrealistic because successful programs were rated as "poor" and less successful programs were rated as "good".

This dissertation identified the institutional features that were responsible for the success of certain U.S. bank insurance programs, such as those of Indiana, Ohio, and Iowa. These factors are proposed as essential features of a best-practice DIS.

When the proposed model was applied to all countries having an explicit DIS, the results were realistic: DIS rated as "good" were found only in countries with well-developed financial systems, and DIS rated as "poor" were found mostly in countries with less-developed financial systems. When the model was applied to the historical U.S. data, the results were again realistic: programs rated "good" were those known to be the most successful, and programs rated "poor" were those known to be failures.

A modified Garcia-IMF model incorporating the factors identified in this research would better address the fundamental problems of DIS. Such a model would be of value to any state or country instituting or re-structuring a deposit insurance system.

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To my parents:

My father, who passed away a short

time before I finished this dissertation; and my dear mother.

May Allah reward them for their support and prayers.

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CHAPTER ONE

INTRODUCTION

The stability of the financial sector is essential to the long-term growth and development of an economy. The Russian economy, for example, has recently experienced slow growth as a result of its ongoing financial instability. This instability has induced both the International Monetary Fund and the World Bank to provide assistance to Russia in an attempt to restore it to a path of economic growth. Other economies, including that of the United States, have in the past faced significant financial instability and collapse. In the early 1930s, the U.S. experienced bank runs. Lacking an international lending institution, the government's response to this instability was the creation of the Federal Deposit Insurance Corporation in 1933.

Many countries have followed the lead of the United States, and during the last two decades numerous countries have adopted deposit insurance. Though governments have taken other measures, such as imposing strong regulation and supervision on the banking system and providing liquidity to illiquid banks, the creation of deposit insurance has been the most noticeable action taken as a solution to financial instability. In the 1990s, 31 countries established deposit insurance schemes (Garcia 1999, 15), and it is expected that more and more countries will adopt a deposit insurance system (DIS) in the near future. But it has long been recognized that any DIS has problems that need to be

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resolved in order to have a system that adequately balances costs and benefits of deposit insurance. The fundamental problem is that deposit insurance may encourage moral hazard-increasing risks that exacerbate the long-term problem of financial instability while attempting to correct short-term problems.

Gillian Garcia of the IMF provides a list of fifteen factors which are important in a best-practice DIS under normal conditions. These are:

> 1) Avoid incentive problems; 2) Define the system explicitly in law and regulation; 3) Give the supervisor a system of prompt remedial actions; 4) Ensure that the supervisor resolves failed depository institutions promptly; 5) Provide low coverage; 6) Make membership compulsory; 7) Pay deposits quickly; 8) Ensure adequate sources of funding to avoid insolvency; 9) Risk-adjust premiums; 10) Organize good information; 11) Make appropriate disclosure; 12) Create an independent, but accountable, DIS agency; 13) Have bankers on an advisory, not the main, board; 14) Ensure close relations with the lender of last resort and the supervisor; and 15) Begin an explicit, limited DIS when the banking system is sound. (Garcia 1999, 9)

The factors quoted above have been adopted by IMF staff in advising member countries that have or are about to have a DIS, and countries that apply more of these factors are considered to have a better DIS than countries that apply fewer of the factors. Moreover, in her comparison of the Kyei survey (1995) and the Garcia survey (1999), Garcia concludes that countries are moving toward best-practice DIS as they switch from voluntary membership to compulsory membership, and as more DIS are backed up and controlled by the government.

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Statement of the Problem

Garcia develops her best-practice model from the experience of the post-1991 U.S. and other countries. She omits the extensive experience of the individual states in the U.S., as well as credit unions, savings and loan institutions, and, for the most part, pre-1991 versions of the Federal Deposit Insurance Corporation (FDIC). This raises the question: When we examine other experiences with DIS not covered by Garcia's study, do they lead to the same conclusions about what constitutes a best-practice DIS?

This study will review the Garcia-IMF model and evaluate the model in light of historical experiences in the U.S. A set of best practices will then be developed and compared with those presented by the Garcia-IMF model.

Hypotheses of this Research

The central claim of this research is that, by adopting certain institutional features, namely those factors that were behind the success of certain U.S. bank insurance programs, such as those of Indiana, Ohio, Iowa and the National Credit Union Share Insurance Fund (NCUSIF), we should arrive at the best-practice DIS. The factors that promote a best-practice DIS are grouped in the following hypotheses:

H1: *Bankers should be on the board of directors of the DIS.* Bankers' participation on the board of directors would help in monitoring member banks more closely, and in more efficient ways, thus reducing the risks to the Deposit Insurance Fund, especially when bankers possess full enforcement powers.

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H2: *The insurance fund should come from the member banks.* By depending on the members' funds, not on its own funds, the DIS would be able to utilize the huge resources of the banking system to control any financial instabilities in a very short time and in an efficient way. Moreover, the DIS would provide strong internal supervision, under which each insured bank would conduct only safe activities, as a way to save its own funds.

H3: *A high level of coverage is necessary.* High coverage would prevent bank runs during any financial crisis, because only a small portion of depositors--large deposit customers--would run to their banks and withdraw their deposits. The majority of bank customers would leave their funds on deposit, and that would support the financial system and enable it to overcome the panic.

H4: *The government should not provide a back-up fund.* Lack of a government back-up fund would help in minimizing government intervention in DIS decisions, such as practicing forbearance, and would prevent banks from relying on government support. This would make the banking system independent from any unwise decisions that are usually based on political situations rather than economic conditions.

H5: *Membership should not be compulsory.* Compulsory membership is not the right solution for the adverse selection problem, because in this case good banks subsidize bad banks, and the use of risk-based premiums requires an ideal financial system, which is not available in most countries of the world. Thus the best solution for the adverse

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selection problem is to establish a well-designed DIS by applying excellent regulations and supervision.

Methodology

To test the validity of these hypotheses, this dissertation begins with the Garcia-IMF model. Those countries that have an explicit DIS will be categorized into three groups: those with good, average, and poor DIS. Next, the experiences of the U.S. insurance programs will be categorized according to the same scheme to determine which systems fit the IMF best-practice definition. If the Garcia-IMF model is indeed a best-practice DIS, then the U.S. experiences should also be accurately categorized. If not, this implies that the Garcia-IMF model should be revised in light of the U.S. experiences. Thus, the success or failure of the U.S. insurance programs will be used to confirm or negate each of the hypotheses of this dissertation. For instance, my hypotheses predict that programs with bankers on the board of directors should be more successful than programs controlled by government authorities; that programs that depend on their own funds should be more successful than programs that depend on government funds; and that programs with high coverage should be in a better position than programs with low coverage.

The fundamental deposit insurance problems will be discussed in the second chapter, covering all three problems that can affect any DIS negatively: moral hazard, adverse selection, and the agency problem. Each of these three problems will be examined and the literature reviewed.

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The third chapter will discuss the Garcia-IMF model, concerns about this model (since it is mainly based on the post-1991 U.S. deposit insurance experience and recent programs in some other countries), application of this model to all countries that have an explicit DIS, categorization of world DIS into three different groups, and suggestions on how the Garcia-IMF model needs to be improved.

The fourth chapter is devoted to the history of the U.S. state bank insurance programs. First, six 19th century state bank insurance programs are described, beginning with that of New York (1829-1866) and ending with the Iowa program (1858-1866). Second, eight early 20th century state bank insurance programs are described, beginning with that of Oklahoma (1908-1923) and ending with the Washington program (1917-1929). In reviewing these histories, this chapter focuses on the factors that played a significant role in determining the success or failure of the programs, and their relevance to this dissertation's five hypotheses.

The fifth chapter will review the three federal insurance programs: the Federal Deposit Insurance Corporation (FDIC), created in 1933 to insure deposits at banks; the Federal Saving and Loan Insurance Corporation (FSLIC), started in 1934 to insure deposits at saving and loan institutions; and finally the National Credit Union Share Insurance Fund (NCUSIF), started in 1970 to insure shares at credit unions. The significant factors in the performance of these programs are analyzed and discussed in the light of the five hypotheses.

The sixth chapter is devoted to the lessons to be learned from the history of these bank insurance programs. The discussion will review the factors which were found to

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determine success or failure of the programs, in relation to the factors specified by this dissertation's hypotheses: the structure of the board of directors, funding, coverage, back-up and membership. This chapter also presents an evaluation of the Garcia-IMF model and a modified proposal for the best-practice DIS, which is based on the successful U.S. insurance programs. It covers the application of the modified best-practice DIS (this study's best-practice DIS) both to countries that have an explicit DIS and to the pre-1991 U.S. insurance programs, and concludes that the Garcia-IMF model should be modified.

The seventh chapter contains a summary, conclusions and recommendations of this study for future research.

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CHAPTER TWO

THE FUNDAMENTAL PROBLEMS OF THE DEPOSIT INSURANCE SYSTEM

There are three fundamental problems that can affect any DIS negatively: moral hazard, adverse selection, and the agency problem. In this chapter each of these problems will be examined.

Moral Hazard

Moral hazard is a non-optimal allocation of resources resulting from the differences between private marginal cost and social marginal cost caused by an insurance system effect (MIT Dictionary of Modern Economics 1995, 291). According to the economic agency theory, the moral hazard phenomenon arises because when agents are involved in different interaction relationships, each agent will try to maximize his own outcome (Ramakrishnan and Thakor 1982, 1). More simply, moral hazard is "the tendency of insurance protection to alter an individual's motive to prevent loss" (Shavell 1979, 1). In a banking system, moral hazard happens when an insured bank's management realizes that in conducting risky activities only their bank will gain a benefit, and in case of loss, other insured banks will share the loss with them. Furthermore, bank management may conduct risky activities when they believe bank runs

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are less likely to happen. Bank customers themselves will have less incentive to shop to find the best bank management to put their deposits in or get their loans from; instead, they will choose their bank based on irrational measures. Supervisors, as well as politicians, may also be affected by moral hazard. For example, supervisors might not be serious about solving any bank problem if they know that such problems would not create great financial instability in the system as a whole. A politician may find the insured banking system a good environment in which to influence supervisors' decisions.

Moral hazard was one of the main reasons behind the failure of the deposit insurance systems of New York, Vermont, Michigan, eight other state insurance programs, and the FSLIC. White (1989) argues that management of insured banks would be subject to moral hazard behavior since their responsibility is limited to their banks' net worth. Moreover, Barth, Bartholomew, and Labich (1989, 42-43) show empirical evidence that moral hazard was behind the 1980's thrift failures and that thrifts undertake riskier activities as their capital declines. According to Flood (1992), as long as fixed rate deposit insurance exists, bankers will practice moral hazard by conducting more risk and investing in risky portfolios which have high probability of high return; this is the main reason for the high rate of bank failures. Flood concludes that bankers operating with high risk should pay a higher premium than conservative bankers.

Chan, Greenbaum, and Thakor point out that many writers think of the fixed premium structure as a good reason for depository institutions to go into riskier activities, and that using risk-based premiums is the solution. However, they agree that using a risk-based deposit insurance system requires more information to be collected by the deposit

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insurer. Some information about insured institutions may be regarded as private information, such as information about asset portfolios. It is true that insurers may be able to get such information by applying some kind of intensive examination; however, such an examination will be costly since there will always be information differences between insurer and insured institutions. Furthermore, increasing worldwide competition together with recent deregulation schemes will make any risk premium application more difficult. Finally, they argue that moral hazard can be handled only if the insurance agency has enough power and the ability to enforce its rules against depository institutions that conduct risky activities. (Chan, Greenbaum, and Thakor 1992, 1-3, 17).

Giammarino, Lewis, and Sappington note that the current deposit insurance system's main problem is using fixed-rate premiums, and not relating insurance premiums to the risk. However, they add that if the bank risk level can be calculated correctly, then a risk-adjusted premium is an optimal solution for the moral hazard problem. However, there are two problems for this option. First, some information that is needed to determine bank's risk level is not easily available through monitoring procedures, so bank directors will always have more information about their bank risk than any outside parties. Second is "the change in investment incentives that accompany its implementation" (Giammarino, Lewis, and Sappington 1993, 1-3).

According to Arnott and Stiglitz, not providing full coverage will minimize moral hazard since individuals still have an incentive to be more careful to avoid loss. They add that moral hazard exists since most insurance agencies are unable to monitor the behavior

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of the insured. However, some other parties, such as the insured family, can monitor the insured's behavior in a more efficient way, which they call "peer monitoring". They also argue that peer monitoring is an essential technique for solving moral hazard. In this paper they provide a simple moral hazard model under the assumption that there are non-market insurance sources (such as friends and relatives) besides market insurance. They describe two extensive cases: one in which non-market parties have more information than the market, and another in which non-market parties have less information than the market. They conclude that when non-market parties have more information than market parties and are able to monitor each other effectively, peer monitoring will be optimal and moral hazard will be minimized. On the other hand, when non-market parties have equal or less information than market parties then the peer monitoring technique will be dysfunctional and moral hazard will be present, resulting in lowering welfare (Arnott and Stiglitz 1991, 1- 2, 11). In a banking system, the peer monitoring technique can be used when bankers themselves are on the insurance agency board of directors, because bankers are in a better position to monitor their co-bankers than are insurance agencies.

Grossman argues, based on the balance-sheet data, that moral hazard started after the thrifts had been insured for several years, and that during the first year of newly insured thrifts, those thrifts conducted less risky activities than uninsured thrifts. He notes that, the sudden rise in the interest rate in early 1980 was behind the collapse of many saving and loan institutions. This rise induced savings and loans to practice moral hazard as a way of overcoming that problem, especially in situations where they lacked supervision and regulation enforcement. Further, he argues that with deposit insurance,

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moral hazard may exist because financial institution management does not bear the risk of its actions, and customers do not ask for high returns for their deposits under this risk-taking management because their deposits are insured. Finally, Grossman tested moral hazard empirically, and concluded that institutions operating under strict regulation and supervision (such as that in Wisconsin) conducted fewer risky actions than did those institutions operating under less strict regulation and supervision (such as those in Illinois). In addition, institutions which were under federal charter conducted less risky actions than institutions that were state-chartered (Grossman 1992, 12-13, 17-20).

According to Darrough and Stoughton, the main reason for moral hazard is the separation in time between investment decisions and financing decisions. Where the former happen first and are followed by the latter, they argue that moral hazard and adverse selection constitute two situations in which the agency problem may occur. Moral hazard can exist when the agent's action is undetectable and has a different outcome (value) to the agent than to the principal. This paper studied the "moral hazard-cum-adverse selection" problem within corporate finance by examination of a debt \ equity financial market framework assuming positively correlated means and standard deviation (Darrough and Stoughton 1986, 1-3, 12). The main goal of the paper was to offer an equilibrium where moral hazard and adverse selection are present and external financing is justified. They concluded that "the diversity of capital structure commonly observed can be reconciled as a natural response to the presence of heterogeneous investment opportunities and the delegation of financially relevent actions to the manager (or entrepreneur)" (Darrough and Stoughton 1986, 3).

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Wheelock and Kumbhakar noted that a large number of economists agree that federal deposit insurance was behind the difficulties of banks and savings and loans in the 1980's. The support of risk-taking institutions played a significant role in the rise of moral hazard, when insured institutions found it optimal to go into more risk-taking behaviors. Furthermore, in the highly competitive and deregulated financial market of recent years, many insured institutions are forced to practice moral hazard, which results in a high failure rate.

In the same paper, Wheelock and Kumbhakar stated that the Kansas deposit insurance system tried to eliminate moral hazard and adverse selection problems by applying strong regulations and a supervision system such as pre-admission inspection for all banks. In addition all member banks were required to maintain certain ratios, such as a capital and deposit (plus surplus) ratio, and an undivided profit to total capital ratio. However, they conclude that the Kansas system still faced moral hazard and adverse selection problems, because high risk banks joined the system first. Furthermore, they found that insured banks were less capitalized because the total capital / total assets ratio was higher among nonmember banks than among member banks, which indicates moral hazard among insured banks (Wheelock and Kumbhakar 1995, 1-4, 14-15).

Shavell maintained that two solutions for moral hazard have been suggested by economists: providing partial coverage, and "observation by the insurer of the care taken to prevent loss" (Shavell 1979, 1). By providing only partial coverage, the beneficiary still has a probability of financial loss whenever loss occurs, which will induce him to avoid risk. If the insurer uses the "observation" technique, the beneficiary has a

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probability of paying high premium due to his previous behavior and that will definitely increase his motivation to avoid risk.

Shavell examined moral hazard under two different assumptions: first, when individual behavior to avoid risk is not observed, either due to high cost or difficulty of observation; and second, when individual behavior is observable. He concluded that under the first assumption the optimal solution for the moral hazard problem is not providing full coverage, and under the second assumption the optimal solution for moral hazard is providing full coverage (Shavell 1979, 1-2, 6,13).

Marshall defined moral hazard as "any misallocation of resources which results when risks are insured with normal insurance contracts and only with such contracts" (Marshall 1976, 1). Normal contract means that the insurance agency should pay a certain amount to the beneficiary whenever loss occurs regardless of his behavior regarding risk. Moral hazard arises because such a contract is unable to accomplish an optimal allocation of resources. Marshall studied moral hazard using two models, one when probability of loss is fixed, and the other when probability of loss is variable. His conclusion is that a contract that is price sensitive to probability of loss is more likely to make a better allocation of resources (Marshall 1976, 10-11).

According to Holmstrom "asymmetry of information" is the origin of the moral hazard problem, since individual behavior regarding risk is unobservable by the insurer. "A natural remedy to the problem is to invest resources into monitoring of actions and use this information in the contract" (Holmstrom 1995, 1). Though perfect monitoring could be attainable in simple cases, it is either not attainable or expensive in most cases.

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He concluded that when moral hazard is present and perfect observation of indivduals is impossible, it is recommended to consider the existing information as a way to improve the contract. Maximizing the use of any available information about the individual behavior is beneficial, since more information about the beneficiary will definitely help in getting a good opinion that can result in an optimal contract (Holmstrom 1995, 13).

To create the best-practices deposit insurance program, this problem should be eliminated or at least minimized. A strong regulatory and supervisory system is needed to prevent bank management from conducting risky activities which may increase the chances for loss to the DIS.

Adverse Selection

This significant problem can affect any insurance program. In banking insurance systems, adverse selection problems occur when only the weak banks join the program and the sound banks do not. In this case, an insurance program would be built on a group of unhealthy banks, and its funds would be exhausted in a very short time. This would definitely lead to failure of the insurance program. The adverse selection problem was behind the failure of most of the unsuccessful U.S. insurance programs. The Vermont insurance program, for example, experienced an adverse selection problem when only weak and risky banks joined the program (Calomiris 1989, 9).

According to Mayers and Smith, the adverse selection problem is another type of "lemons" problem, first introduced by Akerlof in 1970, and is a result of informational differences between the insurance provider and the beneficiary. In addition, they believe that when a group premium reflects the different histories of beneficiaries and relates to

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their probability of loss, then that premium will be too high for individuals who have a low probability of loss and too low for individuals who have a high probability of loss. Consequently only individuals with high probability of loss will find it optimal to buy that insurance policy, resulting in adverse selection. Further, mandatory membership in a group insurance policy will solve the adverse selection problem only if each member's average risk is equal to all members' average risk. Mayers and Smith suggest a renegation contract as a low-risk solution for the adverse selection problem. In this contract, the insurance agency keeps adjusting the beneficiary's premium according to its behavior; however, this solution is practical only when the insurance agency is able to obtain and monitor their policyholders' information. Finally, this paper is in favor of a group insurance policy as long as the following three circumstances exist: "(1) when information asymmetry is greater, (2) when employers' incentive to monitor the employee purchase of insurance is greater, and (3) when the heterogeneity of demand for insurance within the group is less" (Mayers and Smith 1981, 13-14, 18).

The adverse selection problem arises whenever the agent's information exceeds the principal's information (Darrough and Stoughton 1986, 1). In a banking deposit insurance system it happens whenever a bank (agent) has more information about itself than the deposit agency (principal). Only weak banks join the system and good banks stay away from it. If the deposit agency has the same information that each bank has, this problem could be eliminated by making membership compulsory for all banks and making each bank pay an assessment that reflects its level of risk. However, that can only happen in an ideal world and not in the real world, where there will be differences

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between the information that the bank has and the information the deposit agency has. Furthermore, in the current vast banking system with today's possibilities for instant communication, the level of any bank's risk can change each second, and it is costly for any deposit insurance system to follow up with banks and determine each bank's level of risk.

According to Watt and Vazques if separating contracts is possible then it will provide an optimal equilibrium for the adverse selection problem and is more practical than any applicable "pooling equilibria"--when the same contract applies for all beneficiaries. Their concluding recommendation is the best that can be obtained from the adverse selection literature. In this paper, they elaborate on the differences between two potential solutions for the adverse selection problem, when two insurance contract arrangements are offered under the assumption that all insurers expected profit to be zero, and all information is public. The first optimal contract is the "standard separating equilibrium contract menu" based on the classic model offered by Rothschild and Stiglitz in 1976. The second is the updating model that reflects the beneficiary's previous history and provides full coverage, which they call the "Bayesian contract". They showed that risky beneficiaries would prefer the second contract, since that contract would give them higher expected utility than the first. Furthermore, they reach the same conclusion for low-risk beneficiaries (Watt and Vazques 1997, 1-3,11).

Though applying one contract for all agents is repeatedly mentioned as a "partial" remedy for the adverse selection problem, Smith and Stutzer argue that a pooling equilibria contract is not the complete solution for adverse selection since this type of

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contract is not optimal for all agents, and low risk agents would have to "bear risk" (Smith and Stutzer 1990, 17).

Though information asymmetry occurs in both adverse selection and moral hazard problems, in adverse selection it exists prior to setting the contract while in moral hazard it occurs after setting the contract (Hart and Holmstrom, 1986). Moreover, Hagerty and Siegel conclude that the previous difference "does not necessarily lead to any difference in the mathematical programs that describe the respective contracting problems" (Hagerty and Siegel 1988, 4).

In order to establish the best deposit insurance program, the problem of adverse selection should be eliminated. However, by making participation in the insurance program mandatory, and using risk-adjusted premiums, this problem may be resolved only temporarily. It is true that voluntary DIS are subject to the adverse selection problem: however, it is not true that compulsory membership is the remedy, because a poor DIS most likely will stay poor, and healthy, sound banks would pay for the mistakes of badly managed banks. However, a well-designed DIS would be less likely to face this problem, since all banks would insist on being insured in order to obtain public confidence and to increase their profits. So compulsory membership is not the right solution for the problem. This problem is closely connected to the other DIS problems, and when we solve problems such as moral hazard and the agency problem, the problem of adverse selection will also be resolved.

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The Agency Problem

This problem occurs whenever an agent pursues his or her own interests rather than the interests of the people he or she represents. In a bank insurance program this may happen when an insurance agency puts its own interests first and the interests of taxpayers and depositors second. For example, allowing troubled banks to stay in business increases the cost of resolving a bank failure later. In the case of the FSLIC, this problem was the main reason for failure, because the Federal Home Loan Bank Board (FHLBB), the agency that controlled the FSLIC, allowed troubled savings and loan institutions to stay in business a long time before taking corrective action, thus incurring higher losses for taxpayers and depositors. According to Kane, the FSLIC created an agency problem when they issued the 1982 decision that eased capital requirements as a way to keep insolvent institutions in business, which led to increased resolving costs later. Moreover, Kane claims that deposit insurance authorities may promote the agency problem by delaying the closing of insolvent deposit institutions, since such action will show that those authorities have a poor regulatory system (Kane 1989, 9, 15). Further, Barth, Bartholomew, and Labich note that due to a shortage of funds, many insolvent institutions were allowed to stay in business a long time before any corrective action was taken (Barth, Bartholomew, and Labich 1989, 35).

According to Gjesdal, the principal-agent model represents the externality that exists whenever agents make decisions based on their judgment and see to their own interests without paying any attention to other people who are affected by their actions. He argues that when full information about agents' actions or behavior toward risk is

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impossible, it is recommended to use the available information even though it is not perfect. He concludes that information is a potential solution for the agency problem "if the probabilities of the signals received from the information system are influenced by the choices made by decision makers" (Gjesdal 1982, 14). Finally, when choices made without using information are inefficient, making those choices using information will result in an optimal improvement (Gjesdal 1982, 1.14).

Shleifer and Vishny argue that the origin of the agency problem is that the people who own a firm do not usually control it. Their paper deals with the legal protection for financial contracts. People who invest money want to make sure that their money plus a profit will return to them. The only way to assure that investors get what they deserve is by applying the "corporate governance" technique, such as creation of a legal shield by the authorities to protect investors (Shleifer and Vishny 1997, 5, 38).

According to Haugen and Senbet the agency problem is closely related to the asymmetry of information problem, and both of them get considerable attention in finance. Well-known writers in this field argue that in order to shape the financial structure of a firm, the costs associated with those two problems should be eliminated or minimized. The first priority of their paper is to examine the agency problem and the asymmetry of information at the same time while trying to find one solution that maximizes the entrepreneur's expected outcome and makes the cost of these two problems minimal. After jointly examining the agency problem and the asymmetry of information problem, they concluded that agency costs can be reduced by using an "appropriate financing package offered by the manager" that provides equity ownership

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for the manager and suggests that the manager consider the entrepreneur's portfolio. Finally they note that although the solution they propose for the agency problem and information asymmetry problem is optimal, it is not costless (Haugen and Senbet 1979, 1-4, 21-22).

Carlos argues that the ability of the agent to pursue its self-interest first, and the interest of the principal second, has shaped much of the recent literature about the agency problem. The main reason that the agent could operate in this way is asymmetry of information (or uncertainty), in that agent and principal do not have the same information. This type of environment also helps produce moral hazard and adverse selection. To minimize the agency problem, the principal should arrange a contract that enjoins the agent to pursue the firm's interest first and its own interest second (Carlos 1992, 1.5). Carlos and Nicholas examined the agency problem that occurred in one of the oldest companies in the world, the Hudson's Bay Company (which was started in 1670). This company was chartered in England as a "joint-stock, limited-liability" company to operate in the overseas trade field. The Hudson's Bay Company's main office was in London and its operation area was in Canada. The main office employed managers to oversee its operation in Canada. Carlos and Nicholas viewed those managers in Canada as the agents, and the directors of the head office as the principal (Carlos and Nicholas 1990, 4).

As a multinational company, the Hudson's Bay Company experienced two main problems that played a significant role in the emergence of an agency problem. The first problem was the separation in distance between principals and agents; the second

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problem was the separation between control and ownership. The company itself tried to solve the agency problem by following three different strategies. First, a "formal contract structure" was instituted, which provided a decent financial income for its employees, and required managers to "take an oath swearing that they would not engage in private trade and reinforced their oaths by requiring that the managers post large bonds that would be lost if the person was found to have engaged in private trade" (Carlos and Nicholas 1990, 22). Second, the company instituted direct and strict monitoring for its managers (agents) such as searching their baggage, shipments, and ships that left or returned from their location, and using "internal control mechanisms" whereby each manager's treading actions could easily be monitored. Third, "social structures" were established, whereby all employees worked as one family. Hence, by providing a good financial and social environment in addition to applying a strong monitoring system, the Hudson's Bay Company overcame the agency problem by the end of the eighteenth century (Carlos and Nicholas 1990, 5, 22-23).

Hermalin and Katzl studied the outcome of contract renegotiation in principal-agent relationships and showed that such renegotiation will affect the agent's behavior in carrying out principal orders, and will also affect the cost of fulfilling such orders. Further, they stated that contract renegotiation would give both parties the opportunity to make good use of risk sharing in the case of an unverifiable signal being present. They concluded that even when a principal receives an unverifiable signal regarding an agent's behavior, renegotiation will increase welfare. However, this conclusion contrasts with the

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findings of Fudenb and Tirole (1990) that such renegotiation decreases welfare rather than improving it (Hermalin and Katzl 1991, 4,18).

To establish the best deposit insurance program, the agency problem should be avoided by resolving any failing bank's problems immediately. However, regulators may not be able to react quickly if there is a fund deficiency; therefore, the deposit insurance fund must be large enough to cover any failed bank's debt immediately. To create faith in a deposit insurance program, insured members should back up a deposit agency fund, as was done in Indiana, Ohio, Iowa, and the NCUSIF.

In summary, the above three items--moral hazard, adverse selection, and the agency problem--are the essential problems that any DIS may face. In order to create a best-practice DIS, those problems should be eliminated or at least minimized. For example, by allowing bankers to participate on the board of directors, moral hazard will be resolved since that board will monitor member banks more closely and in a more efficient way, and that will induce bank officials to conduct less risky activities, which will improve the banks' confidence in the DIS, and, as a result, the adverse selection problem will be resolved when healthy banks also seek membership in that system. On the other hand, depending on member banks' funds will provide the DIS with enough funds to resolve any troubled banks immediately, so that the agency problem will be minimized. Moreover, absence of government back-up will minimize government intervention in the DIS, and that will help in resolving these three problems. To determine how successful a DIS model is, we should examine it carefully, trying to find

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out how those problems may be created, and what factors can be proposed to avoid them. The next chapter will be devoted to the Garcia-IMF model to determine how well that model can be expected to work.

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CHAPTER THREE

THE GARCIA-IMF MODEL

Gillian Garcia of the IMF, in a paper titled "Deposit Insurance: A Survey of Actual and Best Practices" (1999), surveys the explicit deposit insurance systems of 68 countries, and compares them with a set of best-practice DIS that the IMF staff use in advising member countries. According to this paper, the adoption a best-practice DIS model (which this study calls the Garcia-IMF model) by any financial system would improve that system and keep it sound. Furthermore, as countries move toward this model, they will move to the best-practice DIS (Garcia 1999, 1).

In her paper, Garcia's goal is to create a DIS where institutions or banks, customers, and regulators work together in the most efficient way and produce a good financial system. Moreover, she believes that by applying the best-practice DIS the following targets are achieved:

> (1) protect small depositors; (2) elucidate the rules under which sound depository institutions operate and under which failed institutions will be closed or otherwise resolved; and, in so doing, (3) help to stabilize the financial system by establishing an incentive structure that will encourage good banking practices (Garcia 1999, 5).

Garcia agrees that a weak DIS could suffer from moral hazard, adverse selection, and the agency problem. Those conditions would affect the financial system negatively. Regulation and supervision are essential to any DIS and to maintaining a sound banking

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system. However, a poorly designed DIS could prevent regulation and supervision from achieving their goals, which might result in the failure of the DIS and the banking system (Garcia 1999, 6, 7).

Further, Garcia argues that providing high coverage, making membership voluntary, and having bankers in control are factors that depart from a best-practice DIS (Garcia 1999, 9). Furthermore, she argues that a DIS that relies only on its own fund is more secure, organized, and responsible than an unfunded system, and a DIS that lacks a government back-up fund is most likely to be an under-funded system. Furthermore, she suggests that banks and wholesale finance companies that take only large deposits should not be covered by the DIS, while banks, credit unions, and retail finance companies that take only small deposits should be covered by the DIS. Garcia adds that the DIS should cover only institutions that are eligible for regulations and supervision rules (Garcia 1999, 10-11, 22).

In a survey prepared by the IMF staff, 86 countries were found to have an explicit DIS. Those DIS were located as follows: 47.1 percent in Europe, 20.6 percent in America, 14.7 percent in Africa, 13.2 percent in Asia, and 4.4 percent in the Middle East. Among these, only the United States' DIS was started before the 1960s (in 1933). During the 1960s, 9 countries created a DIS, followed by 7 countries in the 1970s, and 19 countries in the 1980s. By April 1999, 32 countries had started a DIS in that decade. (Garcia 1999, 30-33).

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Ten DIS have no annual premiums. In the case of bank failure, all member banks must bail out failed banks' depositors. Ninety percent of those systems are in Europe--those of Austria, France, Germany, Gibraltar, Italy, Luxembourg, the Netherlands, Switzerland, and the United Kingdom. The remaining one is in the Middle East--in Bahrain. Fifty-five DIS have premiums; further, most of the DIS (53 DIS) have access to a government fund. Only 16 DIS have no access to a government fund.

To resolve the adverse selection problem, 55 DIS are compulsory; only 14 DIS are voluntary. Twenty-one DIS have a risk-based premium whereas 48 DIS have a fixed premium. As a remedy for moral hazard, Garcia argues that coverage should be low to let large deposit customers shop to find out the lowest-risk bank management with which to deposit their money. The IMF provides that maximum coverage should not go over 1 or 2 times the per capita GDP. Thirty-three DIS provide less than 2 times per capita GDP deposit coverage; the highest rate is in Chad--equal to 14.5 times per capita GDP; the lowest is in Macedonia-- equal to 0.1 times per capita GDP. Six DIS provide full deposit coverage (in crisis): those of Colombia, Ecuador, Japan, Korea, Mexico, and Turkey. Chile covers only demand deposit (Garcia 1999, 30-41).

To combat the agency problem, Garcia offers the following three strategies--ensuring sufficient funding for the DIS, clarifying the role and responsibilities of the DIS, and creating a suitable DIS organizational structure. Good funding of the DIS will provide enough funds to bail out any failed bank. "In fact, best practices suggest that the government should provide back-up funding. Consequently, leaving financial decisions

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to a board of bankers is likely to result in an under-funded scheme"(Garcia 1999, 22).

The role and responsibilities of the DIS can be wide or narrow. Garcia argues that a DIS under government authority will be more responsible and will play a strong role in the banking system, while a privately operated DIS will act in a very narrow way, its effect on the banking system will be limited, and its role will be within a small range of activities such as managing the fund and paying a failed bank's depositors. Further, to create a suitable DIS organizational structure, a Deposit Insurance Agency (DIA) should be away from any political influence and it should be responsible for its wrong actions. Moreover, the DIA should be independent from any central bank, because having a DIA as a department within the central bank may lead to disagreements about central bank responsibilities (Garcia 1999, 22-23).

At the end of her paper, Garcia compares her survey with two previous papers, one in 1995 by Kyei and the other in 1996 by Lindgren and Garcia. In 1999 there were 68 explicit DIS, while in 1995 there were only 47 DIS. In 1999, 55 DIS were compulsory, while in 1995 only 26 DIS were compulsory. In 1999 there were 58 DIS with a fund, while in 1995 only 34 DIS had a fund, and in 1999, 21 DIS had risk-adjusted premiums, while in 1995 only 4 DIS used risk-adjusted premiums. Garcia sees those changes as favoring a best-practice DIS. In conclusion, Garcia argues in favor of protecting banks as a way of protecting the whole economy, and concludes that a well-created DIS (based on each country's experiences) will support the financial system and help make it sound (Garcia 1999, 24-26).

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One possible concern about the Garcia-IMF model is that it is mainly based on post-1991 U.S. deposit insurance experiences and recent programs in some other countries. It does not make use of the extensive U.S. experience with deposit insurance such as the individual states' insurance programs, the pre-1991 FDIC experience, the FSLIC, and the NCUSIF. For example, according to the Garcia-IMF model, bankers should not be on boards of directors, yet the successful state insurance programs of Indiana, Ohio, and Iowa were mainly directed by bankers themselves. Furthermore, the Garcia-IMF model supports government back-up for the DIS fund, but various successful U.S. state insurance programs and the NCUSIF were not backed up by the government.

A second concern is that the Garcia-IMF model does not match the real world. We applied the selective Garcia-IMF model measurements to all countries that have an explicit DIS (68 countries), and categorized theses DIS into three different groups: 1) good DIS, 2) average DIS, and 3) poor DIS. Elements that are generally agreed upon, such as avoiding incentive problems, defining the system explicitly in law and regulation, and giving the supervisor a system of prompt remedial actions, were eliminated. Essential elements that are examined in the present study are: 1) membership, 2) existence of a fund, 3) level of coverage, 4) the board of directors, and 5) a government back-up of the fund. Table 3.1 shows the results for all countries.

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Table 3.1. Worldwide DIS, Based on Garcia-IMF Best Practice Model.

Continent, Country, or Province	Compulsory Membership	Has Fund	Provides Low Coverage	No Bankers on Board of Directors	Government Back-up of Fund	DIS Rank
AFRICA						
Cameroon		✓			✓	2
Central African Rep.		✓			✓	2
Chad		✓			✓	2
Congo Rep.		✓			✓	2
Equatorial Guinea		✓			✓	2
Gabon		✓	✓		✓	3
Kenya	✓	✓		✓	✓	4
Nigeria	✓	✓		✓	✓	4
Tanzania	✓	✓	✓		✓	4
Uganda	✓	✓		✓	✓	4
MIDDLE EAST						
Bahrain	✓		✓			2
Lebanon	✓	✓	✓		✓	4
Oman	✓	✓		✓	✓	4
ASIA						
Bangladesh	✓	✓		✓	✓	4
India	✓	✓		✓	✓	4
Japan	✓	✓			✓	3
Korea	✓	✓		✓	✓	4
Marshall Is.		✓		✓		2
Micronesia		✓		✓		2
Philippines	✓	✓		✓	✓	4
Sri Lanka		✓	✓	✓	✓	4
Taiwan Pro. of China		✓		✓	✓	3
EUROPE						
Austria	✓		✓		✓	3
Belgium	✓	✓	✓		✓	4

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Table 3.1. Worldwide DIS. Based on Garcia-IMF Best Practice Model (continued).

Continent, Country, or Province	Compulsory Membership	Has Fund	Provides Low Coverage	No Bankers on Board of Directors	Government Back-up of Fund	DIS Rank
Bulgaria	✓	✓	✓		✓	4
Croatia	✓	✓		✓	✓	4
Czech Republic	✓	✓		✓	✓	4
Denmark	✓	✓	✓		✓	4
Estonia	✓	✓	✓		✓	4
Finland	✓	✓	✓		✓	4
France	✓					1
Germany						
Official	✓	✓	✓			3
Private			✓			1
Gibraltar	✓		✓			2
Greece	✓	✓	✓			3
Hungary	✓	✓	✓		✓	4
Iceland	✓	✓	✓			3
Ireland	✓	✓	✓	✓		4
Italy	✓				✓	2
Latvia	✓	✓	✓	✓	✓	5
Lithuania	✓	✓		✓	✓	4
Luxembourg	✓		✓			2
Macedonia		✓	✓		✓	3
Netherlands	✓		✓	✓	✓	4
Norway	✓	✓			✓	3
Poland	✓	✓	✓	✓		4
Portugal	✓	✓	✓	✓		4
Romania	✓	✓	✓		✓	4
Slovak Rep.	✓	✓			✓	3
Spain	✓	✓	✓		✓	4
Sweden	✓	✓	✓	✓	✓	5
Switzerland			✓			1
Turkey	✓	✓		✓	✓	4
Ukraine	✓	✓	✓	✓		4
United Kingdom	✓		✓			2
WESTERN HEMISPHERE						
Argentina	✓	✓				2
Brazil	✓	✓				2

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Table 3.1. Worldwide DIS, Based on Garcia-IMF Best Practice Model (continued).

Continent, Country, or Province	Compulsory Membership	Has Fund	Provides Low Coverage	No Bankers on Board of Directors	Government Back-up of Fund	DIS Rank
Canada	✓	✓		✓	✓	4
Chile	✓		✓	✓	✓	4
Colombia	✓	✓		✓		3
Dominican Rep.		✓			✓	2
Ecuador	✓	✓		✓	✓	4
El Salvador	✓	✓		✓	✓	4
Jamaica	✓	✓	✓	✓	✓	5
Mexico	✓	✓		✓	✓	4
Peru	✓	✓			✓	3
Trinidad & Tobago	✓	✓	✓	✓	✓	5
U.S.	✓	✓		✓	✓	4
Venezuela	✓	✓	✓		✓	4

Source: Garcia 1999, 30-47.

A summary of the rankings is given in table 3.2. We found that 39 DIS were good, 27 DIS were average, and 3 DIS were poor. Looking at the poorly-ranked DIS, we notice that all of them are in countries with well-developed financial systems. On the other hand, looking at DIS that are ranked "good," we notice that more than 70 percent of them are in countries with less-developed financial systems. Finding the U.S. and Sweden, with their well-developed financial systems, in the "good" category may be as expected; however, finding Tanzania and Bangladesh in the same category is surprising.

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Table 3.2. World DIS. Ranking Based on the Garcia-IMF Best Practice Model.

Poor DIS (rank 0& 1)	Average DIS (rank 2& 3)		Good DIS (rank 4& 5)		
France	Marshall Is.	Greece	Chile	Belgium	Sweden
Switzerland	Micronesia	Japan	Kenya	Croatia	Latvia
Germ.	Brazil	Taiwan	Nigeria	Czech	Jamaica
(Private)	Cameroon	Prov. of China	Uganda	Rep.	Trinidad
	Central	Germ (Official)	Tanzania	Estonia	& Tobago
	African Rep.	Iceland	Bulgaria	Denmark	
	Chad	Norway	Finland	Ireland	
	Congo Rep.	Peru	Hungary	Lithuania	
	Equatorial	Slovak Rep.	Romania	Poland	
	Guinea	Colombia	Turkey	Spain	
	Gibraltar	Gabon	Portugal	Ukraine	
	Dominican	Austria	U.S.	Canada	
	Rep	Macedonia	El Salvador	Mexico	
	Argentina		Netherlands	Venezuela	
	Italy		Oman		
	Bahrain		Lebanon		
	Luxembourg		Bangladesh		
	U.K.		India		
			Korea		
			Philippines		
			Sri Lanka		
			Ecuador		

Considering the results discussed in the above paragraphs, we infer that the Garcia-IMF model needs to be improved, and some changes need to be added in order for that model to reflect real best-practice DIS. Countries with well-developed financial systems should fall mostly in the "good" DIS category, and countries with less-developed financial systems should fall mostly in the "poor" DIS category. The Garcia-IMF model may suffer from the fundamental DIS problems, namely moral hazard, adverse selection, and the agency problem. For example, separating bankers from directing the DIS may cause a bank's official to practice moral hazard by conducting riskier activities, and

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control of the system by government may lead to the agency problem by allowing troubled banks to stay in business for a long time. Furthermore, a DIS that suffers from moral hazard and agency problems is most likely to be a weak system suffering from the adverse selection problem, in which only weak banks keep their DIS membership while healthy banks stay away from it.

The Garcia-IMF model does not fit any of this dissertation's five hypotheses. Applying these hypothetical factors may mitigate that model's problems, which are strongly related to the general DIS problems. To improve the model, this study will use real-life experiences that are available from the history of insurance programs in the U.S. The next two chapters will be devoted to the history of U.S. bank insurance programs, in order to evaluate that history and understand the lessons of the successful programs, and how those insurance programs avoided the fundamental problems of a DIS.

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CHAPTER FOUR

HISTORY OF BANK INSURANCE PROGRAMS IN THE UNITED STATES: The State Programs

Given the central role that the history of U.S. Bank insurance programs plays in this dissertation, it is important to give a complete account of that history. The state insurance programs will be discussed in this chapter, and the federal insurance programs--those of the FDIC, FSLIC, and NCUSIF--will be covered in the next chapter.

Prior to creation of the Federal Deposit Insurance Corporation (FDIC), there was no universal bank deposit insurance system. However, there were several state bank liabilities insurance programs (in the 19th century) and state deposit insurance programs (in the early 20th century). Of these systems, which included 14 states, the first was started in New York State in 1829; the last was ended in South Dakota in 1931.

To study these 14 state insurance systems in depth, we will divide the system according to period into two groups: those established in the 19th century (six states), and those established in the early 20th century (eight states).

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Six State Bank Insurance Programs of the 19th Century

This group of insurance systems began with New York in 1829, followed by Vermont in 1831, Indiana in 1834, Michigan in 1836, Ohio in 1845, and Iowa in 1858.

1 New York (1829-1866)

New York's safety fund was created in 1829. All banks starting or rechartering their business after 1829 had to be members of this system (which excluded the free banks of 1838). The only source for its funds was premiums paid by its member banks, and each bank had to pay an annual assessment equal to ½ of 1% of its capital stock, and annual special assessments not to exceed the previous percentage (see table 4.1). It was mainly under state government control. From 1829 to 1837 there were three bank commissioners: one appointed by the Governor, and two by the banks. From 1837 to 1843 there were three bank commissioners appointed by the Governor, from 1843 to 1851 the fund was administered by the state comptroller, and between 1851 and 1866 by the banking department, with a superintendent appointed by the Governor (Calomiris 1989, 6). The program offered partial coverage for notes and deposits; however, after 1842 coverage was only for bank notes. Under this system, coverage payment could not be made before liquidation of the failed bank (Federal Deposit Insurance Corporation: Annual report 1953, 46).

Table 4.1 Funding base in the New York state bank insurance program.

Assessments	Assessments maximum	Special Assessment:
Annual assessment equal to ½ of 1% of capital stock.	When fund equal to 3% of capital stock.	Special annual assessment up to ½ of 1% of capital stock, applicable when fund went below 3% of capital stock until fund restored to its maximum.

Sources: Golembe and Warburton 1958, II-5.

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Figure 4.1 shows that the number of insured banks reached its highest level in 1840, when 89 banks were members in the system, and its lowest level in 1865 when only 2 banks were members. Figure 4.2 shows that insured bank obligations reached their highest level in 1836, at $66,781,000, and their lowest level in 1865 at $710,000.

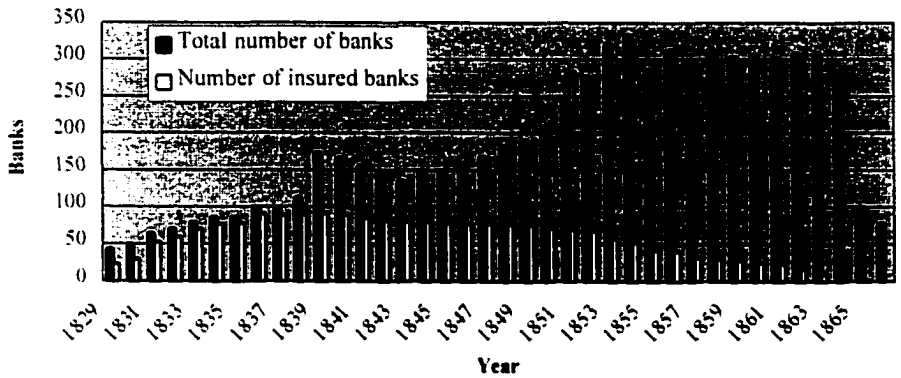

Figure 4.1 New York bank insurance program. Total number of banks, and number of insured banks.

Sources: Golembe and Warburton 1958, II-20.

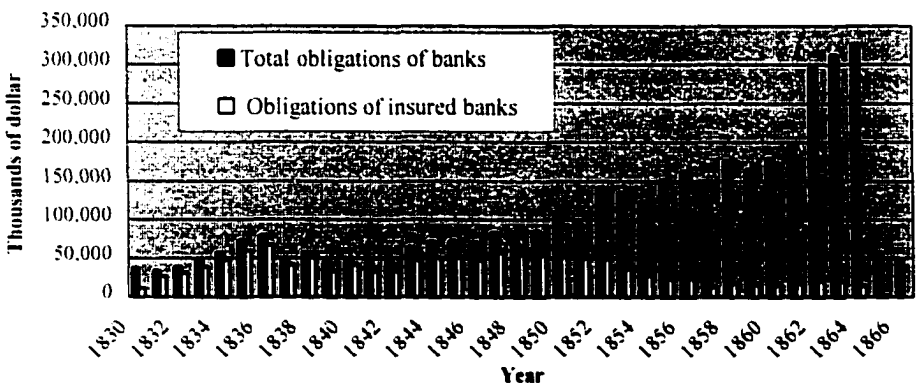

Figure 4.2 New York bank insurance program. Total obligations of banks, and obligations of insured banks.

Sources: Golembe and Warburton 1958, II-24.

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Economic difficulties during 1833, 1839, 1840, and 1841 affected the banking system deeply and resulted in the failure of 16 of 21 insured banks in the New York system. Figure 4.3 shows that the highest number of banks with financial difficulties occurred in 1837 and 1842, with 5 banks facing serious financial difficulties in those years. Figure 4.4 shows that obligations of banks with financial difficulties reached their highest level in 1841, at $1,830,000.

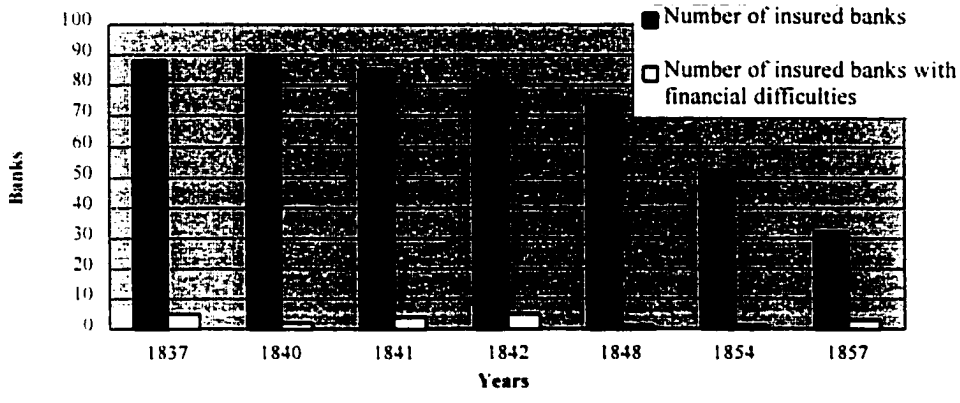

Figure 4.3 New York bank insurance program. Number of insured banks, and number of insured banks with financial difficulties.

Source: Federal Deposit Insurance Corporation, Annual Report 1953, 50, 60.

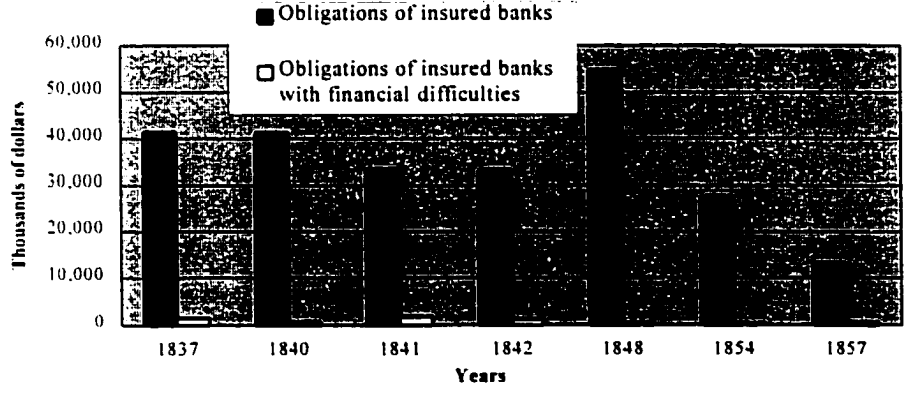

Figure 4.4 New York bank insurance program. Obligations of insured banks, and obligations of insured banks with financial difficulties

Source: Federal Deposit Insurance Corporation, Annual Report 1953, 50, 62-63.

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Due to these difficulties, the system experienced severe losses and was unable to protect the New York State payment system. By looking at the previous figures we note that, from its creation till 1836, the New York bank insurance program succeeded in attracting more members, the number of insured banks increased year after year, and no member banks failed during that time. However, after 1840 the number of insured banks decreased year after year until 1866 when there were no banks in the system. Furthermore, as a response to the fund deficiency that arose in that new system "the legislation authorized the state comptroller to sell bonds sufficient to meet all claims against the insurance fund" (FDIC: The First Fifty Years 1984, 15). The supervisory system that was established to prevent banks from adopting risky practices was insufficient to prevent such behavior. Failures of the member banks during economic difficulties were not the fault of the system. However, failure of the payment system was (Calomiris 1989, 7).

The New York bank insurance program was not able to maintain stability in the financial system, and did not minimize losses among member banks during the financial difficulties of 1833, 1839, 1840, and 1841. Member banks practiced risky activities and the board of directors was not able to prevent such behavior. Fund deficiency was another reason for the New York program's poor performance.

Finally, two hypotheses of this dissertation do not seem to fit this case. The relevant hypotheses are: H1: *Bankers should be on the board of directors of the DIS* and H2: *The insurance fund should come from the member banks.* In general, bankers' participation on the board of directors will make the supervisory system more efficient

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because bankers are close to each other and know what is happening in the banking system. Further, using a "mutual gurantee" will make funds available, by applying a special unlimited assessment on member banks, whenever needed. However, the New York bank insurance program supervisory system was less than satisfactory because the government effectively controlled its board of directors and the bankers themselves were separated from that responsibility. Furthermore, the program experienced fund deficiency because it relied on its own limited fund, which mainly came from member banks as an assessment, rather than on the total funds of member banks.

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2 Vermont (1831-1866)

The Vermont insurance system was established in 1831 to cover bank notes and deposits. It was similar to the New York system in that all banks created or rechartered after the program started had to be members (excluded were the banks of 1851). The government mainly directed the program. From 1831 to 1837 there were three bank commissioners: one appointed by legislature, and two by banks. From 1837 to 1858 there were one bank commissioner appointed by legislature (Calomiris 1989, 6). The system generated its income from assessments paid annually by its member banks: each member bank had to pay an annual assessment equal to ¾ of 1% of capital stock, in addition to a special assessment applicable when the fund went below a certain level (see table 4.2). Accumulated funds were invested in securities such as "approved bank stock or other securities" (Golembe and Warburton 1958, III-2). The system covered liability obligations only after liquidation of failed banks.

Table 4.2 Funding base in the Vermont state bank insurance program.

Assessments	Assessments maximum	Special Assessment:
Annual assessment equal to ¾ of 1% of capital stock.	When fund equal to 4½ % of capital stock.	Special annual assessment up to ¾ of 1% of capital stock. applicable when fund went below 4½ % of capital stock until fund restored to its maximum.

Golembe and Warburton 1958, III-2.

Figure 4.5 shows that the number of insured banks reached its highest point between 1841 and 1848 when it increased to 13 banks, and reached its lowest point in 1858 when it declined to 4 banks.

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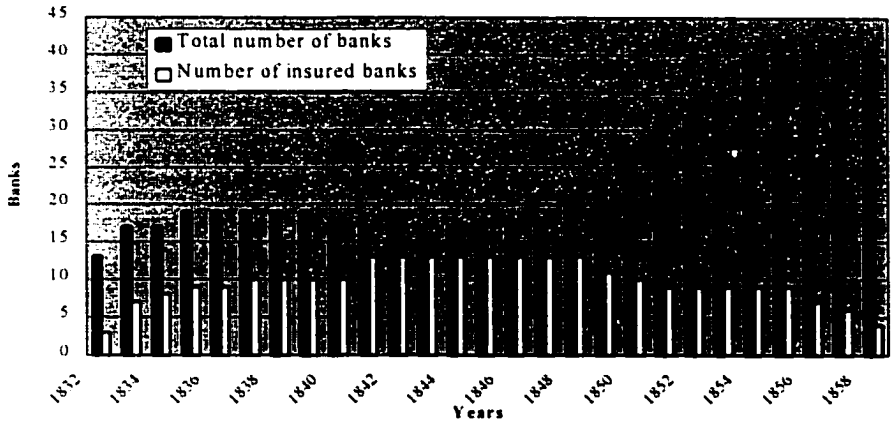

Figure 4.5 Vermont bank insurance program, total number of banks, and number of insured banks.

Sources: Golembe and Warburton 1958, III-8.

Figure 4.6 shows that the insured bank obligations reached their highest level in 1847 at $1,936,000, and their lowest in 1858 at $ 307,000.

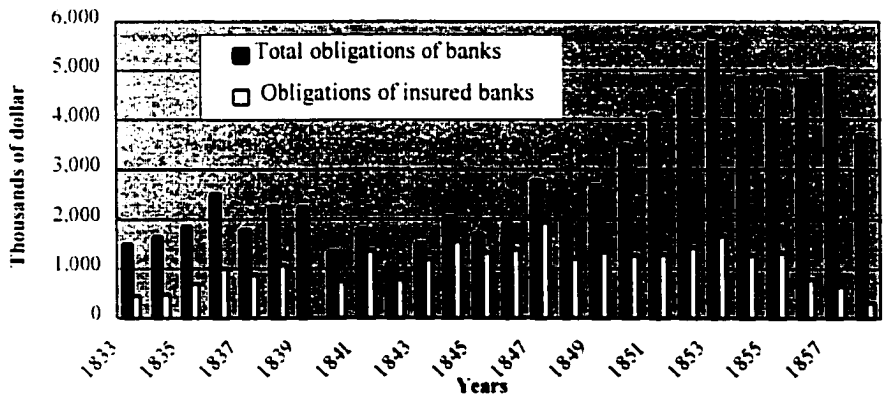

Figure 4.6 Vermont bank insurance program. Total obligations of banks, and obligations of insured banks.

Sources: Golembe and Warburton 1958, III-8.

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Since Vermont's program allowed member banks to leave the system and take all that they had paid as premiums, only risky banks remained in the system. Bank supervision was unable to eliminate adverse selection problems. During its period of operation, the failure of two large banks--one in 1839 and the other in 1857--affected the system badly. One bank that experienced serious financial difficulties in 1839 was holding obligations equal to $70,000, and another bank that experienced serious financial difficulties in 1857 was holding obligations equal to $102,000 (FDIC, 1953). Though the first bank's creditors were paid in full, the second bank's creditors were paid only two fifths and the balance was never paid due to fund deficiency (see figures 4.7 and 4.8) (Golembe and Warburton 1958, III-12).

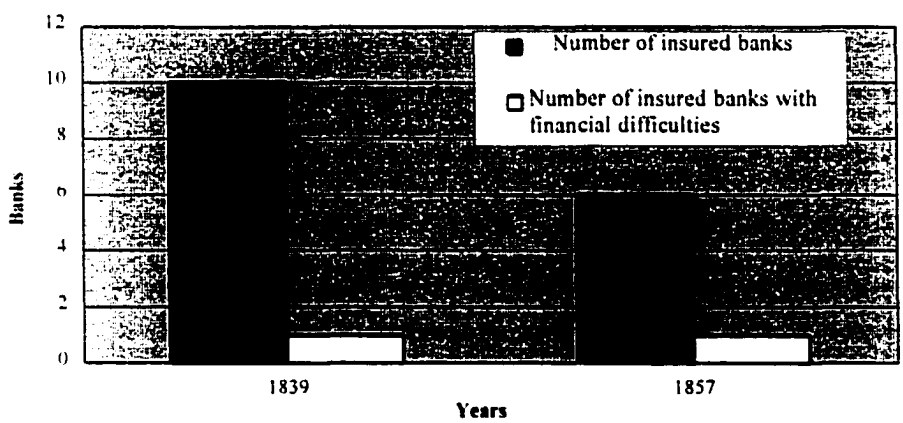

Figure 4.7 Vermont bank insurance program. Number of insured banks, and number of insured banks with financial difficulties

Source: Federal Deposit Insurance Corporation, Annual Report 1953, 50, 60.

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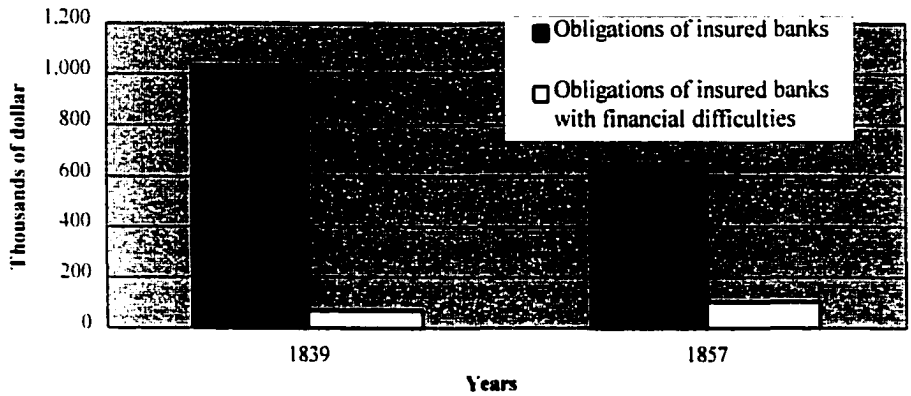

Figure 4.8 Vermont bank insurance program. Obligations of insured banks, and obligations of insured banks with financial difficulties.

Source: Federal Deposit Insurance Corporation, Annual Report 1953, 50, 62-63.

The failure of two large banks affected this system negatively. The first bank failure was before the nationwide panic, and can be explained by the risky practices of the bank managers. Hence lack of enforcement power of the banking examiners during that time contributed to the failure. In general "Vermont's insurance had only limited success in attaining the objectives it sought" (Golembe and Warburton 1958, III-11, III-19).

As with the New York bank insurance program, two hypotheses of this dissertation do not appear to fit this program. Those are: H1: *Bankers should be on the board of directors of the DIS* and H2: *The insurance fund should come from the member banks.* The failure to allow the Vermont program to be directed by bankers helped in creating a weak supervision system. In addition, depending only on its own fund, not on its member' funds, caused the fund deficiency problem in this program.

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3 Indiana (1834-1865)

In 1834 Indiana started its own insurance plan. All branch banks had to participate in this system. The Indiana plan differed from the New York plan by allowing member banks to take the lead in controlling the system, and each member bank participated in controlling the program by providing one director to the board of directors that was responsible for controlling the program. From 1834 to 1855 the plan was administered by the board of directors of the state bank of Indiana: a president and four directors appointed by legislature, and one director from each insured bank. From 1855 to 1865 it was administered by the same board, but the president was elected by the board (FDIC: The First Fifty Years 1984, 20). Unlike the New York bank insurance program, the Indiana bank insurance program had no annual assessment; instead it applied unlimited special assessments whenever they were needed. Under this system, covering the liability of failed banks was the responsibility of all member banks (FDIC: The First Fifty Years 1984, 14).

Figure 4.9 shows that between 1834 and 1851 all banks participated in the system when only branch banks were allowed to operate in Indiana. After 1851 free banks started operation in Indiana (Golembe and Warburton 1958, IV-10). The number of insured banks reached its highest point between 1857 and 1864 with 20 banks, and its lowest in 1834 and 1835 when it declined to 10 banks. Moreover figure 4.10 shows that during the same period all banks' obligations were insured. The insured obligations reached their highest point in 1862 at $7,898,000, and reached their lowest point in 1842 at $2,182,000.

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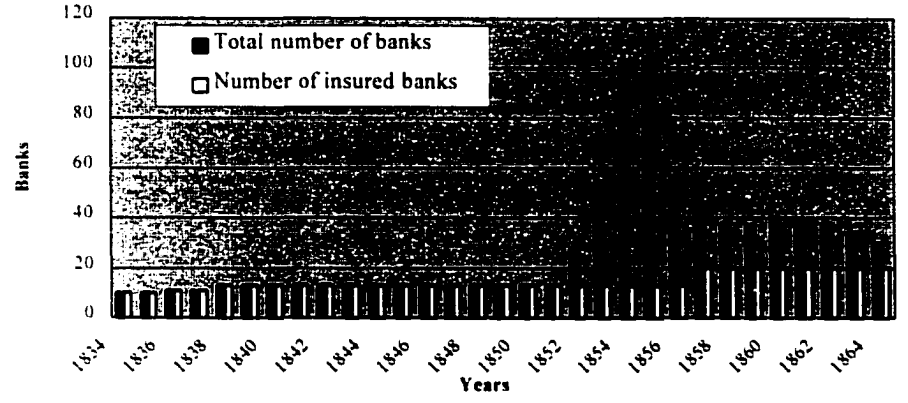

Figure 4.9 Indiana bank insurance program. Total number of banks, and number of insured banks.

Sources: Golembe and Warburton 1958, IV-11, IV- 14.

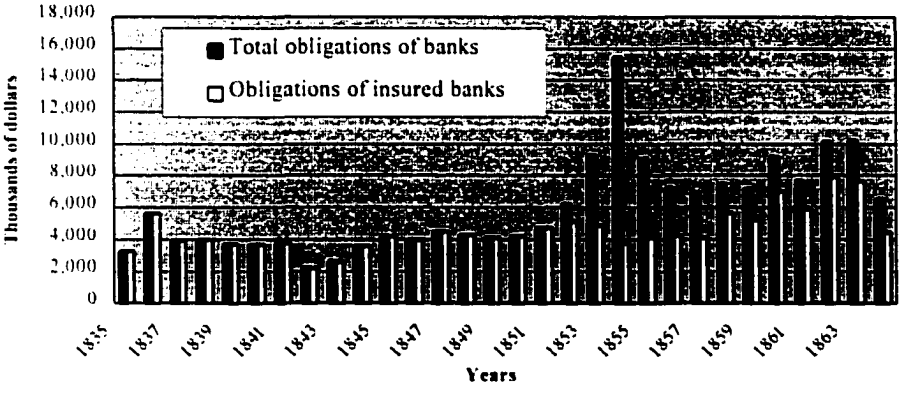

Figure 4.10 Indiana bank insurance program. Total obligations of banks, and obligations of insured banks.

Sources: Golembe and Warburton 1958, IV-11, IV- 14.

Figures 4.11 and 4.12 show that during the system's 30-year operation, only one member bank faced serious financial difficulty (in 1843), holding obligations equal to only $78,000 (FDIC: Annual Report 1953, 53). All member banks kept operating during the regional crisis of 1854-1855 and the national crisis of 1857, whereas 63 of 126 nonmember banks failed in Indiana during these two periods. In 1855 there were 53 bank

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failures out of 104 banks, and in 1857 there were 10 failures out of 46, none of which were members of the Indiana bank insurance program (Golembe and Warburton 1958, IV-16).

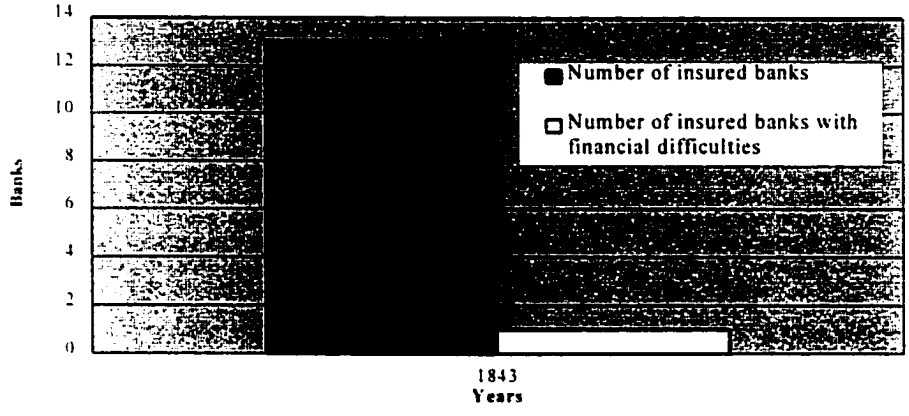

Figure 4.11 Indiana bank insurance program. Number of insured banks, and number of insured banks with financial difficulties

Sources: Federal Deposit Insurance Corporation, Annual Report 1953, 50, 60.

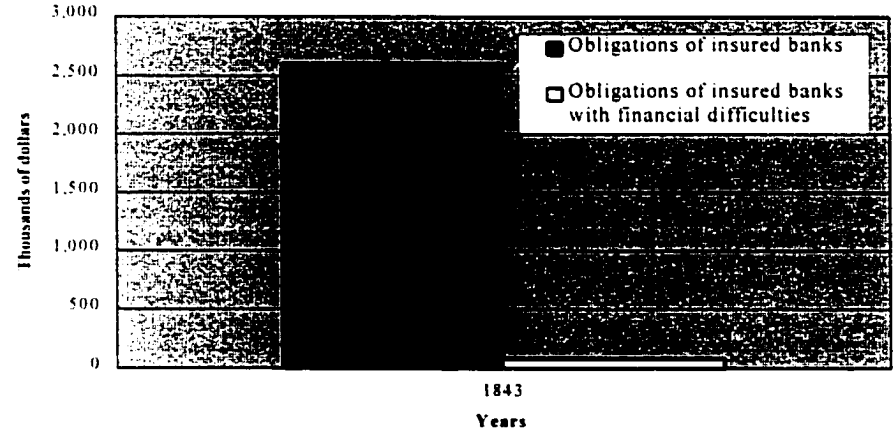

Figure 4.12 Indiana bank insurance program. Obligations of insured banks, and obligations of insured banks with financial difficulties.

Sources: Federal Deposit Insurance Corporation, Annual Report 1953, 50, 62.

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The Indiana program was an example of a successful insurance system. That success essentially was because of mutual guaranteed coverage and a board of directors that was controlled by the bankers themselves. The directors had the power to make and enforce bank decisions which positively affected the supervision system (Calomiris 1989, 9-11). Bank examiners were able to get whatever information they needed from member banks. Further, participants in this system were not required to pay annual assessments. Instead, there was a special assessment made when needed. Payment was made to creditors after liquidation of failed banks. If that was not enough, complete payment would be made within one year of a bank's failure using mutual guarantee (Golembe and Warburton 1958, IV-4, IV-5). In general, the Indiana bank insurance program experienced a high degree of success during its 30 years of operation. During that period there was not a single bank failure, only one bank stopped operation for a few months (by an order from the board of directors), and no creditors of that bank or any other bank experienced any loss (Golembe and Warburton 1958, IV-15).

The Indiana bank insurance program fits all five hypotheses of this dissertation. Bankers' participation on the board of directors made the board very effective in directing the program. Moreover, depending on member banks' funds made each member bank interested in keeping other member banks in a stable condition; in case of any problem all members would lose, since there was no government back-up.

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4 Michigan (1836-1842)

In 1836 the Michigan State insurance system was implemented by applying the New York plan, with slight differences. All banks established or rechartered after the program started were required to be members of the system. It offered 100 percent coverage for liabilities of all member banks. As in the New York system, annual assessments were its main income stream; each member bank had to pay an annual assessment equal to ½ of 1% of its capital stock, in addition to a special annual assessment not to exceed the previous percentage in any one year when funds went below a certain level (see table 4.3). The fund was controlled by the Auditor General and the Treasurer and was kept in a separate account from the state fund; however, that fund was considered as "property of the banks" and each member bank got back its portion from the fund's investment return (Golembe and Warburton 1958, V-4). As in the New York and Vermont insurance programs, government played a dominant role in controlling the Michigan bank insurance program. From 1836 to 1837 a bank commissioner was appointed by the Governor, from 1837 to 1840 three bank commissioners were appointed by the Governor, and from 1840 to 1842 the program was under the State's Attorney General (Calomiris 1989, 6). In case of any bank failures, coverage payments were made only after finishing all liquidation processes.

Table 4.3 Funding base in the Michigan state bank insurance programs.

Assessments	Assessments maximum	Special Assessment:
Annual assessment equal to ½ of 1% of capital stock.	When fund equal to 3% of capital stock.	Special annual assessment up to ½ of 1% of capital stock, applicable when fund went below 3% of capital stock until fund restored to its maximum.

Sources: Golembe and Warburton 1958, V-4

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As shown in figure 4.13, the number of insured banks reached its highest level in 1837 with 36 banks, and its lowest level in 1841 when there were no insured banks (Golembe and Warburton 1958, V-10).

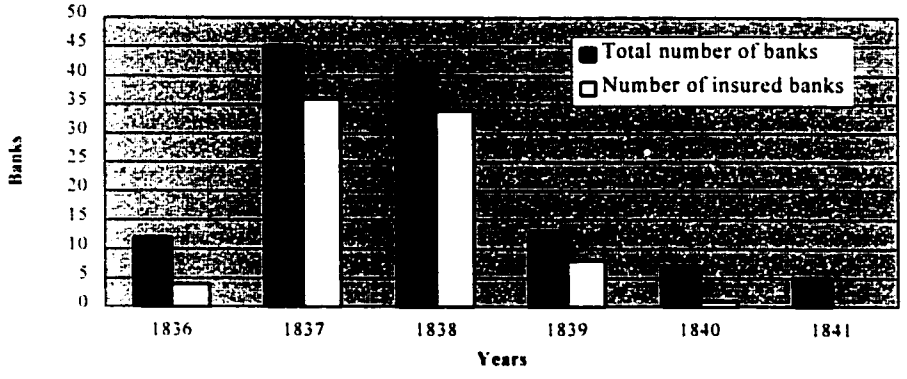

Figure 4.13 Michigan bank insurance program. Total number of banks, and number of insured banks.

Sources: Golembe and Warburton 1958, V-10.

Figure 4.14 shows that the insured bank obligations reached their highest point in 1837 at $1,198,000, and their lowest point in 1841 when there were no insured obligations (Golembe and Warburton 1958, V-13).

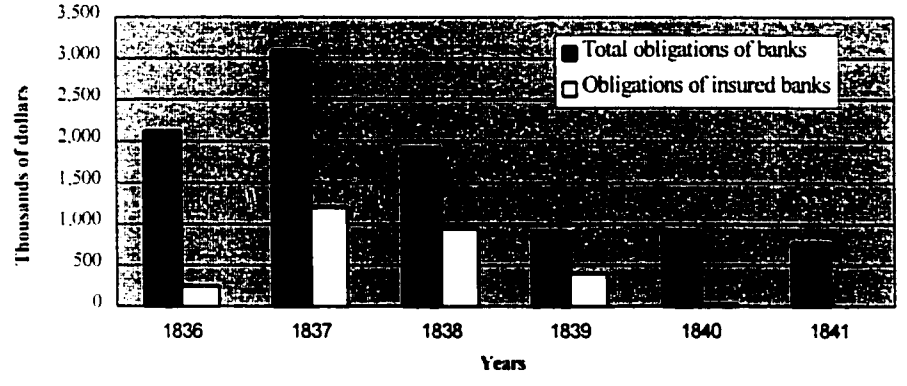

Figure 4.14 Michigan bank insurance program. Total obligations of banks, and obligations of insured bank.

Sources: Golembe and Warburton 1958, V-13.

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During the life of the Michigan bank insurance program, 55 banks experienced serious financial difficulty, of which 39 banks were insured. In 1838, 16 insured banks experienced serious financial difficulty, holding $449,000, and in 1839, 18 banks experienced serious financial difficulty holding $424,000. In 1840, 5 banks experienced serious financial difficulty, holding $218,000 (see figures 4.15 and 4.16).

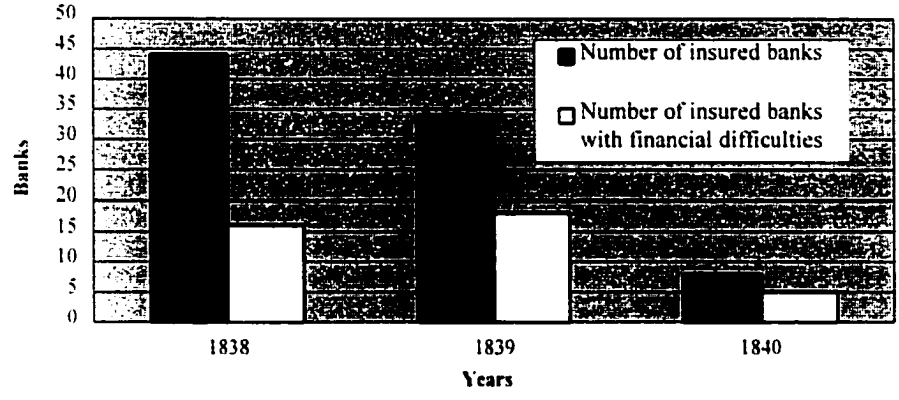

Figure 4.15 Michigan bank insurance program. Number of insured banks, and number of insured banks with financial difficulties.

Source: Golembe and Warburton 1958, V-22.

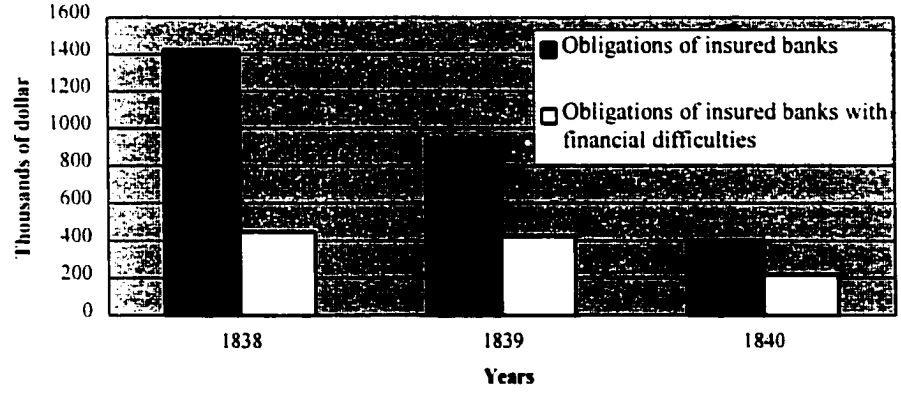

Figure 4.16 Michigan bank insurance program. Obligations of insured banks, and obligations of insured banks with financial difficulties.

Source: Golembe and Warburton 1958, V-22.

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In its first three years of operation the Michigan program had to support its member banks during the economic difficulties of 1838 and 1839. Since that support was in the fund accumulation period, the system collapsed in 1842, with the shortest life of any state insurance program (Calomiris 1989, 9). The Michigan bank insurance program was similar to those developed in New York and Vermont; however, three hypotheses of this dissertation apparently do not fit this program. The relevant hypotheses are H1: *Bankers should be on the board of directors of the DIS*, H2: *The insurance fund should come from the member banks, and* H5: *Membership should not be compulsory*. However, once again this bank insurance program experienced insufficient and inefficient supervision as bankers were excluded from control of the system; for instance, in 1836 there was only one examiner, who had to examine each member bank three times a year (Golembe and Warburton 1958, V-6, V-27). Further, it experienced fund deficiency because it relied only on its own fund accumulated from members' assessments. For instance, in early 1838 many banks failed, holding thousands of dollars as obligations, as a result of fund deficiency when the fund was not enough to bail out all creditors of those banks. That was the beginning of the program's collapse. In addition, compulsory membership contributed to the program's poor performance, which was the worst of all the six 19^{th} century state programs. The inadequacy of the board of directors and fund deficiency prevented the program from reaching its goals, both of keeping the payment system sound and of protecting creditors of small member banks (Golembe and Warburton 1958, V-21, V-33).

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5 Ohio (1845-1866)

In 1845 the Ohio insurance system was initiated using the Indiana insurance program as a basic model. All branch banks were required to participate in the Ohio insurance system, and each bank had to pay just one assessment before its operations covered 10 percent of its notes. Future assessments were required for future notes (see table 4.4). This fund was invested in government securities or in mortgages by member banks under the supervision of the board of directors, and each bank received its portion of return (Golembe and Warburton 1958, VI-5, VI-6). Mutual guarantee coverage and a board of directors composed of member banks were the dominant elements in the system. The primary duty of the Ohio system was insuring its members' bank notes only. In case of a bank failure other sound member banks were required to pay a special assessment, consistent with each bank's outstanding notes, enough to bail out failed bank note holders (Golembe and Warburton 1958, VI-6).

Table 4.4 Funding base in the Ohio state bank insurance program.

Assessments	Assessments maximum	Special Assessment:
Single assessment before opening a bank equal to 10% of circulating notes, and additional assessment at the previous percentage for any additional circulating notes.	No maximum.	Unlimited special assessment whenever it was needed.

Sources: Golembe and Warburton 1958, VI-5, VI-6.

Figure 4.17 shows that the number of insured banks reached its highest point from 1849 to 1851 with 41 banks, and its lowest point in 1865 with 8 banks. Figure 4.18 shows

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that the insured obligations reached their highest level in 1850 at $11,878,000, and their lowest level in 1845 at $2,384,000.

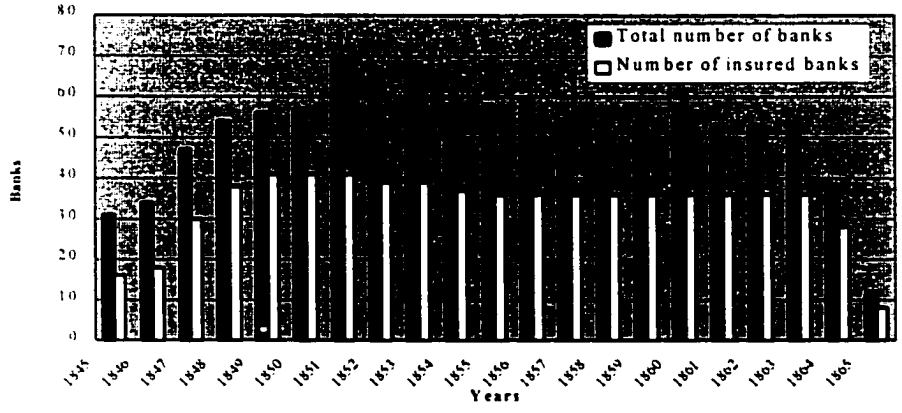

Figure 4.17 Ohio bank insurance program. Total number of banks, and number of insured banks.

Sources: Golembe and Warburton 1958, VI-12.

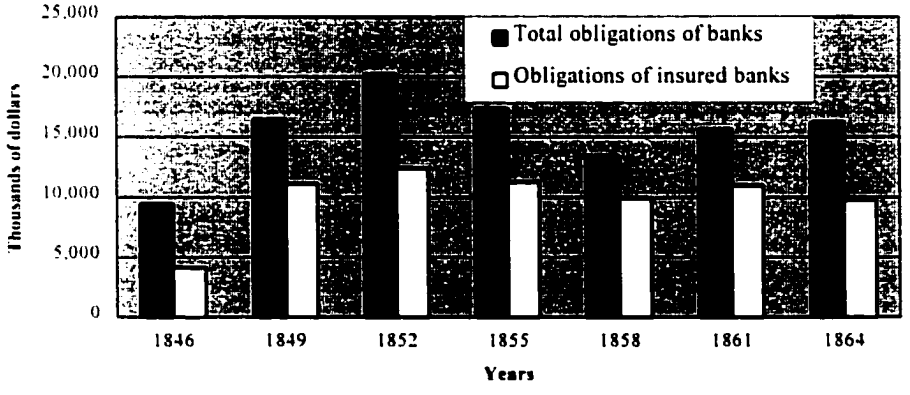

Figure 4.18 Ohio bank insurance program. Total obligations of banks, and obligations of insured banks.

Sources: Golembe and Warburton 1958, VI-15.

During its period of operation, 23 banks experienced serious financial difficulties, of which 10 banks were members of the Ohio bank insurance program, holding 36.12% of the obligations of all banks experiencing financial difficulties (FDIC: Annual Report

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1953, 48). Figure 4.19 shows that the highest number of insured banks with financial difficulties occurred in 1857 when 4 banks faced serious financial difficulties. Figure 4.20 shows that the obligations of insured banks with financial difficulties reached their highest level in 1857 when they totaled to $872 ,000.

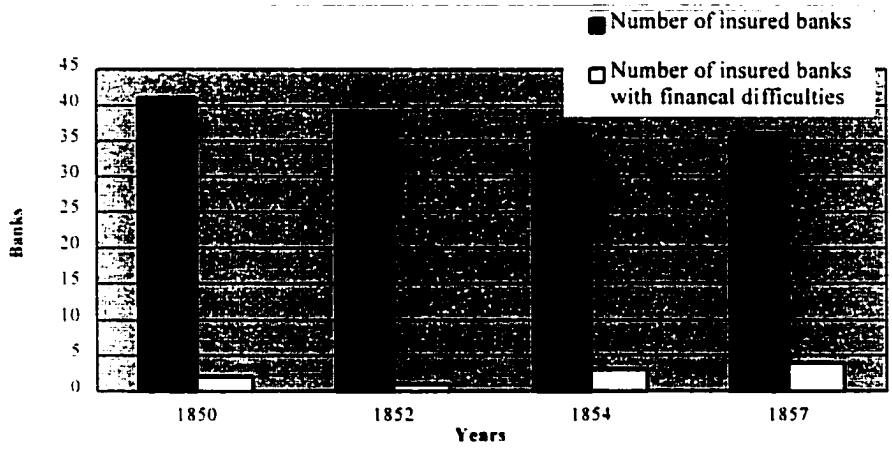

Figure 4.19 Ohio bank insurance program. Number of insured banks, and number of insured banks with financial difficulties.

Source: Federal Deposit Insurance Corporation, Annual Report 1953, 50, 60-61.

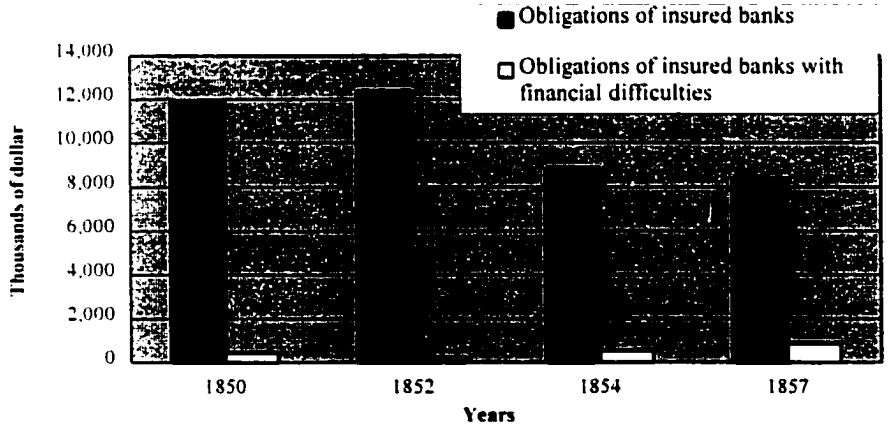

Figure 4.20 Ohio bank insurance program. Obligations of insured banks, obligations of insured banks with financial difficulties.

Source: Federal Deposit Insurance Corporation, Annual Report 1953, 50, 60-61.

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The key point for the success of the Ohio system was the group action of its board of directors. Due to the controlling power of its board of directors, the Ohio program acted as deposit insurance through its member banks' joint action in lending to each other whenever it was needed. This joint behavior, with each bank acting in favor of other banks in case of any crisis, enabled Ohio banks to operate during the 1857 panic. Moreover, all member banks' notes were redeemable on demand from any bank in the system. The Ohio member banks' joint behavior spread to nonmember banks, producing a low rate of bank failures in the state as a whole (Calomiris 1989, 13). "The success of the insurance plan is reflected in the fact that the state Bank of Ohio has come to be recognized as one of the great banking systems of the pre- Civil War period" (Golembe and Warburton 1958, VI-48). Further, the Ohio program succeeded in protecting failed banks' note holders and troubled banks' creditors and also succeeded in keeping its state payment system sound even though the Ohio program was for participating banks only (Golembe and Warburton 1958, VI-42).

Finally, as with the Indiana program, basically all five hypotheses of this dissertation hold under the Ohio bank insurance program, which reflected positively in the performance of its member banks. The board of directors played a very significant role in the success it experienced, as supervisors were granted great enforcement power to pursue their jobs efficiently. Back-up of the system by member banks through the mutual gurantee system added to its good performance. Furthermore, voluntary membership kept sound banks from paying for weak banks' management mistakes.

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6 Iowa (1858-1866)

The Iowa bank insurance system, enacted in 1858, was the last system started during this time period. As in the Ohio program, all branch banks were required to be members of the system. It covered bank notes only, and there was one assessment before a bank opened covering 12.5 percent of its notes. Future assessments were applicable for issuing of future notes (see table 4.5). In case of a bank failure immediate payments were available to cover member banks' obligations by the healthy banks in the system. It was an updated version of the Indiana plan where the decision-making originated with its board of directors, comprised mainly of member banks (FDIC: The First Fifty Years 1984, 21).

Table 4.5 Funding base in the Iowa state bank insurance program.

Assessments	Assessments maximum	Special Assessment:
Single assessment before opening a bank equal to 12½ % of circulating notes, and additional assessment at the previous percentage for any additional circulating notes.	No maximum.	Unlimited special assessment whenever it was needed.

Sources: FDIC: The First Fifty Years 1984, 17.

Figures 4.21 and 4.22 show that all banks and all banks' obligations were insured during the Iowa bank insurance program--a number of private banks were operating during the same period as this program, but their numbers are unknown (Golembe and Warburton 1958, VII-20).

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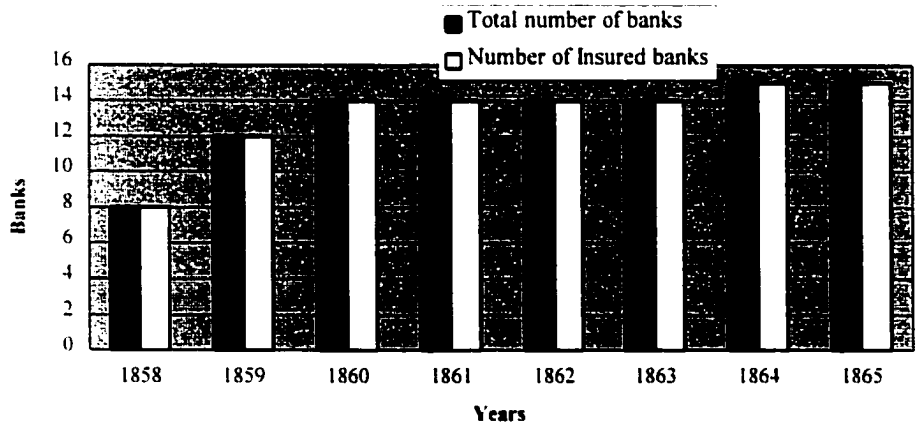

Figure 4.21 Iowa bank insurance program. Total number of banks, and number of insured banks.

Sources: Federal Deposit Insurance Corporation, Annual Report 1953, 61.

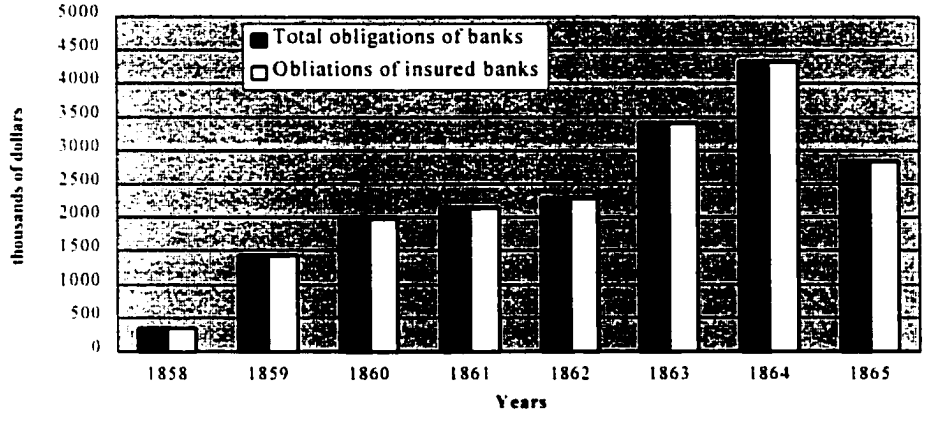

Figure 4.22 Iowa bank insurance program. Total obligations of banks, and obligatigations of insured banks.

Sources: Federal Deposit Insurance Corporation, Annual Report 1953, 61.

Though this system never experienced the financial crises that the other systems faced, it most likely would have repeated the success of the Indiana and Ohio systems if it had faced one. Iowa's success was an expansion of the Indiana and Ohio successes, and there were no member bank failures during its short period of operation (seven years) (Calomiris 1989, 14).

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Figures 4.23 and 4.24 show that only one bank experienced financial difficulty; that occurred in 1860. Moreover, that bank was holding obligations which amounted to only $95,000 (Federal Deposit Insurance Corporation, 1953). However, the supervisory agency was very efficient in examining the troubled bank in such a way as to get it back to solvency and to protect its creditors (Golembe and Warburton 1958, VII-17).

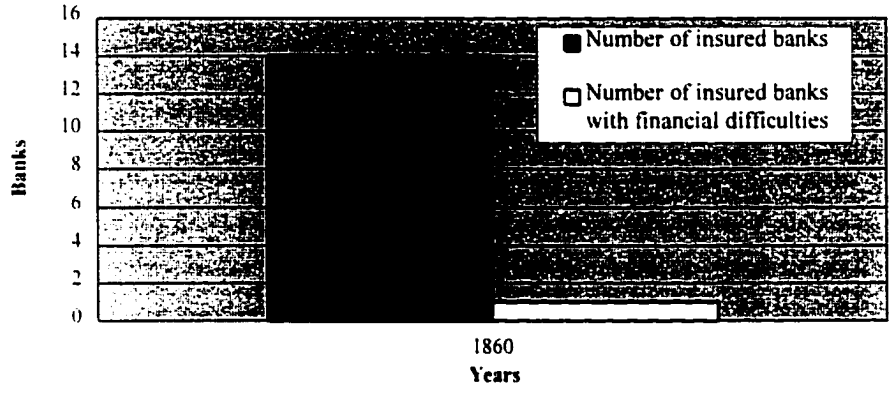

Figure 4.23 Iowa bank insurance program. Number of insured banks, and number of insured banks with financial difficulties.

Source: Federal Deposit Insurance Corporation, Annual Report 1953, 53, 61.

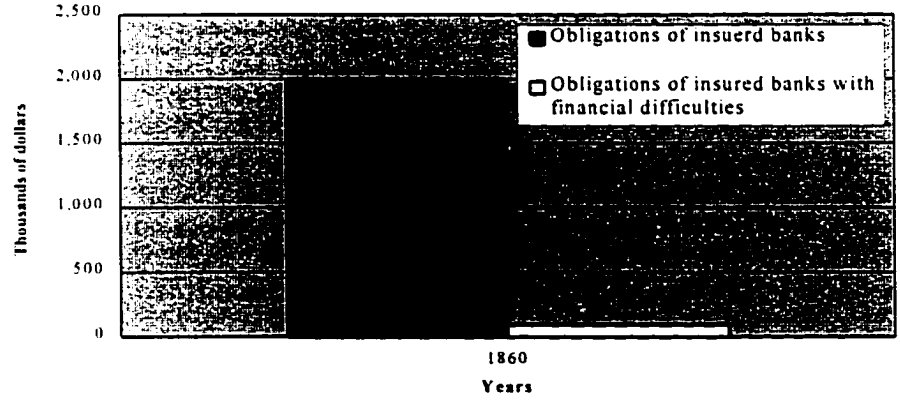

Figure 4.24 Iowa bank insurance program. Obligations of insured banks, and obligations of insured banks with financial difficulties.

Source: Federal Deposit Insurance Corporation, Annual Report 1953, 53, 63.

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Because the Iowa bank insurance program was very similar to those of Indiana and Ohio, it is no surprise that this program fits all five hypotheses of this dissertation. Bankers' participation on the board of directors helped the board to direct the program efficiently. The board's good performance extended to its supervisory system, which was able to keep all member banks in sound condition. Having sufficient enforcement power enabled bank examiners to be more effective in determining any bank's situation; further, a member bank was subject to termination of its operation if it refused any bank examiner's orders. During the period of the Iowa bank insurance program's operation, all member banks were (on average) adequately capitalized, with capital / assets equal to 66.66% (Golembe and Warburton 1958, VII-8, VII-17).

In addition, the use of the "mutual gurantee" system played a central role in this program's success, since funds were available (from member banks) in case of any emergency such as a financial difficulty occurring in any member bank. Furthermore, the lack of government back-up funds made it clear that the banking system was determined by the bankers themselves, and any problem would affect them directly in that all member banks together would bear the loss.

In conclusion, after reviewing the previous six state bank insurance programs, we find two distinct types of plan. Indiana, Ohio, and Iowa adapted a plan that was mainly controlled by bankers and relied on the "mutual gurantee" system. New York, Vermont and Michigan adapted a plan that was mainly controlled by government and relied substantially on its own fund, which came from member banks as an assessment. Only three of these six programs succeeded in maintaining stability in their financial systems

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and minimizing loss among their member banks during financial difficulties--those of Indiana, Ohio, and Iowa. The other programs did not experience the success attained by the first group. The Michigan program was the least successful program, then the Vermont program, then to some extent the New York program.

The three successful bank insurance programs, those of Indiana, Ohio, and Iowa, fit all the five hypotheses of this dissertation. First, their boards of directors were controlled by experienced bankers who succeeded in providing high-quality supervision systems. Second, applying the "mutual gurantee" system improved group action among all member banks, since each bank was interested in keeping other banks in solvent condition. The previous two hypotheses made the difference between the successful programs and the failed programs. Further, providing high coverage and applying a voluntary membership system added to the success attained by the successful programs. Providing high coverage increased public confidence in the banking system during financial difficulties, and voluntary membership with a strong supervision system kept member banks in good performance and saved them from paying for other banks' risky management mistakes. Furthermore, the lack of a government back-up fund increased responsibility among all member banks, and induced them to do their duty in a safe and sound manner.

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Eight State Bank Insurance Programs of the Early 20th Century

In the period between the Civil War and the Great Depression, the banking market experienced strong competition between federal and state regulatory agencies to increase bank memberships in their bank systems. As a means of attracting more banks, some states argued in favor of creating guarantee funds to protect deposits (White 1981, 1).

After the panic of 1907, interest in creating deposit insurance became stronger, and eight states established deposit insurance systems. These states were Oklahoma, Kansas, Nebraska, Texas, South Dakota, Mississippi, North Dakota, and Washington (White 1981, 2-3). This action improved the competitiveness of insured state banks against national banks, and the public mostly put their money in insured state banks rather than uninsured national banks, especially in the first years of those programs' operations (American Bankers Association, 1933).

1. Oklahoma (1908-1923)

Oklahoma was the first state to pass a bank deposit insurance law. Its program started February 14, 1908 (Robb 1921, 37). Under this system, all state banks had to be members, but membership was voluntary for national banks. The source of income was assessments from member banks (see table 4.6). As guaranty for assessment payment, every existing state bank had to make a deposit with the guaranty fund of securities to cover one percent of its average daily deposits. In the case of a new bank that percentage had to equal three percent of its capital; moreover, each member had to pay an annual assessment equal to 1/5 of one percent of its average daily deposit (American Bankers

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Association 1933, 8). Three-quarters of the guaranty fund had to be invested in state securities, and the remaining quarter held as cash with the state banking board (Robb 1921, 28). Immediate coverage was provided for all deposits. If the fund did not have enough to cover all deposit losses, certificates of debt were issued (FDIC: The First Fifty Years 1984, 25). The state banking board was composed of the following members: the governor, the lieutenant governor, the president of the board of agriculture, the state treasurer, and the state auditor. After 1911, the state banking board was composed as follows: the governor and two other members appointed by the governor with the approval of the senate. After 1913, the state banking board was composed as follows: the bank commissioner and three members appointed by the governor with the approval of the senate (Warburton, Deposit Guaranty in Oklahoma 1958, 7). According to Oklahoma guaranty law, all state banks were subject to examination. Moreover, insolvent banks were the responsibility of the bank commission (American Bankers Association 1933, 8).

Table 4.6 Funding base in the Oklahoma state bank insurance program.

Assessments	Fund maximum	Special Assessment:
1909: Annual assessment equal to 1 percent of average daily deposit. 1913: Annual assessment equal to 1/5 of 1 percent of average daily deposit.	1909: When fund reached 5 percent of banks' total average daily deposits. 1913: When fund reached 2 percent of banks' total average daily deposits.	1909: special assessments. limited to 2 percent average daily deposit in any calendar year 1909-1916: limited to 1/5 of 1 percent. After 1916: no special assessments.

Source: Warburton, Deposit Guaranty in Oklahoma 1958, 5-6.

Following the creation of the Oklahoma program, the number of state-insured banks increased and the number of national banks decreased. Furthermore, deposits at

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state banks increased and deposits at national banks decreased (Robb, 1921). In 1907, there were 370 state banks and 294 national banks holding deposits equal to $16,300,000 and $48,300,000 respectively; however, by 1910, the number of state banks (insured) had increased to 685 banks and their deposits increased to $48,000,000. At the same time, the number of national banks decreased to 215 and their deposits declined to $38,900,000 (American Bankers Association, 1933; Robb, 1921).

During the operation of the Oklahoma program, 180 banks failed out of 557 insured state banks, but only 27 national banks failed out of 350 (Calomiris 1989, 17). The high failure rate among insured banks was due to an inefficient supervisory system that was unable to prevent moral-hazard problems. Insured banks took more risky actions than national banks. In 1914, the dividends for insured banks were 42 percent greater than the dividends for national banks (insured banks' dividends were 17.9, while the national banks' dividends were 12.6), and 79 percent greater than the national average of all state banks' dividends (more dividends implied more risk) (Calomiris 1989, 17). In the first twelve years of the program period of operation, 56 banks failed, of which 54 banks were state banks and only 2 were national banks. Between 1921 and 1923, 88 banks failed, 90% of which were state banks (American Bankers Association, 1933; Robb, 1921).

Figure 4.25 shows that the number of insured banks reached its highest point in 1910 with 695 banks, and reached its lowest point in 1922 with 463 banks. Figure 4.26 shows that the insured deposits reached their highest point in 1919 at $190,900,000, and their lowest point in 1922 at $31,617,000.

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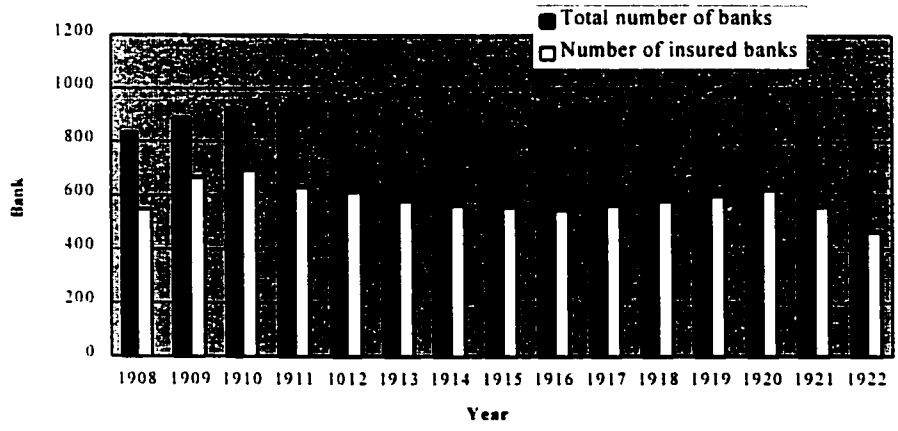

Figure 4.25 Oklahoma deposit insurance program. Total number of banks, and number of insured banks.

Source: Warburton. Deposit Guaranty in Oklahoma 1958. 35.

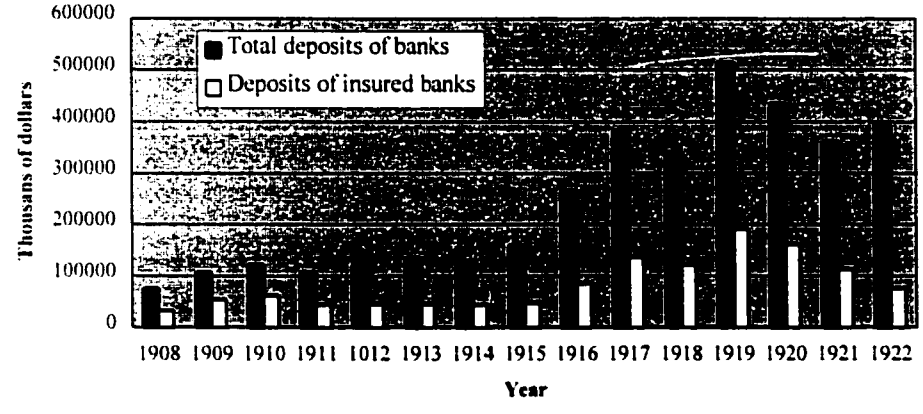

Figure 4.26 Oklahoma deposit insurance program.Total deposits of banks, and deposits of insured banks.

Source: Warburton. Deposit Guaranty in Oklahoma 1958. 36.

Figures 4.27 and 4.38 show that the number of insured banks with financial difficulties reached its highest level in 1922 with 33 banks, and deposits reached their highest level in 1922 at $8,404,000.

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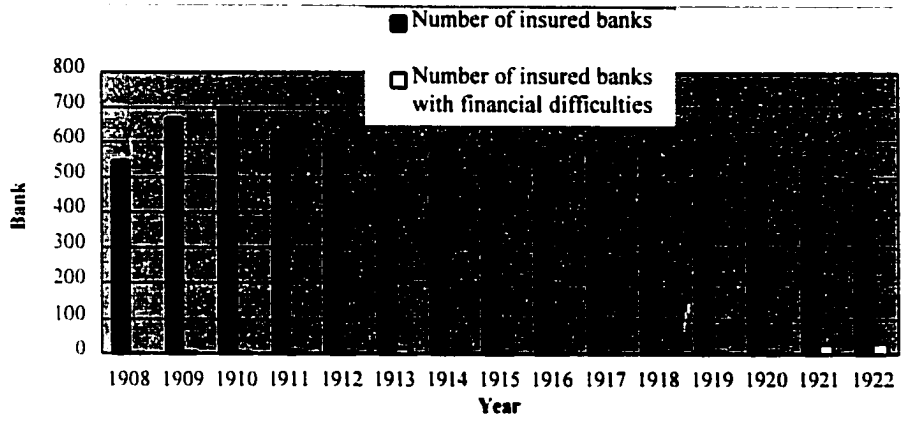

Figure 4.27 Oklahoma deposit insurance program. Number of insured banks, and number of insured banks with financial difficulties.

Source: Warburton, Deposit Guaranty in Oklahoma 1958, 35, 39.

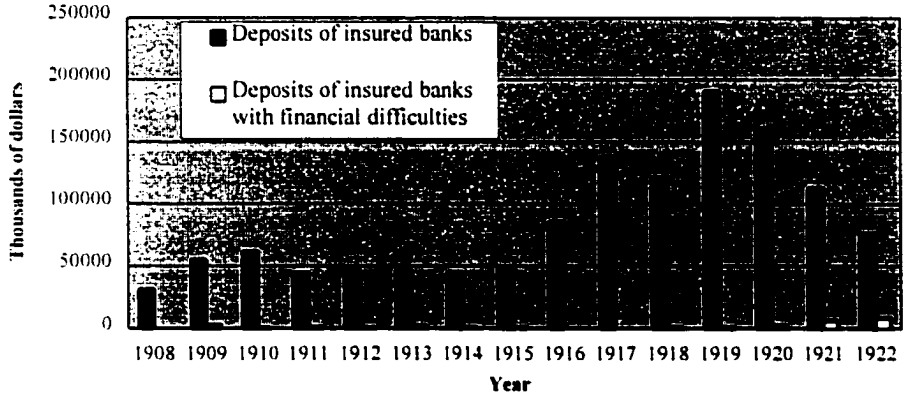

Figure 4.28 Oklahoma deposit insurance program. Deposits of insured banks, and depodits of insured banks with financial difficulties.

Source: Warburton, Deposit Guaranty in Oklahoma 1958, 36, 39.

Failure of the largest insured bank in 1909 affected the Oklahoma guaranty negatively, because the insurance fund was not enough to pay back its depositors. Therefore, certificates of indebtedness were issued to that bank's depositors, causing the insurance fund to be in debt for almost ten years. Moreover, failure of the second largest

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insured bank in 1921 caused that program to be insolvent for the first time (Warburton, Deposit Guaranty in Oklahoma 1959, 2, 30, 32).

Moreover, the Oklahoma guaranty plan experienced bad regulation and supervision; speculation by bank officials and lack of law enforcement were among the factors that led to its poor performance (Robb 1921, 89). Further, fund deficiency affected the supervisory system negatively and played a significance role in its failure to protect member bank depositors, or to minimize the large number of bank failures. "This abnormally high failure rate was due in substantial part to deliberate bank mismanagement--sheer dishonesty, participation in unduly speculative enterprises, and overextension of loans to enterprises with which bank officials or favored customers were connected" (Warburton, Deposit Guaranty in Oklahoma 1959, 59). The large number of insured bank failures during 1921 and 1922 that accompanied fund limitation caused the program to fail in 1923 (Warburton, Deposit Guaranty in Oklahoma 1959, 33).

Testing the five hypotheses of this dissertation against the Oklahoma guaranty plan, we find that two hypotheses do not fit--H1: *Bankers should be on the board of directors of the DIS* and H2: *The insurance fund should come from the member banks.* Though bankers were on the board of directors, that board was dominantly directed by government, and bankers did not take the lead in directing the program. The board was not able to control the Oklahoma program efficiently; its poor performance was reflected in a very weak supervisory system. Though the board of directors had good enforcement power, that power was not totally utilized (Warburton, Deposit Guaranty in Oklahoma 1959, 70). The dependence on funds derived from assessment played a significant role in

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the program's failure. The Oklahoma program experienced a very long period of fund deficiency relative to its period of operation, and that problem affected other parts of that system, such as the supervisory system (Warburton, Deposit Guaranty in Oklahoma 1959, 23, 30, 70). The use of a "mutual guarantee" system might have solved the fund deficiency problem, and greater availability of funds accompanied with an expert board of directors would have resulted in better performance and operation of the bank insurance program.

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2. Nebraska (1909-1930)

On March 25, 1909, the Nebraska insurance system was inaugurated by applying the Kansas plan (Robb 1921, 133). Membership in the Nebraska program was mandatory for all state banks. As in the Kansas system, the Nebraska program generated its income from assessments of member banks. Semiannual assessments of 1/20 of one percent of a bank's average daily deposit were used with a maximum when the fund reached 1.5 percent of total deposit. A new bank's assessment was equal to 4 percent of its capital. Special assessments could be applied whenever the fund went below 1 percent of the total deposit (see table 4.7). Each bank held the fund in a special account and made it payable to the guaranty fund (Robb 1921, 133). The coverage was for all deposits, and immediate payment was available. In case of deficient funds, obligation certificates were issued. A state banking board composed of the following three members was responsible for directing the system: the governor, the attorney general, and the public account auditor (Warburton, Deposit Guaranty in Nebraska 1959, 16).

Table 4.7 Funding base in the Nebraska state bank insurance program.

Assessments	Fund maximum	Special Assessment:
Semi-annual assessments equal to 1/20 of 1 percent (in first two years it was equal to ¼ of 1 percent) of average daily deposits. New banks' assessments equal to 4 percent of their capital stock	When fund reached 1 ½ percent of banks' total average daily deposits. After 1923 reduced to ¾ of 1 percent.	Special assessments up to 1 percent applicable when fund went below 1 percent of average daily deposit. After 1923 reduced to up to ½ of 1 percent of average daily deposit.

Source: American Bankers Association 1933, 15

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Figure 4.29 shows that the number of insured banks reached its highest point in 1920 with 1009 banks, and its lowest point in 1929 with 647 banks. Figure 4.30 shows that the amount of insured deposits reached its highest point in 1925 at $281,547,000, and its lowest point in 1911 when it declined to $73,890,000.

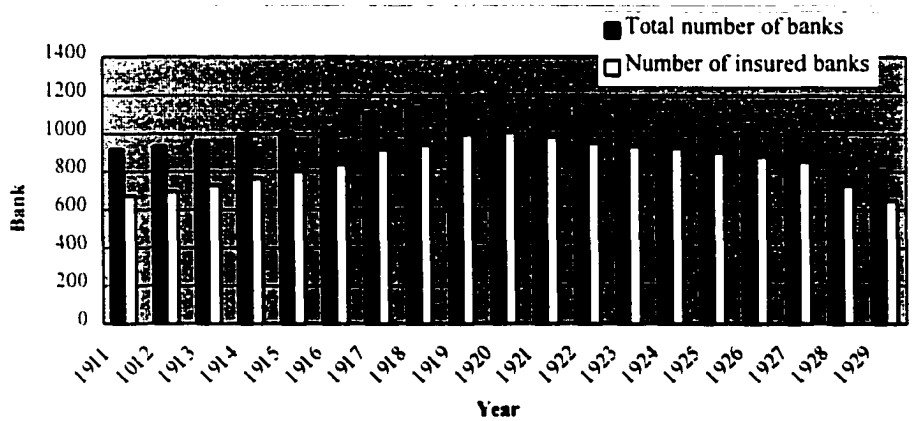

Figure 4.29 Nebraska deposit insurance program. Total number of banks, and number of insured banks.

Source: Warburton, Deposit Guaranty in Nebraska 1958, 36.

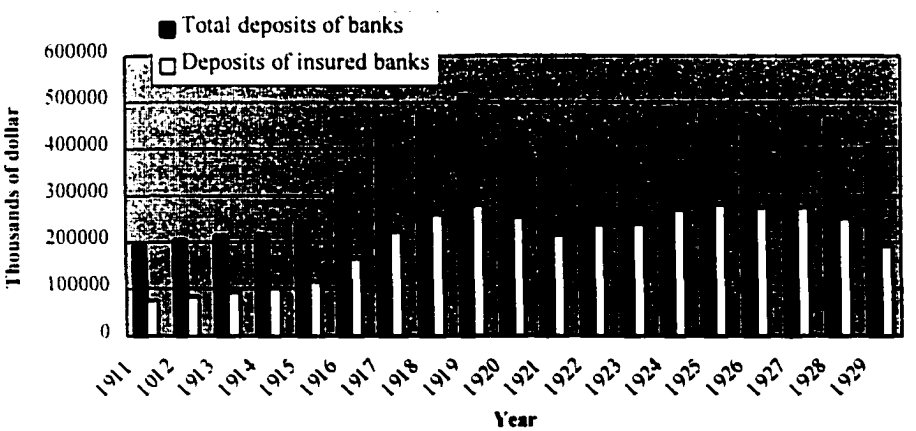

Figure 4.30 Nebraska deposit insurance program. Total deposits of banks, and deposits of insured banks.

Source: Warburton, Deposit Guaranty in Nebraska 1958, 38.

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In the first three years of its full-force operation (between 1911 and 1914), the number of state banks increased by 38 percent from 661 to 910, while the number of national banks decreased by 22 percent from 246 to 191 (Calomiris 1989, 20). From 1909 to 1920, the number of state banks increased from 662 banks to 1008 banks, and their deposits increased from $71,139,000 to $291,100,000. At the same time the number of national banks decreased from 219 banks to 175 banks while their deposits increased slightly from $83,369,000 to $98,800,000. In the first half of Nebraska's bank insurance program, 7 banks failed, of which 5 were state banks, while in the second half, 360 banks failed of which more than 90% were state banks (American Bankers Association 1933, 15; Robb 1921, 139).

Figures 4.31 and 4.32 show that the number of insured banks with financial difficulties reached its highest level in 1929 with to 116 banks, and the total deposits of insured banks with financial difficulties reached its highest level in 1929 at $19,835,000.

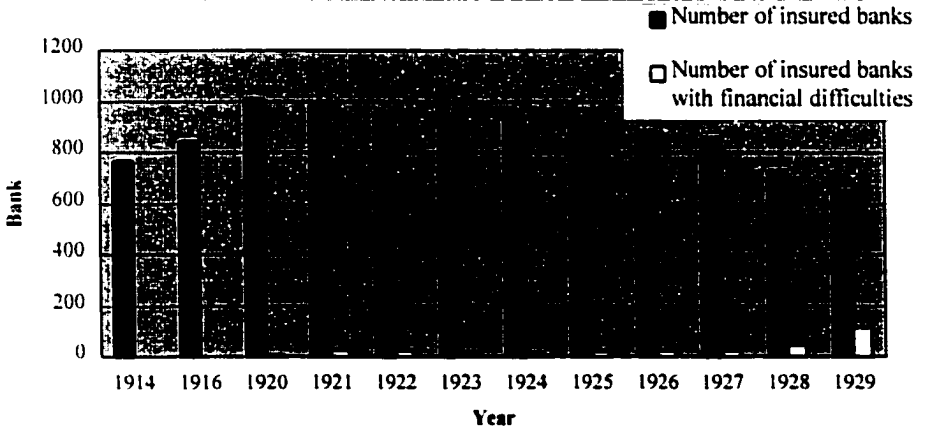

Figure 4.31 Nebraska deposit insurance program. Number of insured banks, and number of insured banks with financial difficulties.

Source: Warburton, Deposit Guaranty in Nebraska 1958, 41.

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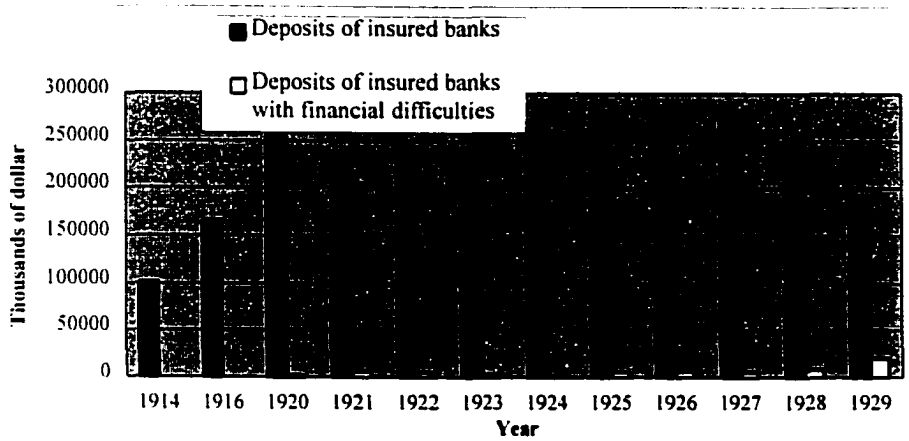

Figure 4.32 Nebraska deposit insurance program. Deposits of insured banks, and deposits of insured banks with financial difficulties.

Source: Warburton, Deposit Guaranty in Nebraska 1958, 38, 42.

From its beginning until 1920, the Nebraska guaranty plan succeeded in keeping the banking system stable--only 5 state banks failed. By the end of 1920, the guaranty fund amounted to $2,367,000 and the failed banks' deposits had covered $239,330 (American Bankers Association 1933, 18). However, in 1920 insured banks went to more risky behavior, practicing moral-hazard problems. This resulted in a higher failure rate among insured state banks than among national banks. During 1920, 38 percent of insured state banks failed compared to 18 percent of national banks (Calomiris 1989, 20). In the next five-year period around 100 insured banks failed due to financial difficulties. As more and more insured banks failed in 1928 and 1929, the Nebraska deposit insurance program technically ended in April 1929 (Warburton, Deposit Insurance In Nebraska 1959, 30).

Testing this dissertation's five hypotheses against the Nebraska deposit insurance program suggests that two hypotheses do not hold--H1: *Bankers should be on the board*

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of directors of the DIS and H2: ***The insurance fund should come from the member banks.*** The Nebraska deposit insurance program was totally under government authority control, and bankers did not participate in its board of directors. Bankers' participation on the board of directors would have made that board more efficient and its decisions more accurate as a way of preventing banks' failure and minimizing loss. Moreover, a high-quality board of directors would have implemented a good supervisory system. The failure of a few banks in the first half of the program's operation does not imply a good supervisory system; it implies stable economic conditions. During this period the number of insured banks increased by 40% while the number of examiners did not change. Just nine examiners were responsible for doing at least two bank examinations for each member bank during that period. In 1911 each examiner had to do 150 bank examinations per year, and in 1919 that number increased to over 200 (Warburton, Deposit Insurance In Nebraska 1959, 22, 23). Moreover, the low pay rates for examiners kept their experience at a very low level, because they changed their jobs as soon as they found better paying positions. Furthermore, the Nebraska deposit insurance program relied only on assessments it received from member banks. This led to a fund deficiency in the program as the number of failed banks increased during the 1920s. The assessments collected only covered 39% of the total insured deposit loss (Warburton, Deposit Insurance In Nebraska 1959, 71). The application of a mutual guarantee system would have made funds available whenever they were needed, and would have enabled the board of directors to step in at the right time to solve any banking problem at minimum cost.

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3. Kansas (1909-1925)

The Kansas insurance system was implemented on June 30, 1909 to insure bank deposits (Robb 1921, 123); membership was voluntary for state banks. Member banks' assessments provided the system with the income used to cover deposit losses. Before becoming a member each bank had to deposit one-half percent of its average daily deposit (cash or bond) with the fund. An annual assessment equal to 1/20 of one percent on average daily deposits applied, and additional assessments could be applied if the fund went below a certain level (see table 4.8) (American Bankers Association 1933, 32). The guaranty funds were kept with the state treasurer, deposited with state depository banks under the command of the bank commissioner (Robb 1921, 113). In the Kansas bank insurance program, any insolvent bank was subject to asset liquidation by the bank commissioner, and no immediate payments were available. Instead, interest-bearing certificates (six percent) would be issued to depositors in failed banks, and after liquidation was finished, the balance on these certificates would be paid (FDIC: The First Fifty Years 1984, 24). The Kansas program was controlled by a bank Commissioner (appointed by the governor with the advice of the senate) with three years of experience in Kansas, and the Commissioner of banking and insurance deputies (appointed by the governor). In 1925 the State banking board was composed of the following members: the bank Commissioner (chairman), and four other members appointed by the governor, each with five years of experience in Kansas.

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Table 4.8 Funding base in the Kansas state bank insurance program.

Assessments	Fund maximum	Special Assessment:
Annual assessments equal to 1/20 of 1 percent of average daily deposits less capital & surplus. As Guaranty for assessments payment each bank had to deposit $500 (cash or bond) for each $100,000 of average daily deposits less its capital & surplus	When fund reached $500,000	Special assessments up to 1/5 of 1 percent applicable in any one year whenever fund went below $500.000.

American Bankers Association 1933, 32.

In its first ten years of operation, the number of state banks increased from 757 to 1096 and their deposits increased from $71,139,000 to $291,100,000, and at the same time, the number of national banks increased from 202 to 240 banks and their deposits increased from $61,700,000 to $143,100,000. Figure 4.33 shows that the number of insured banks reached its highest point in 1921 with 714 banks, and reached its lowest point in 1928 when it declined to 39 banks.

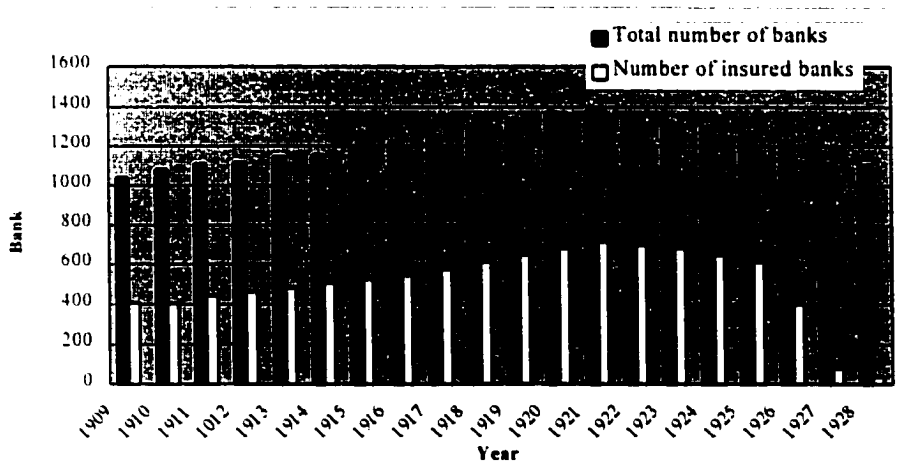

Figure 4.33 Kansas deposit insurance program. Total number of banks, and number of insured banks.

Source: Warburton, deposit guaranty in Kansas 1958, 31.

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Figure 4.34 shows that the total of insured deposits reached its highest point in 1919 at $204,669,000, and its lowest point in 1928 when it declined to $3,340,000.

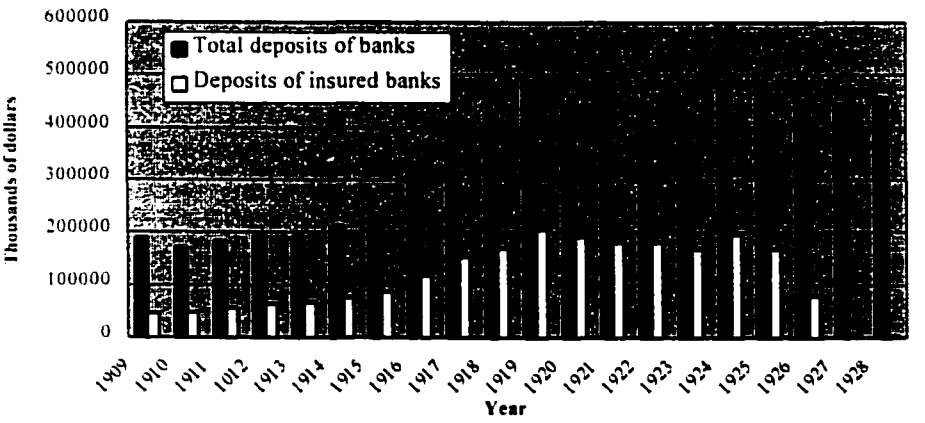

Figure 4.34 Kansas deposit insurance program. Total deposits of banks, and deposits of insured banks.

Source: Warburton, deposit guaranty in Kansas 1958, 33.

To avoid moral-hazard problems, Kansas tried to impose a strong supervisory system, and made all banks subject to an admission examination. But adverse selection problems arose as sound banks left the system, and only unhealthy banks kept their memberships. This explains the high rate of failure among insured state banks relative to uninsured state banks; in a two-year period, 1922-1924, 6 percent of insured state banks failed, while only 3 percent of uninsured state banks failed (Calomiris 1989, 19). National banks and uninsured state banks were in a better position than insured state banks. From 1909 to 1919, 8 banks failed, of which 2 were insured, and between 1920 and 1926, 128 banks failed, of which 94 were insured (American Bankers Association 1933, 34).

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Figure 4.35 shows that the number of insured banks with financial difficulties reached its highest level in 1926 with 35 insured banks, and the deposits of insured banks with financial difficulties reached its highest level in 1923 at $7,897,000.

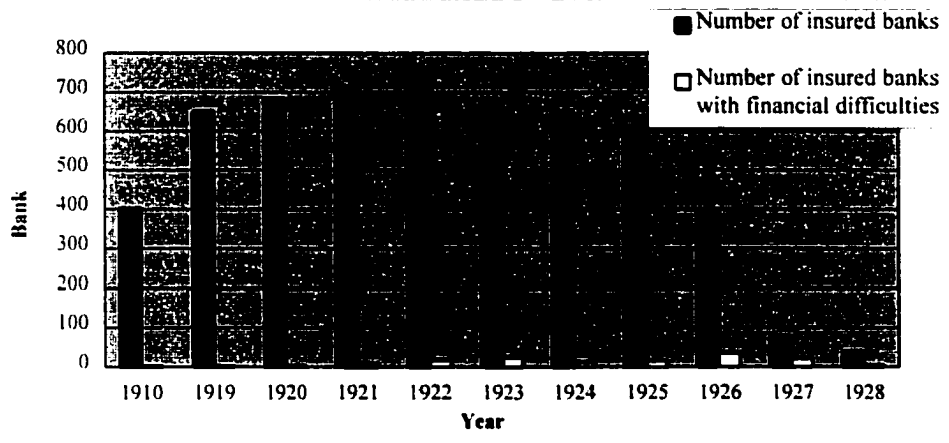

Figure 4.35 Kansas deposit insurance program. Number of insured banks, and number of insured banks with financial difficulties.

Source: Warburton, deposit guaranty in Kansas 1958, 31, 37.

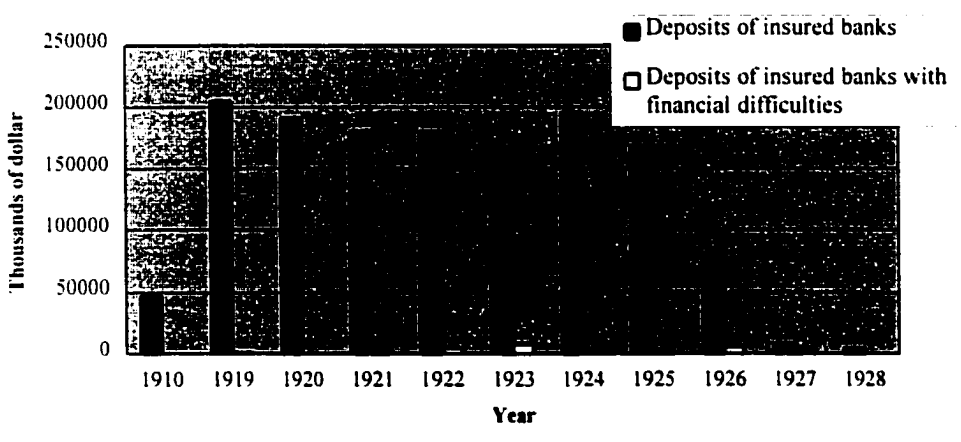

Figure 4.36 Kansas deposit insurance progam. Deposits of insured banks, and deposits of insured banks with financial difficulties.

Source: Warburton, deposit guaranty in Kansas 1958, 33, 37.

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The Kansas bank insurance program was able to maintain stability among its member banks only for the first 10 years, when there were only two bank failures. However, during the 1920s the program went through serious difficulties and more than 117 banks failed due to financial difficulties. In 1927 and 1928 many banks withdrew from the program and by 1928 only 39 banks were still in the program. The law was repealed in 1929 (Warburton, Deposit Guaranty in Kansas 1959, 31, 37, 64). During its operation, 220 banks failed, of which 65% were insured and depositors of only 31 banks were paid either in full (27 banks) or partially (2 banks) (American Bankers Association 1933, 35).

Two hypotheses of this dissertation's five hypotheses do not hold in the Kansas Bank insurance program--Those of H1: *Bankers should be on the board of directors of the DIS* and H2: *The insurance fund should come from the member banks.* Up to 1925 only a bank commissioner was in control of the program; thereafter, a board of directors was created to continue directing the program. Both of these systems were less than successful in producing a good, efficient insurance program. Moreover, the supervisory system was less than effective in carrying out its responsibilities, and failed to keep the program in sound condition. Only experienced people are able to control any bank insurance program efficiently and enable it to reach its objectives such as maintaining stability among its member banks and protecting bank depositors. Those expert people are the bankers themselves, who should direct and control such a program. Further, fund deficiencies were among the main reasons that led to the Kansas program's failure. Many failed bank depositors were not paid. Furthermore, fund deficiency helped to make the

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supervision system less satisfactory. For example, bank examiners were poorly paid. This caused most of them to leave as soon as better paid jobs were available, which resulted in a less expert and less efficient supervisory system. Finally, as with most of the failed state programs, the use of a mutual guarantee system would have helped to solve these problems by creating a good board of directors with the efficient supervisory system necessary to keep member banks in sound condition.

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4. Texas (1910-1927)

Unlike all other state insurance systems studied here, Texas had two insurance programs (a guaranty fund system and a bond security system), and all state banks had to protect their customer deposits under either plan (Robb 1921, 148). Each bank could choose to be either a member in the guaranty fund or insure its customer deposits by buying bonds and placing them with the commissioner of insurance and banking (Warburton, Deposit Guaranty In Texas 1959, 4). However, the amount of bonds a bank had to keep could not go below 50 percent of the average deposits of the previous year. Texas banks favored the guaranty plan system. On January 1, 1910 the deposit guaranty in Texas become effective (Robb 1921, 151). On August 31, 1910, 93 percent of all state banks had become members in the depositors' guaranty fund (541 banks), while only 7 percent of all banks participated in the depositors' bond security system (43 banks). By December 31, 1919, 924 banks were under the depositors' guaranty fund and 41 banks were under the depositors' bond security system (Robb 1921, 151).

A State Bank Board controlled the Texas deposit insurance program. This board was composed of the following members: the attorney general, the commissioner of insurance and banking (appointed by the governor), and the state treasurer. Some restrictions applied to the system, such as setting a maximum deposit limit that each bank could have. Each bank was allowed to accept deposits up to ten times its capital (Calomiris 1989, 20). The Texas guaranty fund plan applied a high rate of assessment with high maximum fund accumulation. An existing bank had to deposit one percent of its average daily deposits; new banks were required to deposit 3 percent of their capital

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and surplus. Annual assessments equal to one-fourth of one percent were applied with a maximum of $2,000,000 fund accumulation. In emergency cases, the banking board could apply an additional limited assessment in any one year (see table 4.9) (American Bankers Association 1933, 35). Three-quarters of the funds were kept with the same bank, payable to the state banking board, and the remaining quarter of the fund was kept with the state banking board, where it was deposited with the state treasurer (Robb 1921, 149).

Table 4.9 Funding base in the Texas state bank insurance program.

Assessments	Fund maximum	Special Assessment:
Annual assessments equal to ¼ of 1 percent of average daily checking deposits. As a Guaranty for assessments payment existing banks had to deposit 1 percent of average daily deposits with the fund New banks had to deposit 3 percent of their capital & surplus.	When fund reached $2,000,000	Special assessments equal to 2 percent in any one year.

Source: Warburton, Deposit Guaranty In Texas 1958, 8.

Between 1910 and 1920, the number of state banks increased by 70%, from 584 to 992, and their deposits increased by 600%, from $43,100,000 to $297,100,000. At the same time, the number of national banks increased by only 7%, while their deposits increased by 224%. Moreover, figure 4.37 shows that the number of insured banks reached its highest point in 1921 with 990 banks, and its lowest point in 1927 when it declined to 34 banks. Figure 4.38 shows that the total of insured deposits reached its highest point in 1920 at $321,008,000, and its lowest point in 1927 when it declined to $5,925,000.

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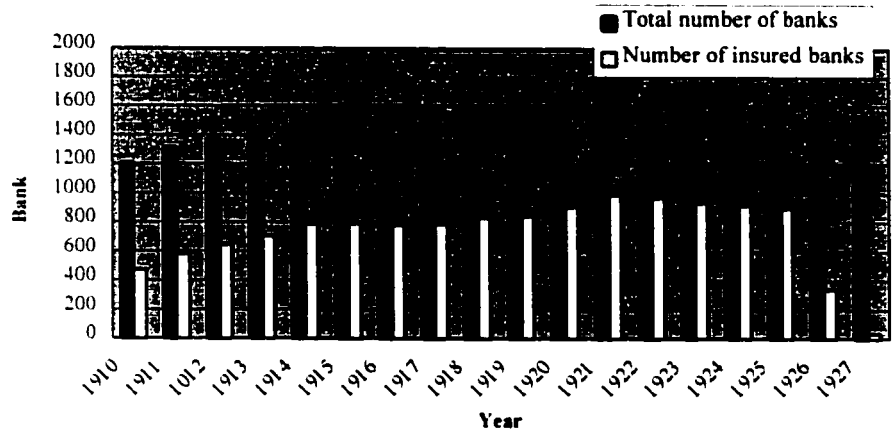

Figure 4.37 Texas deposit insurance program. Total number of banks, and number of insured banks.

Source: Warburton, Deposit Guaranty in Texas 1958, 31.

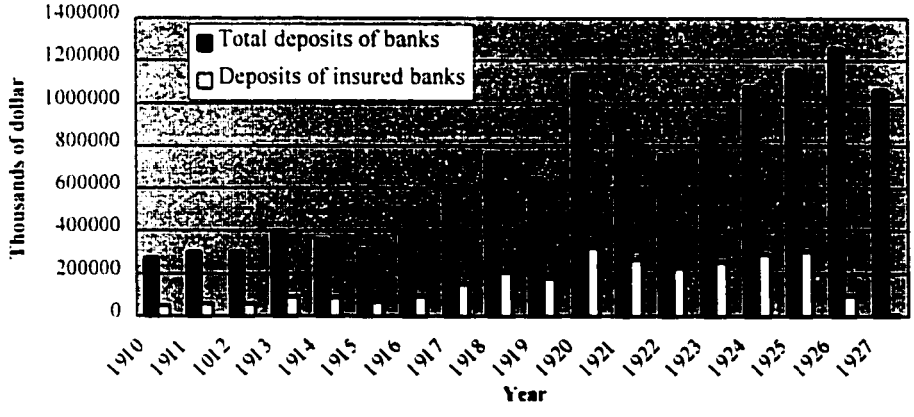

Figure 4.38 Texas deposit insurance program. Total deposits of banks, and deposits of insured banks.

Source: Warburton, Deposit Guaranty in Texas 1958, 33.

Figures 4.39 and 4.40 show that the number of insured banks with financial difficulties reached its highest level in 1921 with 33 banks, and the deposits of insured banks with financial difficulties reached their highest level in 1921 at $12.525.000.

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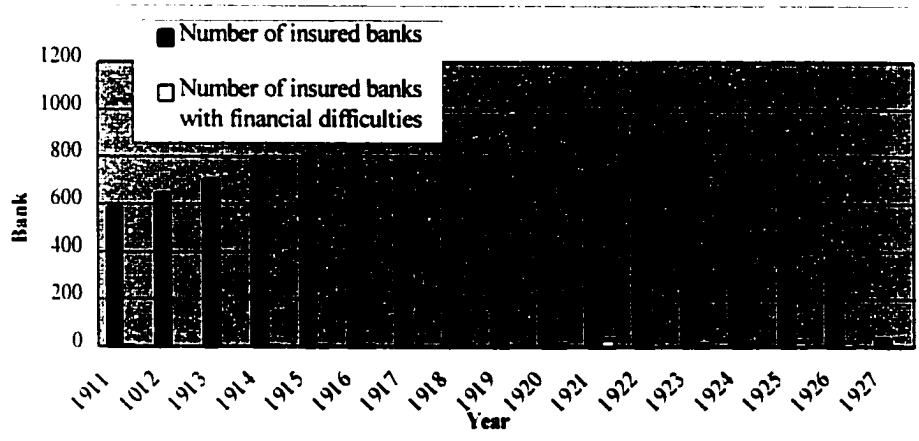

Figure 4.39 Texas deposit insurance program. Number of insured banks, and number of insured banks with financial difficulties.

Warburton, Deposit Guaranty in Texas 1958, 31, 38.

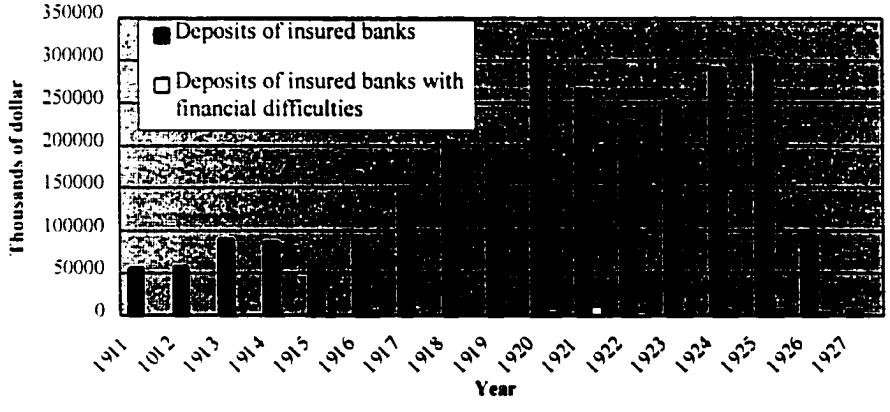

Figure 4.40 Texas deposit insurance program. Deposits of insured banks, and deposits of insured banks with financial difficulties.

Source: Warburton, Deposit Guaranty in Texas 1958, 33, 38.

From its creation till 1919, the Texas deposit insurance program succeeded in maintaining stability among its member banks, and all depositors of failed insured banks were paid promptly. During that period only 19 banks failed, equal to 12.34% of total insured bank failures that occurred during the period of the plan's operation. Beginning in

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the 1920s, the Texas deposit insurance program faced severe problems when agricultural prices fell, and by 1926 it was unable to cover deposit losses in its member banks (Warburton, Deposit Guaranty in Texas 1959, 24-26, 38, 72). Between 1920 and 1925 the failure rate was greater among its member banks (9 percent) than national banks (2.4 percent) (Calomiris 1989, 21). During the 1920s, 135 member banks failed, equal to 87.66% of all insured bank failures that occurred during the period of the Texas program's operation. In 1925, for the first time, member banks were allowed to quit their membership with the program. Subsequently more than 500 banks withdrew from the program a year later, and by early 1927 there were only 34 member banks in the Texas program, which was officially repealed on February 11, 1927 (Warburton, Deposit Guaranty in Texas 1959, 1, 38).

Two hypotheses of this dissertation do not fit the Texas deposit insurance program--H1: *Bankers should be on the board of directors of the DIS* and H2: *The insurance fund should come from the member banks.* Though the program was under a board of control, there were no bankers on that board. The board succeeded in controlling the program in the first half of its existence; however, during the 1920s, as economic conditions deteriorated, it failed to maintain the good performance of its early years. Further, the supervisory system that was responsible for examining member banks was affected negatively by lack of experience, insufficient funds, low salaries, and heavy work load--each member bank had to examined four times in each year. The inefficient supervisory system jointly with a weak board of directors failed to close insolvent banks efficiently: instead, they applied long closing procedures and insolvent banks were

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allowed to stay in business, which increased their cost of failure (Warburton, Deposit Guaranty in Texas 1959, 18-19, 44). The participation of expert bankers on the board of directors is an essential factor to create a good DIS, especially when they possess good enforcement powers to pursue their work in an efficient manner. Availability of funds is another essential factor required to create a good DIS. The Texas deposit insurance program applied a high assessment rate, used a high fund maximum, and was able to pay failed banks depositors only in the first half of its operation. However, during the severe difficulties of the 1920s it was not able to do so. The use of a mutual guarantee system would have enabled this DIS to protect depositors of failed banks all the time. The cooperation of all member banks in bailing out any failed member's customers would have led banks to work jointly, through the board of directors, to achieve a safe and efficient banking system in which only efficient banks would have been allowed to stay in business.

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5. Mississippi (1914-1930)

The Mississippi insurance system was inaugurated on March 9, 1914, as the first state insurance system after the creation of the Federal Reserve System. Membership was voluntary, but after May 15, 1915, all state banks had to be members in the system (Robb 1921, 166-167).

Unlike other state insurance systems, this was fully directed by just three appointed independent district examiners. "One is appointed by the governor, who shall be a successful banker and business man; one by the attorney-general, who shall be an experienced lawyer; and one by the auditor, who shall be an experienced accountant" (Robb 1921, 166). Member bank assessments provided its income--an annual assessment equal to 1/20 of one percent of average daily deposit with a maximum of $500,000 fund accumulation (see table 4.10) (Robb 1921, 168).

Table 4.10 Funding base in the Mississippi state bank insurance program.

Assessments	Fund maximum	Special Assessment:
Annual assessments equal to 1/20 of 1 percent of average daily deposits less capital & surplus. As a guaranty for assessment payment each state bank had to deposit $500 (cash or securities) for every $100,000 of deposits.	When fund reached $500,000	Special assessments up to 1/5 of 1 percent applicable in any one year.

Source: Robb 1921, 168

In the case of any bank failure, the examiner closed the bank and depositors would be given "interest-bearing certificates", where interest payments on these

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certificates would be covered by asset liquidation, and the balance on these certificates would be paid whenever liquidation was finished (FDIC: The First Fifty Years 1984, 24). In case of a fund deficiency, a special assessment equal to 1/20 of one percent of average daily deposit in member banks would apply up to four times in one year to cover all payments (American Bankers Association 1933, 22). An accumulation assessment fund kept with the state treasurer and deposited by him in the state depository banks was mostly kept in cash, with some funds in bonds (Robb, 1921). Mississippi banking authorities were given full power in chartering new banks (American Bankers Association 1933, 25).

Between 1915 and 1920, the number of state banks increased from 280 to 315 banks, and their deposits increased from $41,000,000 to $145,000,000. At the same time the number of national banks declined from 35 banks to 30 banks while their deposits increased from $16,900,000 to $39,900,000 (American Bankers Association, 1933; Robb, 1921). During the period of operation of the Mississippi deposit insurance program, the percentage of insured banks ranged from 88% to 91% of all banks, and the percentage of insured deposits ranged from 67% to 79% (Warburton, Deposit Guaranty in Mississippi 1955, 32). Figure 4.41 shows that the number of insured banks reached its highest point in 1920, 1921, and 1923 with 306 banks, and its lowest point in 1915 and 1916 when it declined to 258 banks. Figure 4.42 shows that the deposits of insured banks reached their highest point in 1919 at $187,850,000, and its lowest point in 1914 at $45,493,000.

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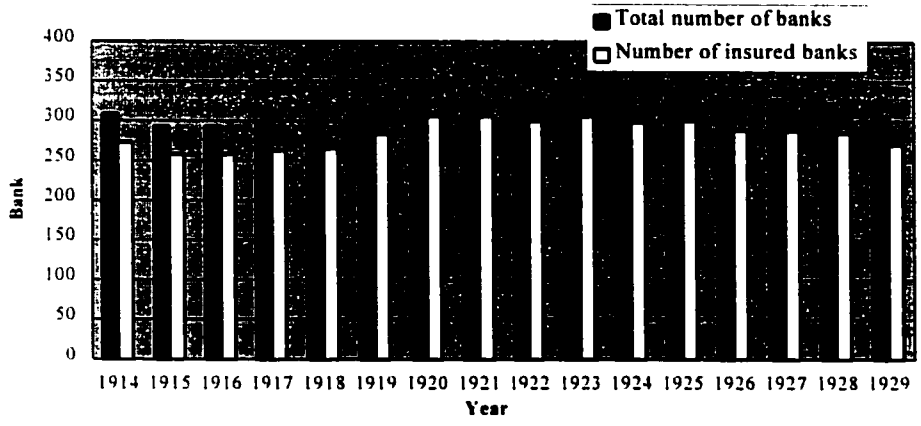

Figure 4.41 Mississippi deposit insurance program. Total number of banks, and number of insured banks.

Source: Warburton, Deposit Guaranty in Mississippi 1955, 32.

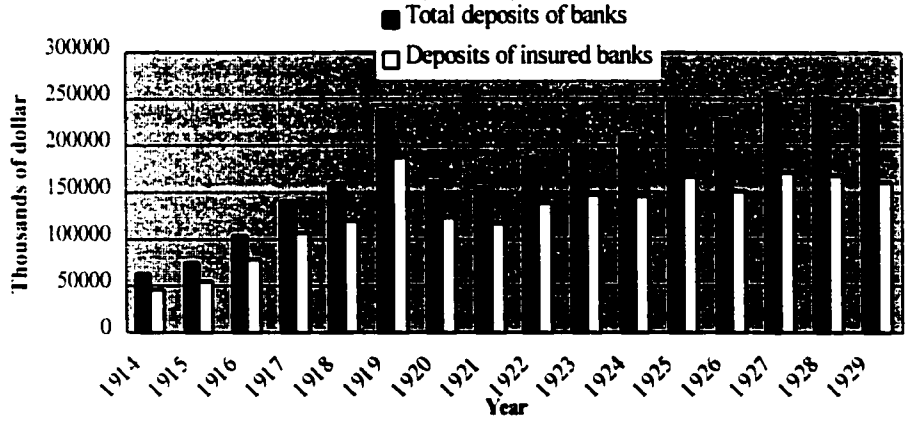

Figure 4.42 Mississippi deposit insurance program. Total deposits of banks, and deposits of insured banks.

Source: Warburton, Deposit Guaranty in Mississippi 1955, 32.

In the first five-year period, 5 state banks failed; however, in the last ten years 58 banks failed, of which 95% were insured banks. Figures 4.43 and 4.44 show that the number of insured banks with financial difficulties reached its highest level in 1922 and 1929 with 10 banks, and the deposits of insured banks with financial difficulties reached its highest level in 1929 at $2,294,357.

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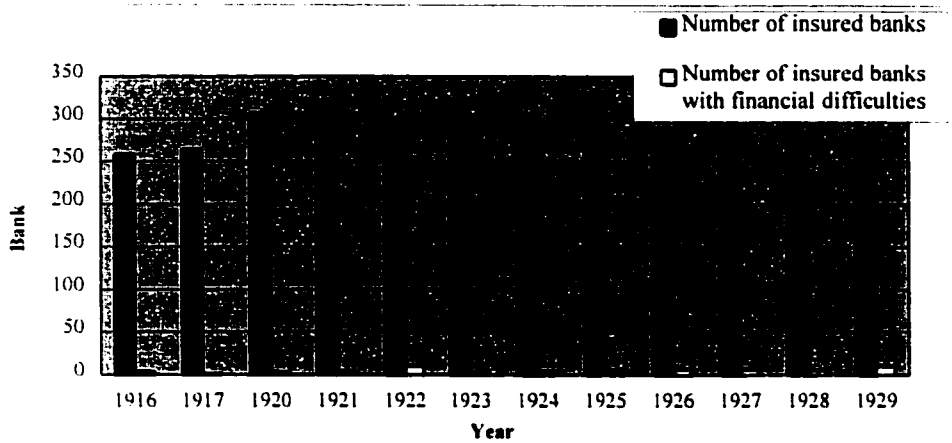

Figure 4.43 Mississippi deposit insurance program. Number of insured banks, and number of insured banks with financial difficulties.

Source: Warburton, Deposit Guaranty in Mississippi 1955, 32, 35.

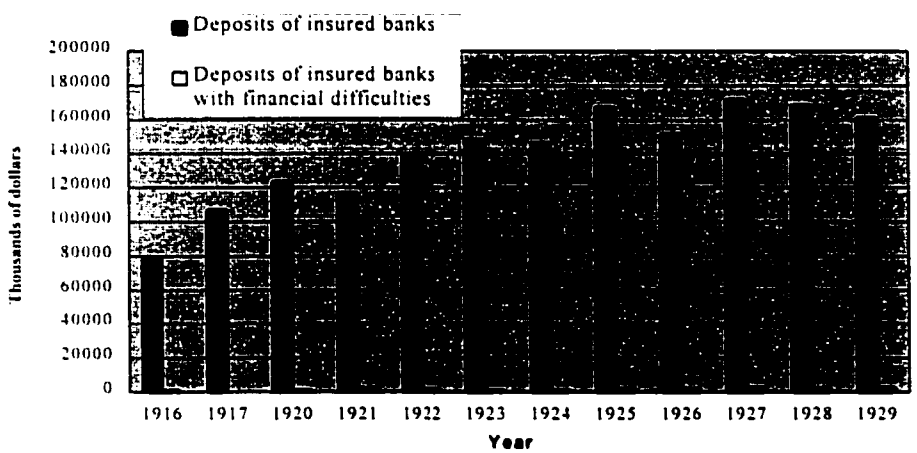

Figure 4.44 Mississippi deposit insurance program. Deposits of insured banks, and deposits of insured banks with financial difficulties.

Source: Warburton, Deposit Guaranty in Mississippi 1955, 32, 35.

In the early 1920s the Mississippi deposit insurance program faced the first strong economic disturbance as an agricultural price collapse caused discomfort in the banking system. By the end of 1921, the program had become insolvent after the failure of 6 member banks. As the number of failed member banks increased in the middle and late 1920s, the fund issued "interest-bearing certificates" that exceeded the failed banks'

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liquidation values. Moreover, the balance on those outstanding certificates was not paid due to fund deficiency (Warburton, Deposit Guaranty in Mississippi 1955, 52). "By 1930 the liabilities of the guaranty fund far exceeded the amounts which were or would become available to the fund for many years, and on March 11 of that year the application of the fund to future failures was postponed until existing obligations were cleaned. In 1934 the law was repealed" (Warburton, Deposit Guaranty in Mississippi 1955, 1).

Testing this dissertation's five hypotheses against the Mississippi deposit insurance program, we find that two hypotheses do not hold--H1: *Bankers should be on the board of directors of the DIS* and H2: *The insurance fund should come from the member banks.* As with most of the early 20th century state deposit insurance programs, government predominantly controlled the board of directors of the Mississippi program. Further, the board of directors was less than successful in controlling the program. During the 1920s, when economic conditions were less favorable, the system encountered serious trouble. Many banks failed as a result of the agricultural sector's collapse along with mismanagement by member bank authorities. Participation of bankers on the deposit insurance board of directors would have improved its performance in keeping member banks in stable condition by applying a prudential supervision system. Fund deficiency was the other reason that led to the poor performance of the Mississippi deposit program. This caused a delay in paying back failed banks' depositors. In fact, fund deficiency was recognized in the early years of the program; the first report of the board of bankers examiners indicated that the accumulated fund was not enough to

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cover any future failed bank's depositor (Warburton, Deposit Guaranty in Mississippi 1955, 23, 53). Fund deficiency kept the supervisory system at a low level and weakened its effectiveness in maintaining stability in the banking system. The use of a mutual guarantee system, together with an expert board of directors, would have solved the fund deficiency problem and increased public confidence in the deposit insurance program.

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6. South Dakota (1916-1931)

On January 1, 1916, the insurance system of South Dakota was inaugurated (Robb 1921, 164). All state banks had to be members in the South Dakota insurance system. As with several other state insurance systems, national banks could not be members in this insurance system. Its income came from assessments that each member bank paid annually. Before becoming a member, each bank had to pay a large membership fee (Robb 1921, 162). Moreover, an annual assessment of one-fourth of one percent of the bank's average daily deposit was charged, with a maximum equal to 1.5 percent of total deposits of all banks. New banks had to deposit an amount equal to 4 percent of their starting capital (see table 11) (American Bankers Association 1933, 26). Complete deposit loss coverage was paid in cash immediately, but if there were not enough funds, certificates of indebtedness were issued. The fund was under the control of the "Depositors' Guaranty Fund Commission" which had four members: a public examiner and three members chosen by the governor from eleven nominees proposed by the State Bankers' Association (Robb 1921, 163).

Table 4.11 Funding base in the South Dakota state bank insurance program.

Assessments	Fund maximum	Special Assessment
Annual assessments equal to ¼ of 1 percent of average daily deposits. New banks paid 4 percent of their capital stock.	When fund reached 1 ½ percent of total banks' average daily deposits	No special assessments

Source: American Bankers Association 1933, 26

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In the five-year period from 1916 to 1920, the number of state banks increased from 486 to 558 banks and their deposits increased from $70,500,000 to $173,500,000. At the same time, the number of national banks increased from 124 to 136, and their deposits increased from $52,700,000 to $90,300,000 (American Bankers Association 1933; Robb, 1921). Figure 4.45 shows that the number of insured banks reached its highest point in 1920 and 1921 with 566 banks, and its lowest point in 1926 when it declined to 322 banks.

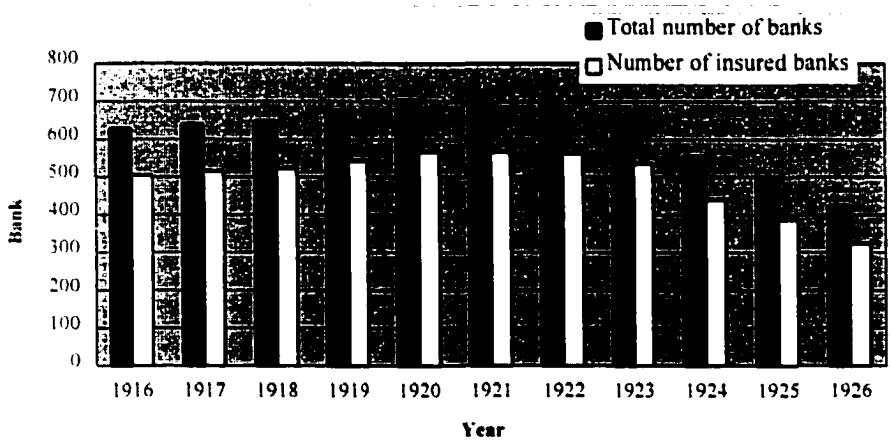

Figure 4.45 South Dakota deposit insurance program. Total number of banks, and number of insured banks.

Source: Warburton, Deposit Guaranty in South Dakota 1958, 28.

Figure 4.46 shows that insured deposits reached their highest point in 1919 at $184,098,000, and their lowest point in 1926 at $78,877,000.

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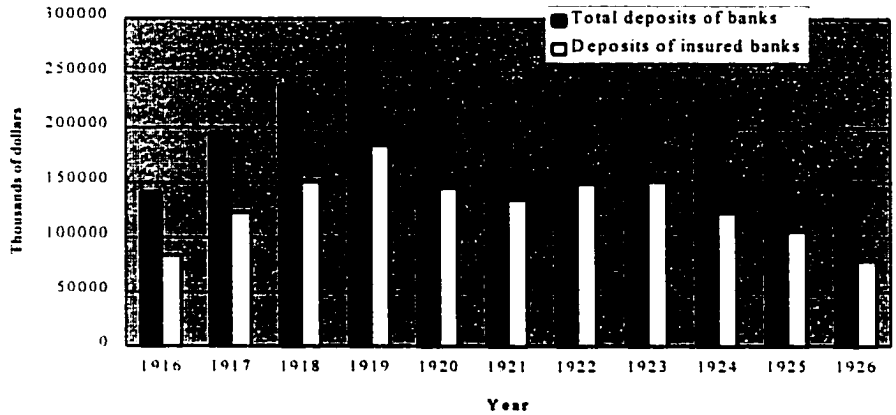

Figure 4.46 South Dakota deposit insurance program. Total deposits of banks, and deposits of insured banks.

Source: Warburton, Deposit Guaranty in South Dakota 1958, 29.

During the first five years of its operation, only 3 state banks failed; however, in the four-year period starting in 1924 and ending in 1927, there were 316 bank failures, of which 86% were state banks. Depositors in only 16 of the failed banks were paid in full (American Bankers Association 1933, 27). Figures 4.47 and 4.59 show that the number of insured banks with financial difficulties reached its highest level in 1926 with 103 banks, and the deposits of insured banks with financial difficulties reached their highest level in 1924 at $28,771,000.

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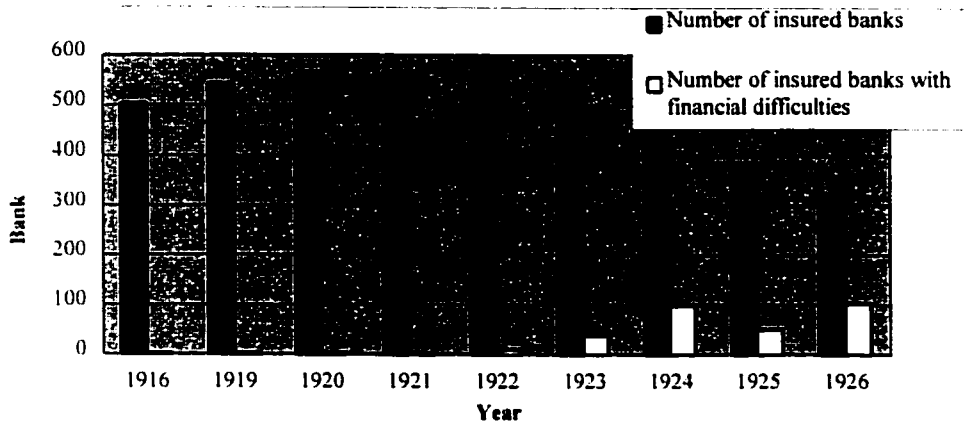

Figure 4.47 South Dakota deposit insurance program. Number of insured banks, and number of insured banks with financial difficulties.

Source: Warburton, Deposit Guaranty in South Dakota 1958, 28, 32.

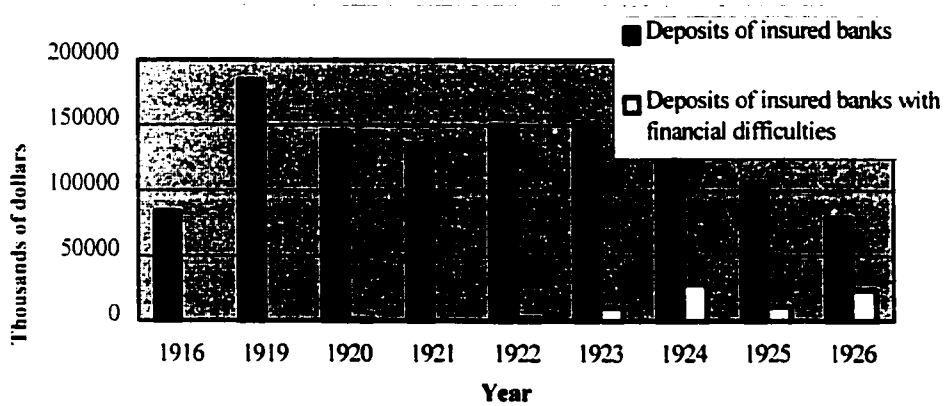

Figure 4.48 South Dakota deposit insurance program. Deposits of insured banks, and deposits of insured banks with financial difficulties.

Source: Warburton, Deposit Guaranty in South Dakota 1958, 29, 32.

As with most of the early 20th century state deposit insurance programs, the South Dakota program succeeded in maintaining stability among its member banks only in its early years of operation. In its first six years only four banks failed due to financial difficulties, and their depositors were paid in full. During the 1920s the program experienced severe adverse economic conditions when agricultural prices fell. In 1923

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the South Dakota program failed to pay back failed banks' depositors. Certificates of indebtedness were issued to any insured failed banks' depositors. In 1925 the outstanding balances on those certificates was $33 million. From 1922 to 1927, 320 member banks failed due to financial difficulties, and depositors of only 12 banks were paid in full. Depositors of other banks were not paid by the program--several years later, after termination of the South Dakota program, they received only 1% of their lost deposits. Due to the high number of insured bank failures and to fund deficiency, the South Dakota deposit insurance program was terminated in July, 1927 (Warburton, Deposit Guaranty in South Dakota 1958, 50-51). "The South Dakota deposit insurance system was one of the least successful--perhaps on should say, one of the worst failures--of the state deposit insurance systems" (Warburton, Deposit Guaranty in South Dakota 1958, 50).

Two hypotheses of this dissertation's five hypotheses do not hold in the South Dakota deposit insurance program--H1: *Bankers should be on the board of directors of the DIS* and H2: *The insurance fund should come from the member banks.* Though there were bankers on the board of directors of the South Dakota program, it was mainly controlled by government, not by them. This adversely affected the program and its supervision system. For example, a heavy work load was assigned to bank examiners--125 bank examinations required by each examiner in each calendar year (Warburton, Deposit Guaranty in South Dakota 1958, 17-18). Control of the board of directors by bankers without heavy intervention by government authorities would have resulted in an effective board of directors and an efficient supervisory system. In addition, the South Dakota deposit insurance program experienced a fund deficiency problem, and shortly

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after the first wave of bank failures in the early 1920s it failed to cover failed banks' depositors (Warburton, Deposit Guaranty in South Dakota 1958, 50). Relying on limited assessments collected from member banks is not sufficient to keep any DIS solvent all the time. However, relying on member banks' funds, and applying a mutual guarantee system, will make funds available to the insurance program at any time. Furthermore, availability of funds will help in creating a good DIS with an effective board of directors and a prudential supervisory system that would be able to keep member banks stable in case of any economic disturbance.

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7. North Dakota (1917-1929)

The North Dakota insurance program was established on March 10, 1917 (Robb 1921, 172). All state banks were required to be members of the program, including every financial institution involved in receiving deposits or exchange business. Assessments were applied to all member banks as a source of funding--an annual assessment equal to 1/20 of one percent of average daily deposit, with a maximum equal to 1 percent of total deposits. Immediate coverage for all deposits was available from funds, but if there were not enough funds, certificates of indebtedness were issued. In case of an emergency, a special assessment up to 1/5 of one percent could be applied in any one year, such as when the fund went lower than one-fourth of one percent of total deposits (see table 4.12). Each bank would be informed of the assessment that it should pay; then, the bank should credit that amount to the depositors' guaranty fund account (in the same bank) and make it payable to the Depositors' Guaranty Fund-Commission. The Depositors' Guaranty Fund-Commission controlled the system. It had five members: the governor, state examiner, and three other members appointed by the governor, who had to be bankers and officials of banks that were directly affected by the system (Robb 1921, 173).

Table 4.12 Funding base in the North Dakota state bank insurance program.

Assessments	Fund maximum	Special Assessment
Annual assessments equal to 1/20 of 1 percent of average daily deposit	When fund reached 1 percent of total banks' average daily deposits	Special assessments up to 1/5 of 1 percent applicable in any one year.

Source: Robb 1921, 173.

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Between 1917 and 1920, the number of state banks increased from 703 to 723, and their deposits increased from $90,300,000 to $124,100,000. At the same time the number of national banks increased from 158 to 181, and their deposits increased from $59,000,000 to $76,800,000 (American Bankers Association, 1933; Robb, 1921). Figure 4.49 shows that the number of insured banks reached its highest point in 1919 with 723 banks, and its lowest point in 1928 with 337 banks.

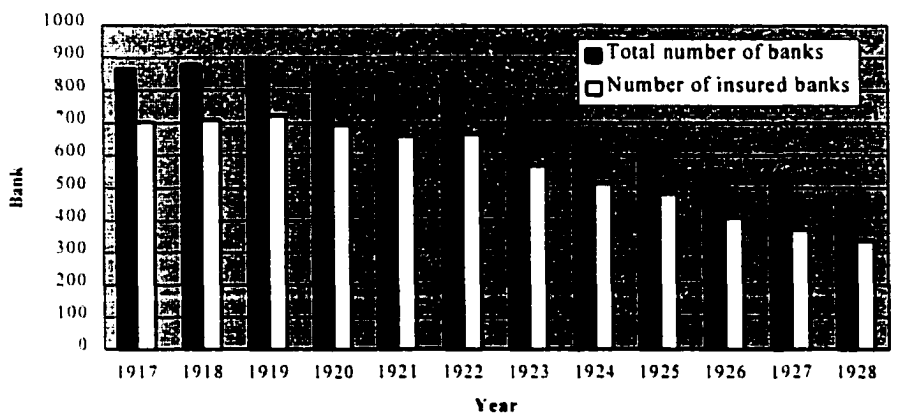

Figure 4.49 North Dakota deposit insurance program. Total number of banks, and number of insured banks.

Source: Warburton, Deposit Guaranty in North Dakota 1959, 28.

Figure 4.50 shows that the deposits of insured banks reached its highest point in 1919 at $130,837,000, and its lowest point in 1928 when it declined to $59,773,000.

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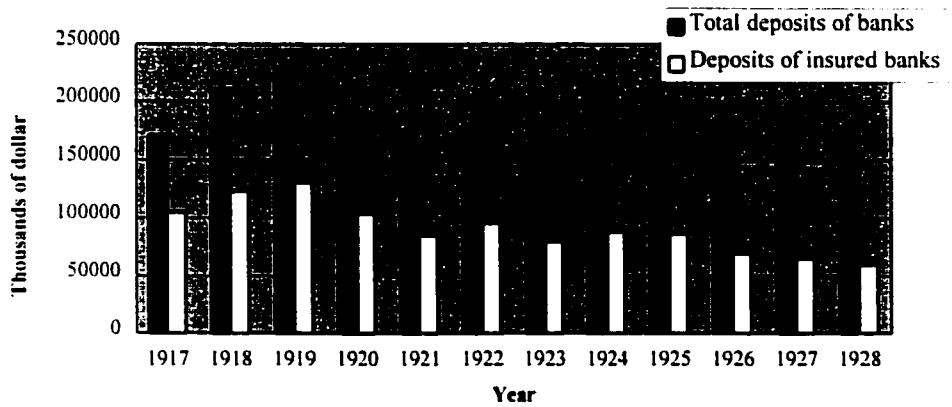

Figure 4.50 North Dakota deposit insurance program. Total deposits of banks, and deposits of insured banks.

Source: Warburton, Deposit Guaranty in North Dakota 1959, 28.

The system that was established to supervise member banks was insufficient to protect them. It worked soundly in its first three-year period. In its third year, two banks failed and their customers were paid in full. In the fourth year, problems started (Warburton, Deposit Guaranty in North Dakota 1959, 24). Between 1921 and 1924, 223 banks failed, of which 87% were state banks; in addition, between 1925 and 1929, 190 banks failed, of which 83% were state banks. Figure 4.51 shows that the number of insured banks with financial difficulties reached its highest level in 1923 with 85 banks, and figure 4.52 shows that the deposits of insured banks reached their highest level in 1923 at $10,267,000.

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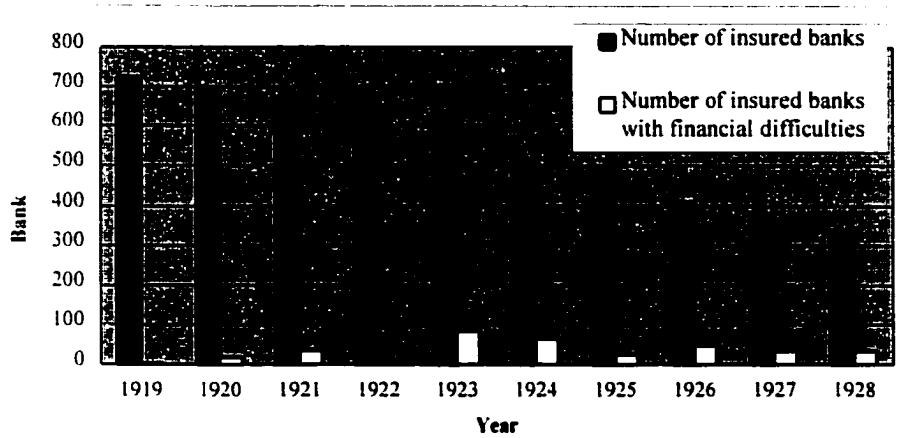

Figure 4.51 North Dakota deposit insurance program. Number of insured banks, and number of insured banks with financial difficulties.

Source: Warburton, Deposit Guaranty in North Dakota 1959, 28, 32.

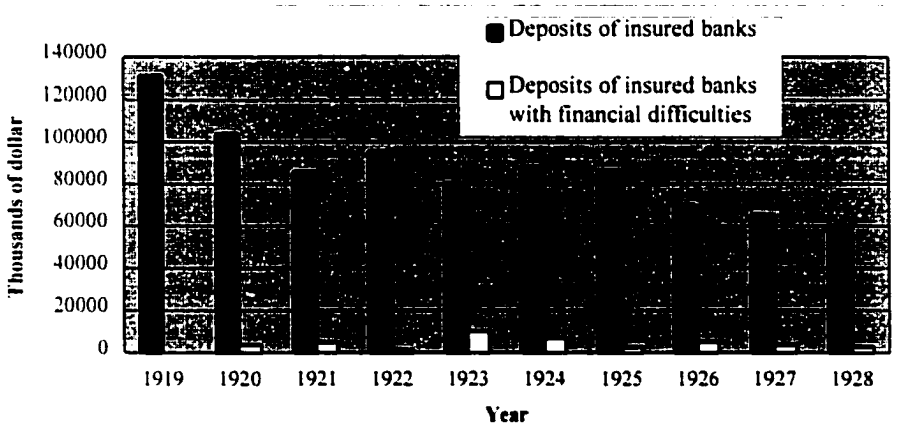

Figure 4.52 North Dakota deposit insurance program. Deposits of insured banks, and deposits of insured banks with financial difficulties.

Source: Warburton, Deposit Guaranty in North Dakota 1959, 29, 32.

The North Dakota deposit insurance program worked successfully in its first three years of operation. However, during the 1920s problems started as more and more banks failed year after year (American Bankers Association 1933, 30-31). In 1921, 35 banks failed, and in the same year the depositors' guaranty fund commission reported that the accumulated fund was not enough to cover all depositors of failed insured banks.

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Moreover, fund deficiency increased year after year until the program was suspended in 1929 (Warburton, Deposit Guaranty in North Dakota 1959, 24, 2). The economic difficulties of the 1920s together with the insured banks' mismanagement were among the main reasons that led to most insured bank failures during that period. Financial deficiency and severely adverse economic conditions caused the North Dakota program to fail.

Testing this dissertation's five hypotheses against the North Dakota deposit insurance program, we find that two hypotheses do not fit that program--H1: *Bankers should be on the board of directors of the DIS* and H2: *The insurance fund should come from the member banks.* As with the South Dakota system, the depositors guaranty fund commission that controlled the North Dakota deposit insurance program was mainly under government direction and bankers were almost excluded from those responsibilities. The commission succeeded in controlling the program when the general economic condition was stable, but when economic difficulties started in North Dakota after 1920, the commission failed to maintain its early good performance. Moreover the unsatisfactory performance of the commission spread to other parts of the program such as its supervisory system, which experienced insufficient staffing along with heavy work-loads. For example in the early years of the program's operation, there were 9 bank examiners--each examiner required to do 150 bank examinations each year--and in its late years there were only 5 examiners (Warburton, Deposit Guaranty in North Dakota 1959, 12, 17). Inadequate funding also contributed to the program's poor performance. For instance, during the program's operation only one fourth of failed member bank

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depositors were paid; the other three fourths were never paid by the program (Warburton. Deposit Guaranty in North Dakota 1959, 12, 17, 49). A DIS should maintain an adequate source of funding such as a mutual guarantee system. This should certainly help in creating a sound deposit insurance program supervised by an expert supervisory system under a high-quality board of directors.

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8. Washington (1917-1929)

This insurance program was established on March 10, 1917 (Robb 1921, 172). Membership was voluntary for state banks, excluding mutual savings banks. To avoid the problems experienced by other state insurance systems, more enforcement power was given to its directors, especially to its state examiner (Calomiris 1989, 10). A guaranty fund board was responsible for controlling the system. The board had five members--the governor, state bank examiner, two officers or directors of member banks (appointed by the governor), and a member appointed by the governor (Robb 1921, 171). To accumulate enough funds to cover failed bank deposit losses, annual assessments equal to one-half of one percent of the average daily deposit were applied, and in case of funding deficiencies such as when the fund decreased by more than 25 percent, special assessments were applied (see table 4.13). Insolvent banks were the responsibility of the state bank examiner (Robb 1921, 171-172). This insurance system provided immediate deposit loss coverage. If there were not enough funds, certificates of indebtedness were issued (FDIC: The First Fifty Years, 1984).

Table 4.13 Funding base in the Washington state bank insurance program.

Assessments	Fund maximum	Special Assessment
Annual assessment equal to ½ of 1 percent of average daily deposits. As a guaranty for assessment payment each member bank had to deposit securities to the face value of 1 percent of the eligible deposits.	No fund maximum	Special assessments up to ½ of 1 percent of the total banks average daily deposits applicable in any one year if fund reduced by more than 25%.

Source: Warburton, Deposit Guaranty in Washington 1958, 3.

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Figure 4.53 shows that the number of insured banks reached its highest point in 1920 with 116 banks, and its lowest point in 1917 when it declined to 46 banks. Figure 4.54 shows that the deposits of banks insured reached their highest point in 1919 at $79,815,000, and their lowest point in 1917 at $39,823,000.

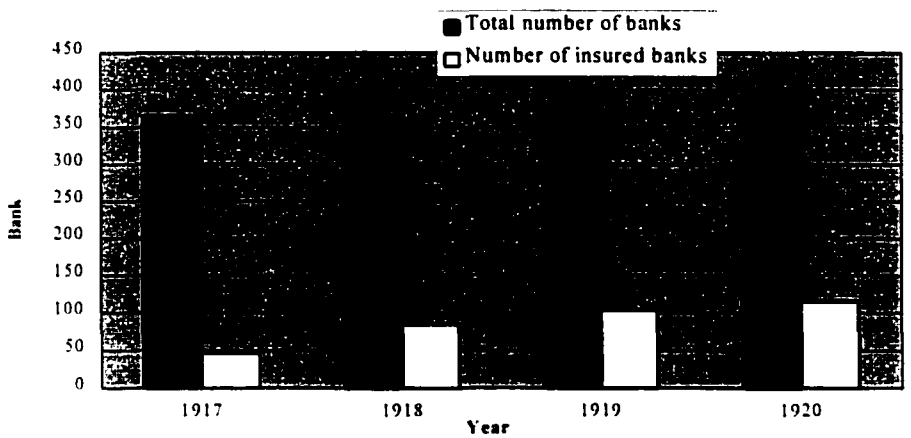

Figure 4.53 Washington deposit insurance program. Total number of banks, and number of insured banks.

Source: Warburton, Deposit Guaranty in Washington 1958, 16.

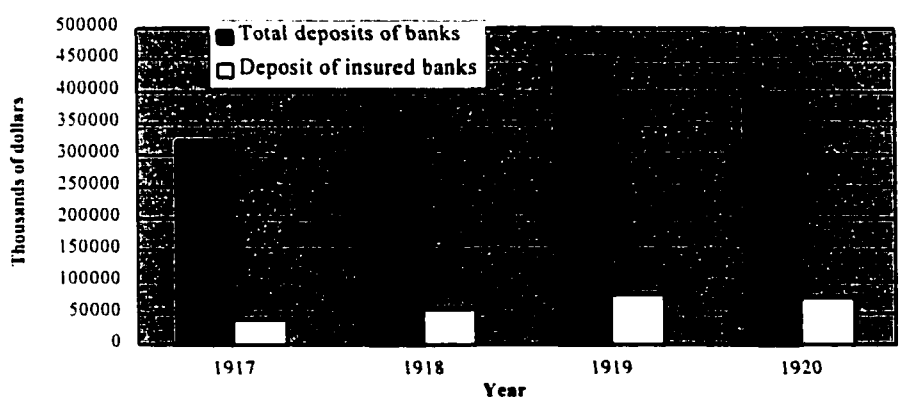

Figure 4.54 Washington deposit insurance program. Total deposits of banks, and deposits of insured banks.

Source: Warburton, Deposit Guaranty in Washington 1958, 16.

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In 1921, the first and the only failure occurred when the largest bank in the system collapsed with guaranteed deposits equal to $10,443,000 (see figures 4.55 and 4.56).

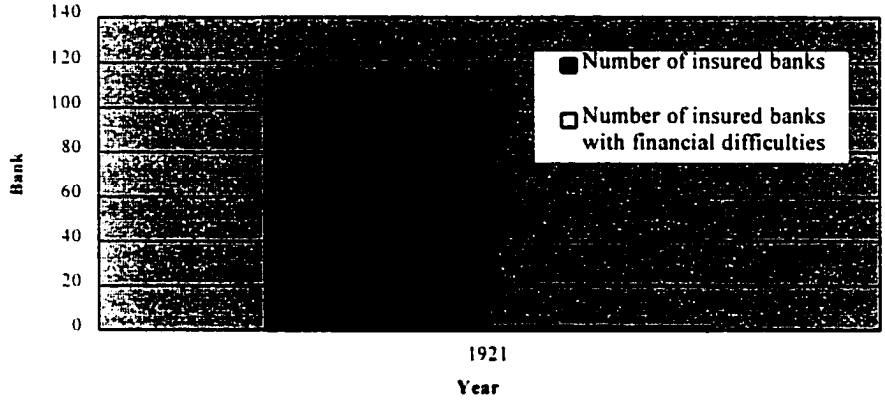

Figure 4.55 Washington deposit insurance program. Number of insured banks, and number of insured banks with financial difficulties.

Source: Warburton, Deposit Guaranty in Washington 1958, 20.

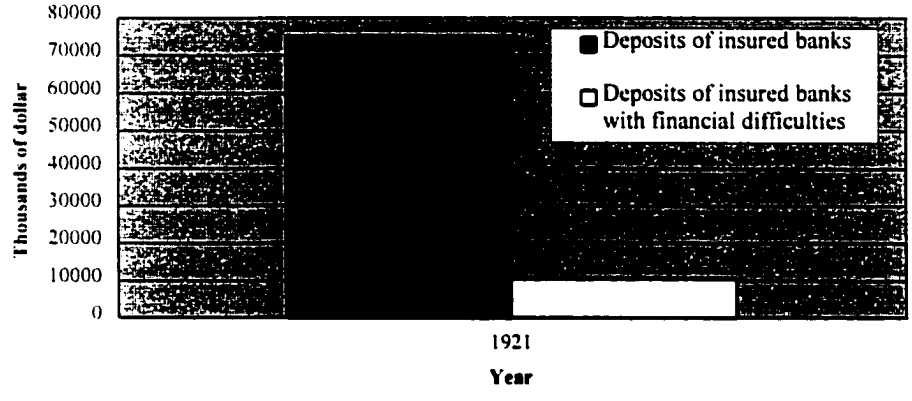

Figure 4.56 Washington deposit insurance program. Deposits of insured banks, and deposits of insured banks with financial duffuculties.

Source: Warburton, Deposit Guaranty in Washington 1958, 20.

In the first 3 years of the Washington deposit insurance program's operation there were no insured bank failures and only 2 noninsured bank failures. All member banks

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worked soundly during that period. However, in the fourth year of the program, the largest participating bank failed with a deposit amount of $10,443,000. Only 10% of its insured deposits were covered using the accumulated fund; 75% of its insured deposits were covered after liquidating the assets of the bank, and 15% of its insured deposits were never paid. Subsequently, by the end of 1921 all member banks had left the program, which officially closed in 1929. During the operation of the program 13 banks failed, of which only one was insured; however, the deposits of that insured bank ($10,443,000) were greater than the total deposits of all other 12 banks ($6,166,000) (Warburton, Deposit Guaranty in Washington 1958, 20, 21).

Two of this dissertation's five hypotheses do not hold in the Washington deposit insurance program--H1: *Bankers should be on the board of directors of the DIS* and H2: *The insurance fund should come from the member banks.* In this program, government authorities predominantly controlled its board of directors, and bankers were excluded from taking the lead on that board. Moreover the board of directors was given weak supervision powers; for example, only in March 1921 was the board allowed to suspend membership of any law-violating bank. In contrast, bank examiners were given stronger powers than in all seven previous state deposit insurance programs (Warburton, Deposit Guaranty in Washington 1958, 3, 7). However, the inadequate board of directors contributed to the disorganized and weak supervision system. For example, the failure of the largest bank in the Washington DIS was mainly due to an expansion in the provision of high-risk loans--moral hazard (Warburton, Deposit Guaranty in Washington 1958, 11, 17). Control of the DIS by bankers with strong enforcement powers would have assisted

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in creating a good board of directors, and would also have helped in creating an efficient supervisory system. In addition the system had an unsatisfactory source of funding, relying only on its own fund received as assessments. It experienced fund deficiency with the first member bank failure, which decreased both public and bank confidence in the DIS, and subsequently all member banks left the program shortly after that failure. Hence to increase confidence in a DIS, funds should be ready and sufficient to deal with any problem that may occur in any member bank immediately. This can be achieved by using a mutual guarantee system. Providing an adequate source of funding to the DIS will help in providing a stable and sound banking system.

In conclusion, none of these eight state guaranty plans achieved their goal of protecting depositors; all of them failed to work positively for their banking systems, and bank failures were greater among insured banks than uninsured banks (American Bankers Association 1933, 39). Up till 1920 most of these state deposit insurance programs worked soundly, but during the 1920s they faced severe financial difficulties and were unable to protect either their member banks or their depositors. The unsatisfactory structure of the boards of directors was among the main reasons for this poor performance. This resulted in insufficient and weak supervisory systems. For example, most insured banks practiced moral hazard problems when they expanded by providing high-risk loans, and some of them practiced adverse selection problems when, during financial difficulties, weak banks kept their membership and sound banks ended theirs. In programs that required all state banks to participate, some banks changed their charter from state to national. Moreover, some state authorities practiced the agency problem as

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they delayed closing insolvent banks due to insufficient funds. The other problem that arose in all eight state programs was fund deficiency, since assessment was the only source of their funds and the ability to apply special assessments was limited.

In light of the argument of this dissertation we note that two of the five hypotheses do not hold in all eight state deposit insurance programs--H1: *Bankers should be on the board of directors of the DIS* and H2: *The insurance fund should come from the member banks*. Most of these programs had no bankers on their board of directors, and states that had bankers on their board of directors were mainly dominated by government control, which negatively affected their supervisory systems. Further, relying on their own funds, obtained as an assessment from their member banks, was insufficient to protect their member banks during less favorable times. Therefore, participation of bankers on the board of directors will improve its effectiveness in keeping member banks in stable condition and keeping their payment system sound during financial crises, especially with availability of a prudential supervisory system. Furthermore, depending on member banks' funds, not on its own fund, is the right solution to the fund deficiency problem. In case of any insured bank failure, all member banks jointly will bear the loss of that bank. That will make each member bank interested in the soundness of other insured banks and in case of any problem occurring in any insured bank, all banks together will work to protect that bank or at least to minimize its failure loss by adopting the right solution at the right time.

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CHAPTER FIVE

HISTORY OF BANK INSURANCE PROGRAMS IN THE UNITED STATES: The Federal Programs

In addition to the programs developed by individual states, which were described in the last chapter, the U.S. has a rich history of deposit insurance at the federal level. This chapter will examine the history of three federal programs--the Federal Deposit Insurance Corporation (FDIC), the Federal Savings and Loan Corporation (FSLIC), and the National Credit Union Share Insurance Fund (NCUSIF).

The Federal Deposit Insurance Corporation (FDIC)

The First Fifty Years

Between 1886 and 1933, 150 proposals for insurance systems were submitted to the United States Congress. Mainly these bills were made in response to financial panics during that period (FDIC 1984, 29). After the 1907 panic, more than 30 bills for deposit insurance creation were submitted to Congress, and after the stock market crash of 1929, more than 20 bills were submitted. It appears that there was a positive correlation between the number of bills submitted to Congress and the number of bank failures. These proposals took three different approaches. The first approach (118 bills) argued for

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creating an insurance fund to cover depositors' losses. The second approach (22 bills) asked for United States government deposit guarantees. The third approach (10 bills) proposed that banks should guarantee all their customer deposits by purchasing bonds (Flood 1992, 16, 29).

Most of the proposals between 1886 and 1913 recommended that only national banks should participate in the insurance system. However, after creation of the Federal Reserve Bank (Fed) in 1913, half of the proposals asked for participation of Fed member banks in addition to national banks. Nearly 100 proposals stated that deposit insurance should be under the control of the Office of the Comptroller of the Currency (OCC); however, after creation of the Fed, some proposals required Fed control, while others preferred control by an independent special board. Nearly 120 bills asked for full deposit coverage. There were 75 bills that proposed imposing assessments to cover all insurance costs with the assessment rates ranging from 0.2 to 0.5 percent per year and others with adjustable rates to cover total costs. Some proposals asked for allowing the fund to borrow and others to issue unpaid certificates in case of fund deficiencies if necessary.

During the 1920s and early 1930s, the United States experienced the highest number of commercial bank failures in its history. Between 1920 and 1929 there were 5,882 bank failures, and between 1930 and 1933 that number increased to 9,106 (Dwight, 1989). The main reason for commercial bank failure was the repeated occurrence of bank runs during that period. Bank runs usually happened during a period of financial crisis when people believed that their banks would fail, and rushed to withdraw their deposits. A large deposit withdrawal from any bank could lead to the bank's failure even though

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the bank was in a sound position. That created severe economic problems as healthy banks failed one after the other, forcing the financial system, as a whole, to collapse (Douglas & Philip, 1983).

Due to the high number of commercial bank failures during the 1920s and early 1930s, public demand for state and federal insurance systems increased. This demand was aimed at reducing personal risk, since most people lost at least part of their wealth during the bank-failure period (Jones, 1938). Not everyone was in favor of the creation of federal deposit insurance. President Roosevelt was initially opposed to the FDIC (Papadimitrion, 1996). John Dole, the Comptroller of the Currency, argued, "A general guaranty of bank deposits is the very antithesis of branch banking" (Golembe 1960, 197). Opponents of the creation of the FDIC argued that it would fail as most state programs had failed. Others believed that it would increase moral-hazard behaviors among insured banks. On the other hand, Representative Henry Steagall of Alabama argued, "This bill will preserve independent dual banking in the United States" (Golembe 1960, 543). On May 27, 1932, the House passed Steagall's deposit insurance proposal. However, the Senate did not act on that proposal (Golembe, 1960).

At the beginning of March 1933, bank panic reached its highest level. To stop the panic, President Roosevelt announced a four-day national bank holiday to start on March 6 (later it was extended for three days). In mid-May 1933, Senator Carter Glass of Virginia and Representative Steagall presented banking reform proposals containing two bills for the creation of deposit insurance. The two bills were different in some ways. The Senate bill stipulated that banks must be members of the Fed in order to be covered by

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deposit insurance, while the House bill did not impose such requirements. Both bills incorporated the demands made by the Roosevelt administration that: 1) deposit coverage be based on a sliding scale, and 2) there be a one-year delay in the start of the insurance corporation (FDIC 1984, 42).

On June 13, 1933, Congress responded to the strong public call for deposit insurance by enacting deposit insurance legislation that led President Roosevelt to sign the Banking Act of 1933 on June 16, 1933. Section 8 of that Banking Act concerned creation of the FDIC. It offered two deposit insurance plans--a temporary plan to be started on January 1, 1934, and a permanent plan to be started six months later (FDIC, 1984). Congress supplied the FDIC with $289 million (Annual Report, FDIC, 1937). Part of that amount ($139 million) was taken from the Federal Reserve Bank surplus (50 percent of its January 1, 1933, surplus). The remainder ($150 million) was supplied by the general fund of the United States Treasury (Jones, 1938). The FDIC invested those funds in United States government securities.

Moreover, the FDIC would be controlled through a board of directors consisting of three members. Two members would be appointed by the President for six-year terms, and the third member would be the Comptroller of the Currency. The chairman of the board had to be one of the two members appointed by the President. The success of deposit insurance was seen in the complete confidence and faith in insured banks and in seeing people keep their money in banks even though there was a high probability of future failures (Jones, 1938). Between 1934 and 1935 more than 7,500 state banks (not members of the Fed) became members in the FDIC (Gayer, 1935), and 98 percent of all

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commercial bank assets were in insured banks by the end of 1934 (FDIC 1984, 49). Further, the success of the FDIC was immediate. In 1934 the financial system returned to stability and public confidence, and only nine insured banks failed that year.

According to the FDIC temporary plan, each depositor was covered for up to $2,500. Each bank had to pay an assessment equal to 0.5 percent of the covered deposits, half of which were payable upon demand by the FDIC. Solvent banks would be members of the FDIC only if their solvency was approved by state supervisory agencies after FDIC examination. Further, "all Federal Reserve member banks licensed by the Secretary of the Treasury under terms of an Executive Order of the President, issued March 10, 1933, were required by law to become members of the temporary fund on January 1, 1934" (FDIC 1984, 44).

The FDIC temporary plan started on January 1, 1934, by insuring 13,201 banks, of which 12,987 were commercial banks (90 percent of all commercial banks) and 214 were mutual savings banks (36 percent of all mutual savings banks). Congress extended the period of operation of that temporary plan on June 16, 1934, by postponing the starting date of the permanent plan one year. Instead of July 1, 1934, the new starting date was July 1, 1935 (later it was extended for two months). Beginning July 1, 1934, each depositor's coverage was increased from $2,500 to $5,000 (with the exception of some mutual savings banks where the coverage remained at $2,500); for up-to-date coverage see figure 5.1.

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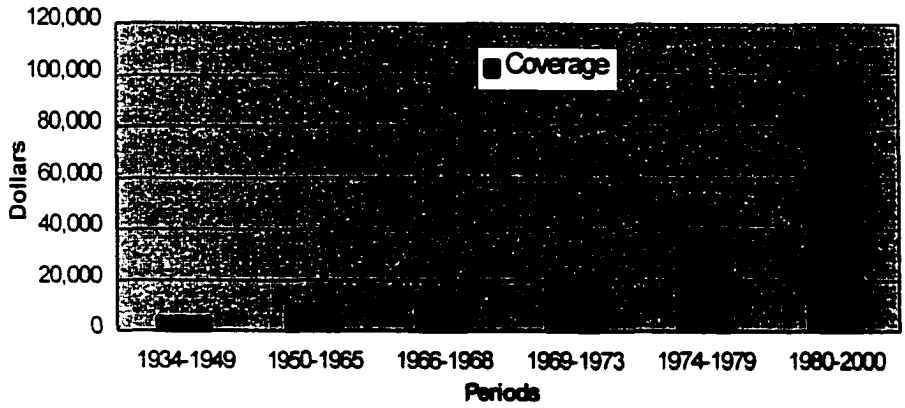

Figure 5.1 FDIC, deposit coverage.

Sources: Federal Deposit Insurance Corporation, Annual reports, 1996, and 1998.

According to the primary permanent plan (it was never carried out), each depositor was covered 100 percent up to $10,000, 75 percent for the next $40,000, and 50 percent for the next $50,000. Also, all FDIC members had to become members of the Fed within two years, and all member banks had to contribute to the FDIC's capital and be ready to pay whatever assessment was necessary in case of covering deposit losses.

The new permanent plan replaced the primary plan by the Banking Act of 1935, in which some changes had been introduced to the FDIC permanent plan. Some of these changes were the reduction of the assessment rate to 1/12 of 1 percent (for up-to-date assessment rates, see figure 5.2) and the elimination of member banks' stock subscription to the FDIC. It also provided that all banks insured under the temporary plan would automatically be insured under the permanent plan with the exception of banks that did not want to keep their membership or banks that did not meet temporary plan requirements. There were 14,219 banks (14,163 commercial banks and 56 mutual savings

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banks) that were automatically insured under the permanent plan and 34 banks that discontinued their membership after ending the temporary plan. Only one bank was not covered by the permanent plan, because it failed to meet the temporary plan requirements.

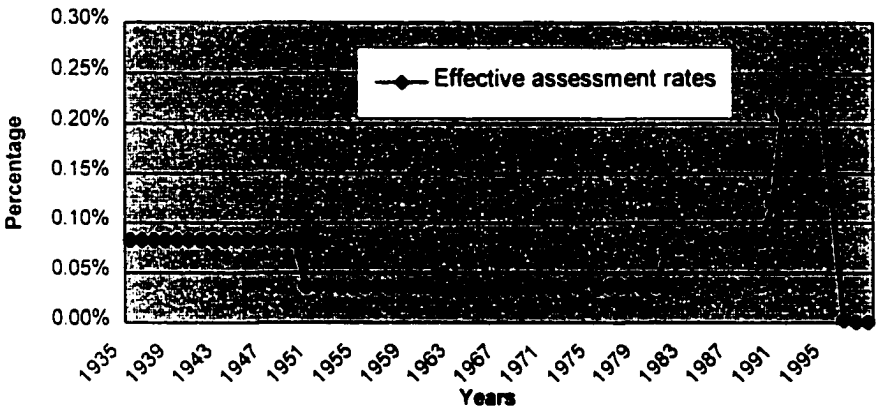

Figure 5.2 FDIC, effective assessment rates.

Sources: Federal Deposit Insurance Corporation, Annual reports, 1996, and 1998.

The Banking Act of 1935 imposed stricter admission rules before insuring any new banks. The FDIC had to examine the bank's capital, earnings, and importance to the community. Moreover, the FDIC allowed borrowing up to $975 million, of which up to $500 million would be provided by the Treasury if that money was required to cover deposit losses (FDIC 1984, 52).

The FDIC was created to stop bank runs of the early 1930s by insuring commercial bank deposits. Soon after its creation, the bank runs were eliminated (Jaffee, 1989), and only 400 commercial banks failed due to financial difficulties in the first six-year period of its operation. Only 2.8 percent of all commercial banks failed in the first

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year of that period, while between 1930 and 1933 the percentage of failures of commercial banks had been 37.5, and during the 1920s it had been 19 percent. (These percentages were calculated from the schedule in Jaffee 1989, 4.)

In the first few years after the Great Depression, most bankers learned lessons from bank failures and became more conservative. In 1937 more than half of the total bank assets (52 percent) were either in cash or in United States government securities, and bank lending was affected negatively. After World War II, in 1947, bank lending was 25 percent of total bank assets. In 1955 bank lending increased to 40 percent and then increased again to 50 percent in the early 1960s. Though lending had increased significantly after World War II, loan loss was minimal due to the steady growth and strong economic performance of that period combined with strict regulations and conservative banking behaviors.

Beginning in 1960, bank management appeared to forget the Great Depression and become less affected by that period's bank failure experiences, especially with the new generation of bankers who engaged in risky behaviors in order to gain more profits. However, during the 1960s banking experienced some changes such as the development of bank holding companies and creation of large negotiable Certificates of Deposit. In spite of more risky behaviors, the financial market maintained the good performance of previous years.

The first recession the FDIC faced came in the period from 1973 to 1975 when bank loan losses increased, which led to difficulties for the banks; 16 banks failed in 1976, the highest number of bank failures since 1940. The recession started mainly

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because of the rapid increase in oil prices which accelerated the inflation rate and affected the entire economy's performance. Soon after the financial market recovered, the inflation rate increased again in 1979 leading to an increase in the interest rate.

In the period 1980-1982 two banking acts were passed:

1. Depository Institution Deregulation and Monetary Control Act of 1980. This was "the most sweeping banking reform package enacted since 1933" (FDIC 1984, 9).

2. Garn-St. Germain Depository Institutions Act of 1982, which gave more freedom to regulators in managing any institution's failure.

In 1981 the FDIC faced its second panic when bank problems arose again. Part of this was caused by oil prices falling, which resulted in large losses for banks that had invested in oil development companies. Due to that recession period (two years) and deregulation factors, the number of bank failures reached 42 in 1982. During 1981, 1982, and 1983, 100 banks failed, while prior to 1981 only 568 FDIC member banks had failed with only $182.6 million in losses. That amounted to only 9 percent of the loss in the three-year period of 1981-1983 (FDIC 1984, 9, 65)

The FDIC during the Eighties

During the 1980s the percentage of commercial bank failures due to financial difficulties increased to 6 percent. (This percentage was calculated from schedules in Jaffee 1989, 4). That percentage was lower than the percentage in 1920 or 1930 but was increased tenfold from the 1970s, when it had been 0.6 percent. Many questions arose

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regarding the causes of that change and what the FDIC could have done to prevent such a high rate of bank failure and maintain its success.

From 1984 through 1989, 963 FDIC member banks faced financial difficulties and either closed or received FDIC financial support. This was the highest number of bank failures since creation of the FDIC, with an annual failure average of 161 per year (see figure 5.3). In 1988 there were 280 bank failures with a loss of $54 billion in assets (the highest in FDIC history). However, that number was about 2 percent of all insured banks that year, and the loss in assets was less than 2 percent of the total bank assets. Further, during that year (1988), the FDIC reported a net loss of $4.2 billion for the first time in its history. That loss continued until the end of 1991 (FDIC, 1996, and 1998).

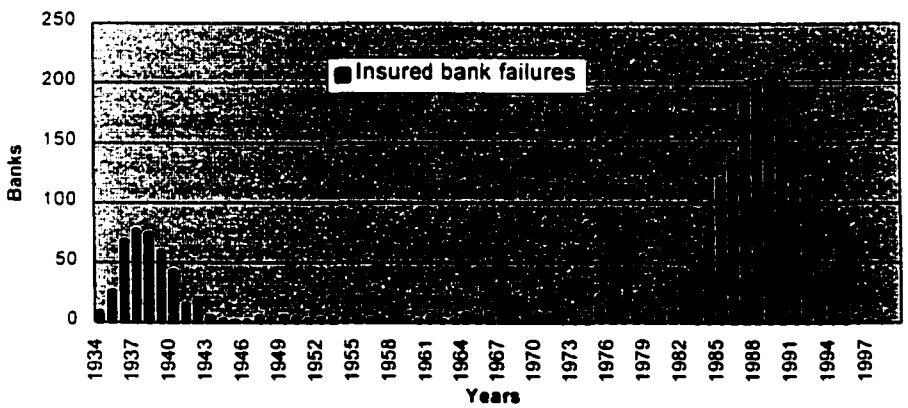

Figure 5.3 FDIC, failures of insured banks.

Sources: Federal Deposit Insurance Corporation, Annual reports, 1996, and 1998.

Most failed banks of that period were having financial difficulties before their failures; therefore, allowing those banks to operate in the market without corrective action created more losses. This is known as forbearance, where insolvent banks were

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allowed to operate in the market. It is bad because management of such banks would be forced toward more risky short-run activities as a way of covering their bank losses, and that would likely lead to more losses (Silverberg 1997, 2).

Excessive bank lending was one reason for the eighties banking crisis, especially unsound real estate lending. Beginning with nominal value increases in real estate during the 1970s (due to inflation rate acceleration), the real-estate sector became very attractive and real-estate lending increased from 10 percent of some bank portfolios during the 1970s to 50-60 percent in the 1980s (Seidman, 1997). Moreover, tax legislation of 1986 negatively affected investments in commercial real estate when selling troubled real estate became much more difficult than before (Silverberg 1997, 1).

People with large amounts of money put their money in banks rather than investing in bonds, stocks, mutual funds, or other investment channels. This was, in part, because of Congress raising deposit insurance coverage up to $100,000, and in part because of a zero or negative slope of yield curve (Medlin 1997, 1). On the other hand, the abnormal deposit growth during the 1980s encouraged some bankers, especially those who saw that deposit growth as a sign of their success, to go into more risky activities practicing moral hazards (for up-to date deposit information see figure 5.4).

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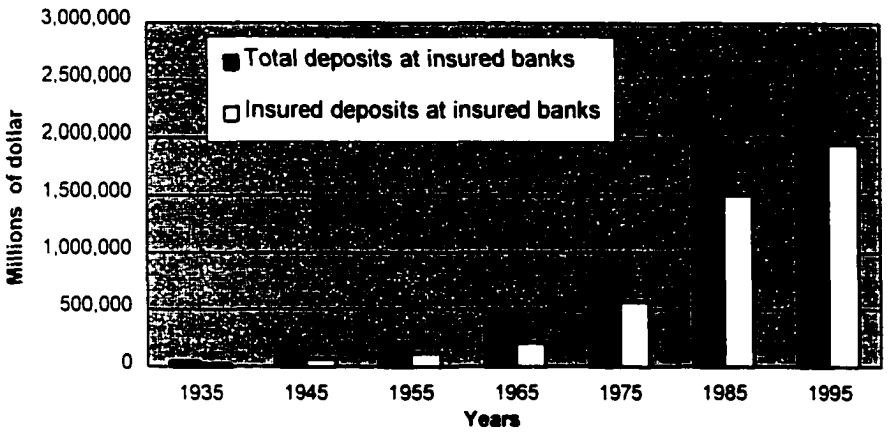

Figure 5.4 FDIC, total deposits at insured banks, and insured deposits at insured banks.

Sources: Federal Deposit Insurance Corporation, Annual reports, 1996, and 1998.

During the first 50 years of its operation, from 1933 to 1983, the FDIC's responsibilities remained unchanged. Its first priority was insuring bank deposits to protect the financial market, producing the longest period of financial stability in the history of the United States (Papadimitrion, 1996). Moreover, during that period, the American economy was mostly in good and stable condition and the FDIC was not severely tested.

To summarize, creation of the FDIC was a response to the financial instability of late 1920s and early 1930s. Soon after its creation, the FDIC succeeded in maintaining financial stability as bank runs were eliminated and bank failures were minimized. In the 1960s insured banks, for the first time, went into more risky behavior--bank lending increased to 50 percent of total assets (it was 25 percent in 1947). During the 1970s, the FDIC faced its first financial crisis when the U.S. economy was hit by a recession and loan losses increased, causing many banks to fail. In 1975 and 1976, 39 insured banks

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failed. During the 1980s the FDIC was hit by a second panic, and more than 1000 banks failed during that period.

The FDIC succeeded in maintaining a financially stable system during the 1970s and 1980s and prevented bank runs on some banks (such as the New England Bank) from spreading to other sound banks. However, that success was at the expense of its funds and those of other parties, i.e., taxpayers and other banks (Helfer, 1997). During the 1980s the FDIC suffered severely when more than 1000 banks failed. However the long pre-1980s stable period helped the FDIC in overcoming the difficulties of the 1980s.

In terms of the five hypotheses of this dissertation, in the case of the FDIC, four hypotheses do not hold--Those are: H1: *Bankers should be on the board of directors of the DIS*, H2: *The insurance fund should come from the member banks*, H4: *The government should not provide a back-up fund*, and H5: *Membership should not be compulsory*. A board of directors was responsible for controlling the FDIC; however, there were no bankers on that board, and government authorities were totally responsible for controlling the board. The FDIC's success was obvious in its first fifty years of operation, but as economic conditions deteriorated in the early 1980s it failed to extend its long period of good performance. During the 1980s the FDIC practiced the agency problem as troubled banks were allowed to stay in business, which induced most of them to practice the moral hazard problem in order to cover their losses. Banker participation on the board of directors might have improved the board's performance and enabled it to overcome any financial difficulties efficiently, since its decisions would have been based on market discipline, not on political background. Moreover, bankers' participation on

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the board of directors would have helped in implementing a good supervisory system which would have been able to minimize incentive problems, such as the agency problem and moral hazard. Further, relying on its own fund, obtained as an assessment from member banks, affected the FDIC's performance adversely during the financial instability of the 1980s. The FDIC experienced fund deficiency for the first time during that period. In 1988 it reported a net loss amounting to 4.2 billion dollars. Relying on member banks' funds by using unlimited special assessment (mutual guarantee) would have made funds available at any time. Further, availability of funds would have enabled the board of directors to pursue its work effectively, by protecting banks from failure or minimizing their failure cost. Depending on a government back-up fund will affect any DIS negatively, because in this case government will interfere in its work and could use its power to put its interests first and the interests of banks and their customers second. Control of the DIS board by bankers themselves will improve the system's performance, especially when that system relies on its member banks' funds, not on its own fund or on a government fund.

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The Federal Savings and Loan Insurance Corporation (FSLIC)

In the first century and a half of their operation, savings and loan associations faced two serious financial instabilities: first, in the 1890s when both local and national associations were negatively affected by increasing competition; second, in the 1930s when savings and loan associations faced severe customer runs to withdraw their deposits in order to meet their consumption needs. Due to failures of those associations in meeting that large demand, two parties were negatively affected--the depositors and the housing markets. As a result of the second severe financial instability, government tried to pursue a more direct role in regulating the savings and loan industry. On July 22, 1932, President Hoover approved the Federal Home Loan Bank Act, which created the Federal Home Loan Bank System, consisting of 12 Federal Home Loan Banks, and controlled by the Federal Home Loan Bank Board (FHLBB). The main goal of the new system was to secure the mortgage loan market and to support people who wanted to own homes (Barth 1991, 12-15)

Creation of the FHLBS played a central role in restoring confidence and strength in the savings and loan market. Moreover, creation of that system during the great depression era helped in minimizing loss to the savings and loan associations. By contrast, the creation of the FDIC to insure bank deposits affected savings and loan associations negatively, as their assets rapidly decreased while commercial bank deposits increased. This situation led savings and loan associations authorities to search for the main reason behind the severe increases in fund withdrawals. They concluded that the creation of the FDIC increased confidence in the commercial banks, and they found that

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"insurance of accounts" was one of the available solutions to the problem. Since the FHLBB system was not responsible for bailing out insolvent savings and loan associations, nor responsible for insuring customer' deposits with savings and loan associations, the way was open for an insurance agency that could increase confidence in the savings and loan industry (Bodfish and Theobald 1938, 301).

On June 27,1934 the National Housing Act was signed into law, which established the Federal Savings and Loan Insurance Corporation (FSLIC) to federally insure savings and loan association deposits. The newly established FSLIC had starting capital of $100,000,000 and was under FHLBB control. All federal chartered savings and loan associations were required to be a member of the corporation (membership was optional for state chartered savings and loan associations) (Barth 1991, 16). After the creation of the FSLIC, public confidence in the savings and loan associations increased, and insured savings and loan associations expanded rapidly. In 1935 there were 1,117 insured savings and loan associations corresponding to 10.88% of the total number of associations. That percentage increased in 1940 to 30.27%, in 1950 to 47.73%, and in 1960 to 65.30% of the total number of savings and loan associations (see table 5.1) (Kendall 1991, 9).

After its creation, the FSLIC was able to maintain stability in the savings and loan industry, and insured savings and loan associations were found to be less risk-taking than uninsured ones. Unlike commercial banks, savings and loan associations were slow in joining the FSLIC, and only in 1951 did the number of insured associations exceed 50% of all associations. In its first five decades, the FSLIC helped in building full confidence

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in insured savings and loan associations, as all deposit customers were able to get their deposits back without any loss (Grossman 1992, 3, 5).

Table 5.1 Early years of the Federal Savings and Loan Insurance Corporation.

Year	Total number of associations	Number of insured associations	Percentage of insured associations
1935	10,266	1,117	10.88%
1940	7,521	2,227	30.27%
1945	6,149	2,475	40.25%
1946	6,093	2,496	40.96%
1947	6,045	2,536	41.95%
1948	6,011	2,616	43.52%
1949	5,983	2,756	46.06%
1950	5,992	2,860	47.73%
1951	5,995	3,020	50.37%
1952	6,004	3,172	52.83%
1953	6,012	3,304	54.96%
1954	6,038	3,433	56.86%
1955	6,071	3,554	58.54%
1956	6,136	3,666	59.75%
1957	6,169	3,772	61.14%
1958	6,208	3,881	62.52%
1959	6,224	3,979	63.93%
1960	6,276	4,098	65.30%

Source: Kendall 1964, 9.

Before becoming a member of the FSLIC, each savings and loan association had to agree to pay the cost of the initial exam and any additional exams. Further, each savings and loan association was required to submit two reports to the FSLIC (one monthly and the other yearly). Furthermore, each savings and loan association had to agree to build a "loss absorb reserve" equal to 5% of its "insured accounts and creditor obligations" (Bodfish and Theobald, 1938).

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The initial insurance coverage was $5000 in 1934, and it increased in various stages till it became $100,000 (see figure 5.5). In addition "coverage of $100,000 for time and saving deposits of local and state governmental units was provided in 1974 and for IRA and Keogh accounts of individuals in 1978" (White 1991, 55).

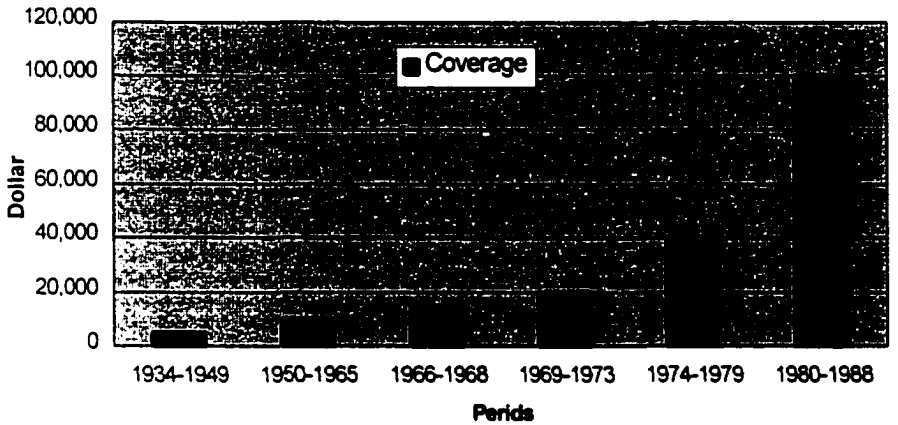

Figure 5.5 FSLIC, deposit coverage.

Source: Barth, The Grate Savings and Loan Debacle 1991, 44-47.

As with the FDIC, the annual assessment that each insured savings and loan institution paid and invested return were the main sources of FSLIC income. The special assessment rate was used for the first time in 1985. In 1934 the annual assessment rate was 0.25%, from 1935 till 1949 it was 0.125%, and from 1950 till 1988 it was 0.0833% (see figure 5.6). FSLIC accumulated funds were invested in government securities. The FSLIC allowed borrowing in case of emergencies, but it was limited to a certain level (Barth 1991, 44-47).

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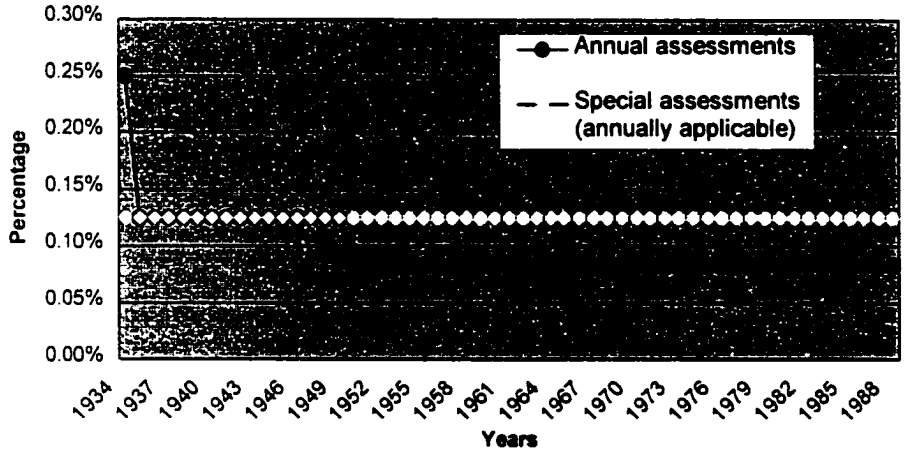

Figure 5.6 FSLIC, assessment rates.

Source: Barth, The Grate Savings and Loan Debacle 1991, 44-47.

Public supervisory authorities were responsible for determining whether the association was in default or not, and after declaring an association in default, the insurance corporation could choose one of the following alternatives: "(1) assume the assets and continue to operate the association, (2) merge it with another insured association, (3) organize a new federal savings and loan association to assume the assets, or (4) liquidate the association" (Bodfish and Theobald 1938, 495).

From the FSLIC's creation in 1934 till the end of the 1970s, the savings and loan industry was mainly sound and enjoyed steady economic conditions and relatively stable interest rates. However, during that period it experienced two unstable conditions. First, in 1965 and 1966, interest rate increases created a negative pressure on savings and loan associations' profitability because they received their income from interest paid by long-term mortgage loan customers at fixed rates, and they paid their expenses to short-run deposit customers. Thus an increase in the interest rate would lead to an increase in

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savings and loan expenses only, while their income would stay the same. However, by the end of 1966 congress had applied the "interest rate ceiling" on savings and loan deposits. That action by congress helped the savings and loan industry to maintain its soundness. Second, unstable conditions occurred at the end of the 1970s when interest rates increased again; however, the "interest rate ceiling" did not ease the problem because of new competition from other markets, such as the mutual funds market. Many savings and loan associations went insolvent in the early 1980s, putting high pressure on the FSLIC fund (White 1989, 5-6).

As a result of that second interest rate shock, several regulatory agencies provided solutions that might return the savings and loan industry to stability. For instance, deposit coverage was increased to $100,000 and regulators allowed savings and loan associations to do the following:

- Offer different types of loan, such as commercial real estate loan.
- Do "direct equity investment."
- Offer interest-bearing checking accounts for customers.

However, this biggest regulatory change in the savings and loan industry (since creation of the FSLIC) stimulated savings and loan associations to conduct more risky activities than otherwise (White, 1989). In 1981 and 1982 the savings and loan industry faced its first serious financial difficulties since the great depressions of the early 1930s. In that two year period almost 17% of all savings and loan (730 associations) either merged or liquidated, accounting for 28% of the net worth of all savings and loan ($7

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billion) (Report to Congress, 1983). Hence, at that time public confidence in savings and loan deteriorated rapidly.

When economic conditions improved as the interest rates tended to go down, some savings and loan associations started recovering and gaining profit. However, the position of others deteriorated due to engaging in risk-taking behavior, such as selling high-interest and high-risk loan to cover their early 1980s losses. Most of these loans defaulted and worsened the situation (Jaffee 1989, 4-5). In 1983 and 1984 savings and loan associations experienced the highest assets growth rate of that decade, when it increased to 18.6% and 19.9% from 7.3% in 1982. This high assets growth can be explained only by expansion of loan and investments which resulted from conducting more risky activities (White, 1989).

A sharp increase in the interest rate in the late 1970s and early 1980s led to a sharp decrease in the savings and loan associations' assets, which were mostly long run and fixed rate. Subsequently, many savings and loan associations' liabilities were greater than their assets, creating a negative net worth (insolvency). This situation resulted in rising incentive problems in the savings and loan market. On the one hand, lacking enough funds to bail out depositors of troubled associations, the FSLIC did not take quick corrective actions; instead, savings and loan associations were allowed to stay in business, resulting in more losses for the industry as a whole. On the other hand, many savings and loan associations went into more risk-taking behavior to increase the value of their assets and to return to solvency as soon as possible (Kroszner and Strahan 1996).

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Economic stability plays a significant role in maintaining financial market solvency, and any change in that stability will lead to instability in the financial market. Downward price trends combined with deregulation and high competition in the early 1980s caused great financial market disturbances, and many savings and loan associations engaged in high risk taking behavior to keep up in the new highly competitive and deregulated financial market. As a result of that behavior many associations faced difficulties and experienced a high rate of failure (Wheelock 92, 1).

In the early 1980s instability and the sharp rise of the interest rate caused many problems for savings and loan institutions. To overcome their problems, institutions tried to offer a high deposit interest rate to attract more depositors (see figure 5.7), then invested those deposits in high risk activities that could provide a high return.

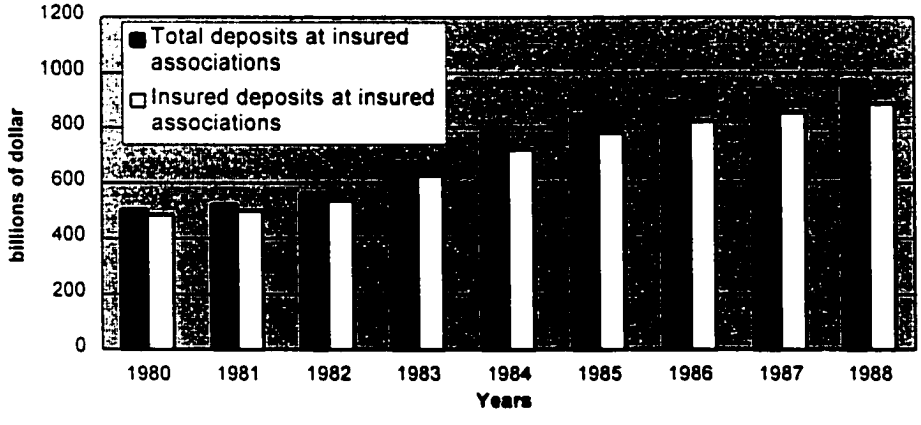

Figure 5.7 FSLIC, total deposits at insured associations, and insured deposits at insured associations.

Source: Barth, The Great Savings and Loan Debacle 1991, 70.

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Further, availability of federal deposit insurance made it easy for savings and loan associations to attract more customers by conducting high-risk behavior. However, due to increasing economic instability, that behavior aggravated the problem and caused many of them to become insolvent (Wheelock 1992, 1-2).

Between 1980 and 1988, the savings and loan industry experienced significant changes that reshaped industry behavior. The number of thrifts declined by 25% (from 3993 to 2949). Moreover, stock thrifts increased from 20% (holding 27% of total assets) to 44% (holding 74% of total assets) of all thrifts and the number of insolvent thrifts (based on GAAP) increased on a yearly basis. The savings and loan industry experienced a high rate of thrift failures and a high rate of asset loss that exceeded what happened in the 1930s (Barth 1991, 25).

In that eight-year period about 1200 thrifts failed (Barth, Bartholomew, and Bradley, 1990). Figure 5.8 shows that during that period the highest number of insolvent associations occurred in 1985, when 705 associations were insolvent, and the lowest number of insolvent associations occurred in 1980 when 43 associations were insolvent. The highest number of associations resolved by the FSLIC occurred in 1988 (205 associations) and the lowest number of associations resolved by the FSLIC occurred in 1980 (11 associations). The total number of associations resolved by the FSLIC was 489 associations holding assets equal to $172 billion dollars (Barth 1991, 63, 70).

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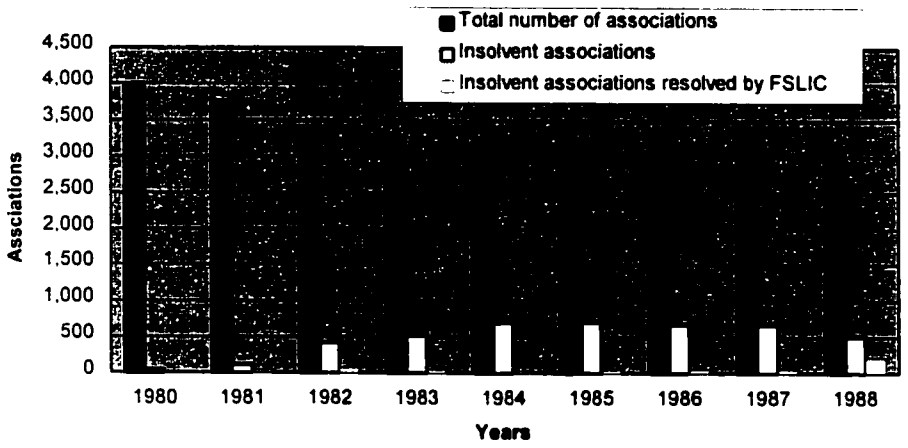

Figure 5.8 FSLIC, total number of associations, insolvent associations, and insolvent associations resolved by FSLIC

Source: Barth , The Great Savings and Loan Debacle 1991, 25, 63, 70.

The Federal Home Loan Bank Board (FHLBB) that controls the FSLIC also regulates savings and loan institutions; however, it did not monitor them closely. For example, in the two and a half year period beginning January 1984, there were several hundred savings and loan institutions non of which was examined (Kane 1989, 100). The agency problem was one of the main reasons behind the FSLIC's failure; further, to aid only severely troubled institutions the FHLBB reduced reserve and net worth soundness measures for insured savings and loan institutions (FSLIC, 83). The FHLBB failed to maintain sound savings and loan institutions and a healthy FSLIC, which forced President Bush to sign the Financial Institutions Reform, Recovery, and Enforcement Act (FIRREA) on August 9, 1989 (White, 1991).

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According to FIRREA:

> The Federal Home Loan Bank Board (FHLBB) is abolished, with a new Office of Thrift Supervision, within the Treasury Department, taking over the FHLBB's Regulatory role. The Federal Saving and Loan Insurance Corporation (FSLIC) is abolished, with the Federal Deposit Insurance Corporation (FDIC) taking over the FSLIC's insurance role (Jaffee 1989, 5)

In summary, in the early 1930s, the savings and loan industry faced its first severe financial instability as a result of the great depression. After creation of the FDIC to insure commercial banks' deposits, confidence in the savings and loan decreased. For example, soon after creation of the FDIC, the deposits of commercial banks increased while the savings and loan assets decreased. Therefore, to restore confidence in the savings and loan industry, the FSLIC was created in 1934 to insure deposits in savings and loan associations. From its creation to end of 1970s, the FSLIC succeeded in building full confidence in insured savings and loan associations.

During the 1980s, the FSLIC faced its first severe crisis when the savings and loan industry was affected negatively by the late 1970s interest rate rise. To overcome that problem many savings and loan practiced moral hazard, and their management engaged in more risky activities (White, 1989). From 1980 to 1988, there were more than 4000 insolvent savings and loan associations (Barth 1991, 70). Due to the failure of the FSLIC and its board of directors to maintain stability among insolvent savings and loan associations, the agency was suspended in 1989.

Testing this dissertation's five hypotheses against the FSLIC, we find that four hypotheses do not hold. Those are: H1: *Bankers should be on the board of directors of the DIS*, H2: *The insurance fund should come from the member banks*, H4: *The*

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government should not provide a back-up fund, and H5: *Membership should not be compulsory*. The FHLBB, which controlled the FSLIC, was dominated by government authorities, and savings and loan directors did not participate on that board. Consequently, the board of directors failed to create a good supervisory system. For example, after the first serious financial instability that occurred in the early 1980s, the board and its supervisory system were unable to prevent insolvent savings and loan associations from practicing the moral hazard problem. Fund deficiency was another problem that led to the FSLIC's collapse, and borrowing did not help much since it was limited (Barth 1991). By the end of 1988 there were 364 insolvent savings and loan associations still operating in the industry, many of which had been insolvent for more than one year. Lack of funds was one important reason for this situation (Barth, Bartholomew, and Labich, 1989). Access to extensive funds, for example by using a mutual guarantee system, is necessary for any DIS to take immediate action such as closing insolvent associations at the right time. Furthermore, back-up of the fund by the government allowed government authorities to interfere in the FSLIC and its board of directors' decisions, for example by allowing insolvent associations to continue in business, which resulted in further losses to their customers. Depending on member associations' funds, not on limited assessments or limited borrowing, is required for any DIS to operate efficiently, as is control by an expert board of directors and a good supervisory system with adequate enforcement powers.

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The National Credit Union Share Insurance Fund (NCUSIF)

The first United States credit union law went into effect in Massachusetts in 1909, and after 1921 the credit union industry developed rapidly as a result of the efforts of the Credit Union National Extension Bureau (CUNEB) between 1921 and 1934. After 1934, a newly-created organization named the State Leagues and Credit Union National Association (owned and fully directed by credit unions) continued the work started by CUNEB (Shipe, 1943).

During the 1930s, credit unions operated successfully and were able to recover the money loaned to their members without any loss (Shipe, 1943). Further, during the great depression, the credit unions' solvency rates were greater than those of commercial banks, and their numbers and membership expanded rapidly. For example in 1935, when there were 3600 credit unions serving 750,000 members, the number of credit unions was expanding by 100 credit unions per month and their membership was increasing by 600 members per week (Withington, 1972).

To organize the credit union market, congress approved the "Federal Credit Union Act" which established a "Federal Credit Union System." This Act provided the main guidelines which credit unions depend on nowadays (Chartering and Field of Membership Manual, 1989).

Congress established the NCUSIF in 1970 to provide deposit insurance for all federal credit union shares, and for member state credit union shares (Chartering and Field of Membership Manual, 1989). In its early years of operation, the NCUSIF provided a share--or deposit--coverage to a maximum of $20,000 (NCUA Quarterly Jan.

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1973, 30). Currently, it covers shares up to $100,000. The National Credit Union Administration (NCUA) board, which has three members, is the main director for the NCUSIF and has the power and the right to keep the NCUSIF in safe and sound condition (Your Insured Fund, 1998). The NCUA board has been successful in controlling the NCUSIF.

Each insured credit union has to keep one percent of its deposits and insured shares as a deposit with the NCUSIF (Your Insured Fund, 1998). However, those deposits should be adjusted annually in order to keep up with any growth changes that may occur. A special assessment may be applied by the NCUA whenever necessary. All credit unions are responsible--as a group or as an individual--for covering any fund shortage in the NCUSIF, which creates a strong incentive for each credit union to monitor other credit unions. Insured credit unions are the primary owners of the funds of the NCUSIF (Kane, 1996). The funds of the NCUSIF are invested in U.S. government securities (NCUSIF, 1999). Several elements have contributed to the success of the NCUSIF. The fund is owned by insured credit unions, hence each credit union feels that part of its responsibilities is to keep the NCUSIF in sound condition; moreover, the responsibility of credit unions for covering any fund shortage has kept the NCUSIF solvent even during economic difficulties.

In the first ten years of its operation, the number of insured credit unions increased from 13,510 in 1971 to 17,350 in 1980, and the insured credit union shares increased from 10.9 billion in 1971 to 54.7 billion in 1980 (see figures 5.9 and 5.10).

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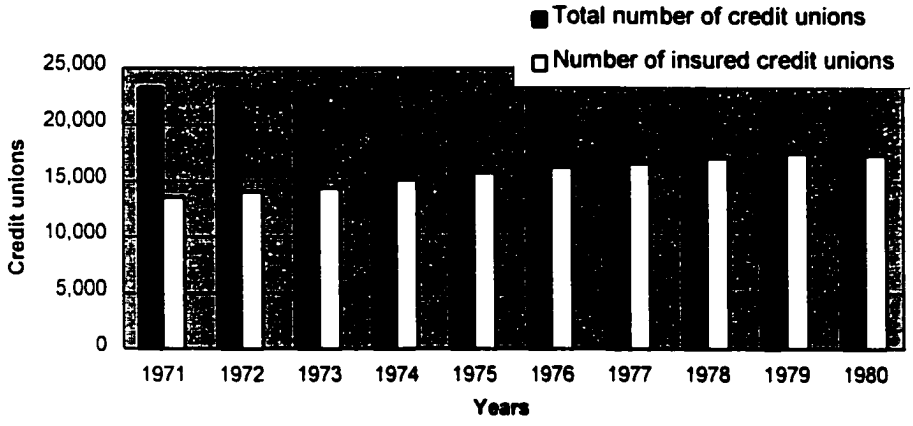

Figure 5.9 First ten years of the NCUSIF, total number of credit unions, and number of insured credit unions.

Source: National Credit Union Administration, Annual Report 1980, 60.

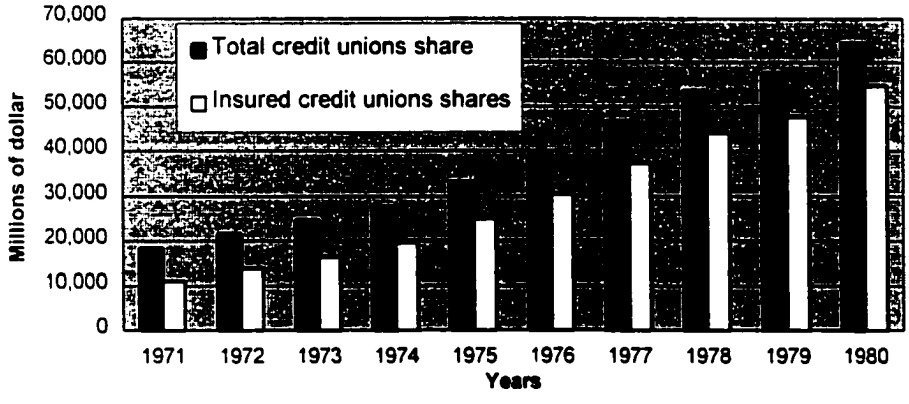

Figure 5.10 First ten years of the NCUSIF, total credit union shares, and insured credit union shares.

Source: National Credit Union Administration, Annual Report 1980, 60.

In its responsibility for the NCUSIF, the NCUA has the right to guarantee the safety of the NCUSIF, and therefore it has the power to examine all insured credit unions (NCUA 1997, 21-1, 21-4). Moreover, the NCUA is the main charter and supervisor of all credit unions. To make sure that credit unions are doing their jobs properly, the NCUA always monitors their activities closely. The General Accounting Office has

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found that the NCUA has more authority than it has utilized so far (Kane, 1996). NCUA regional management meets semi-annually with the State Supervisory Authorities (SSA) to discuss any issues related to credit unions. They also meet with the National Association of State Credit Union Supervisors (NASCUS) to discuss similar issues (NCUA 1997, 21-1). Monitoring insured credit unions closely through regulation and supervision by the NCUA helps to maintain a safe and sound NCUSIF; and good communication and cooperation with other state supervisory authorities, such as the SSA, makes it easier for the NCUA to supervise all insured credit unions efficiently.

Unlike the FSLIC and FDIC, the NCUSIF succeeded in maintaining stability among credit unions during the 1980s when many savings and loan associations and commercial banks went through severe financial difficulties. In 1989, the FSLIC failed when it reported a negative net worth amounting to $200 billion. Though during the 1980s the NCUSIF went into economic insolvency, it was able to return to solvency without using taxpayers' money. For example, during the 1980s the number of insured credit unions with financial difficulties reached its highest point in 1982, when it increased to 1,192 credit unions, and the shares of insured credit unions with financial difficulties reached its highest level in 1988 when it increased to 10.6 billions (see figures 5.11 and 5.12). Moreover during the same period the FDIC and the FSLIC reported negative net worth and were deeply involved in insolvency proceedings (Kane and Hendershott 1996, 1-3).

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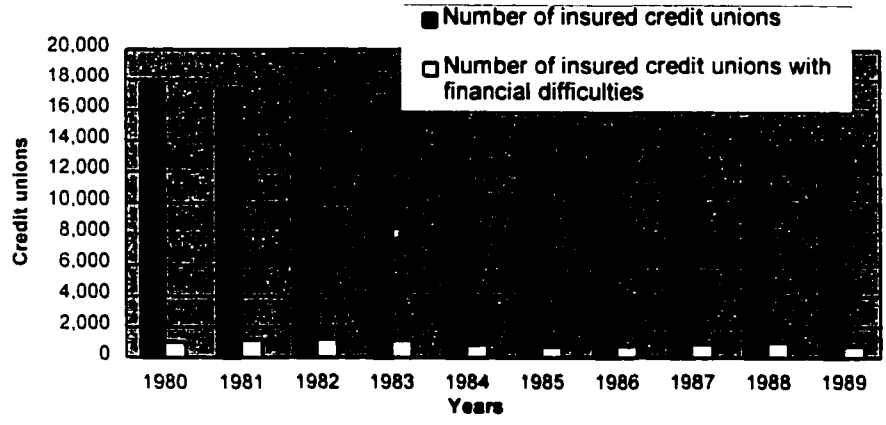

Figure 5.11 NCUSIF, number of insured credit unions, and number of insured credit unions with financial difficulties.

Sources: National Credit Union Share Insurance Fund, Annual Report 1989, 26-27.

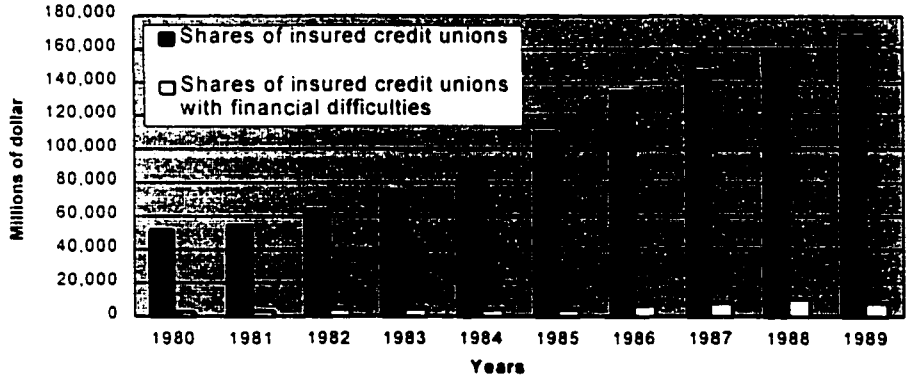

Figure 5.12 NCUSIF, shares of insured credit unions, and shares of insured credit unions with financial difficulties.

Sources: National Credit Union Share Insurance Fund, Annual Report 1989, 26-27.

Testing the five hypotheses of this dissertation with regard to the NCUSIF, we find that two hypotheses do not hold--those are: H1: *Bankers should be on the board of directors of the DIS*, and H5: *Membership should not be compulsory*. However, the NCUSIF is under an expert board of directors that succeeded in keeping member credit unions stable during the 1980s financial instability. The cornerstone of the board's

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success is its sufficient enforcement power and its supervisory system that monitors credit unions activities efficiently. Moreover, availability of funds has enabled the board to pursue its work effectively. Any fund shortage in any insured credit union is the responsibility of all other insured credit unions jointly or individually (Kane and Hendershott 1996, 8). Furthermore, lack of government back-up for the NCUSIF makes its board of directors free from the government intervention that was obvious in the FDIC and FSLIC.

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CHAPTER SIX

DEPOSIT INSURANCE SYSTEMS: Lessons from History

After reviewing the history of the U.S. bank insurance programs given in the previous two chapters, this chapter details the lessons that can be learned from that history. It will focus on those factors which played a significant role in determining the success or failure of the programs, and which are closely related to this dissertation's five hypotheses. Those factors are: 1) Board of directors, 2) DIS funding, 3) Insurance coverage, 4) Back-up of the fund, and 5) Membership. This chapter will also provide an evaluation of the Garcia-IMF model followed by a proposal for a modified model for the best practice Deposit Insurance System.

Board of Directors

This is the first factor that plays a significant role in determining the success or failure of any insurance program. After reviewing the U.S. bank insurance programs, we found that government authorities were the dominant players in controlling insurance programs in three of the six 19th century state bank insurance programs--those of New York, Vermont, and Michigan--and in all the eight early 20th century state bank insurance programs. This had a negative impact which contributed to their failures, because bankers were separated from directing responsibilities. On the other hand, in Indiana, Ohio, and Iowa, bankers themselves were involved in directing the insurance system and were

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given a powerful position in regulating and controlling those programs. A board of directors composed of member banks was the dominant player in those three programs and determined their success (Calomiris 1989, 14).

Moreover, in the federal deposit insurance programs of the FDIC, the FSLIC, and the NCUSIF controlling responsibilities in each program were given to a board of directors; however, none of those boards had bankers on them. The FSLIC failed to minimize the cost of failing savings and loans institutions, in part because of the structure of its board.

Failed insurance programs, such as those of New York, Vermont, Michigan, the eight 20th century state insurance programs, and the FSLIC, gave program direction to inexperienced people. This is in contrast to one of this dissertation's hypothetical best-practice factors which emphasizes letting bankers themselves control the insurance program. The successful programs, such as existed in Indiana, Ohio, and Iowa, let banking experts direct their programs through a board of directors consisting of the bankers themselves. This is consistent with one of the hypothetical best-practice factors of this dissertation.

It is essential for any DIS to be controlled by a board of directors rather than by just one person, because decisions taken by a board of directors are likely to be wiser than those taken only by one person. Furthermore, participation of bankers on the board of directors will result in success in controlling the DIS, because only bankers definitely have adequate, relevant information about banks and about the financial system in general. In addition, an efficient board of directors provides a good supervisory system.

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That supervisory system is related to performance of the insurance program and has the ability to keep it in sound condition by monitoring insured banks through examination, enforcement power, and other means.

In the six 19th century state bank insurance programs, condition reports were required to be submitted to the banking authorities. These reports were required monthly in Indiana, Ohio, and Iowa, and annually in New York, Vermont, and Michigan. Further, in those six states, each insured bank had to be examined at least once a year (except in New York state after 1842; examination there occurred only whenever it was necessary). In the majority of the eight early 20th century state bank insurance programs, each insured bank had to be examined twice a year. Further, in 50 percent of those programs, supervisory authorities were able to remove any law-violating bank officials. Although the supervisory function was an essential part of the state programs, 11 programs failed to protect their payment systems when faced with moral hazard and adverse selection problems. These problems played a significant role in their failures; moreover, banking authorities were unable to enforce their powers (FDIC: The First Fifty Years 1984, 19, 28). In Indiana, Ohio, and Iowa, supervisory officials were able to enforce their powers, such as closing any insolvent or law-violating bank (Calomiris 1989, 6). Good enforcement power, annual examinations, and monthly condition reports were the main reasons behind the success of these three state programs.

In all three Federal Insurance programs, regulation and supervision played the most important role in determining their success or failure. Generally, all these programs were given good enforcement powers, but these powers were not totally utilized. For

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example, the FHLBB, which controlled the FSLIC and regulates savings and loans institutions, did not monitor them closely, and there were several hundred savings and loans institutions that were not examined between January 1984 and July 1986 (Kane 1989, 90, 100). The most successful program of the three National Insurance programs is the NCUSIF, and this is because it monitors the insured credit unions closely through regulation and supervision, and because good communication and cooperation exist with other supervisory authorities.

In summary, the supervisory system is a significant factor that has a major impact on determining the success or failure of any insurance program. Failed insurance programs--such as New York, Vermont, Michigan, the eight early 20th century state bank insurance programs, and the FSLIC--experienced either a lack of enforcement powers or an inability to use enforcement powers, and weak regulation and supervisory systems which led to moral hazard, adverse selection, and agency problems. In contrast, successful insurance programs such as those of Indiana, Ohio, Iowa, and the NCUSIF experienced good supervisory systems and had the ability to use their enforcement powers effectively.

These successful supervisory systems (except NCUSIF) are consistent with the first hypothesis of this dissertation's five hypotheses--that is H1: *Bankers should be on the board of directors of the DIS*. Banker participation on the board of directors would help in monitoring member banks more closely and more efficiently. This is the right solution to minimize incentive problems, especially the adverse selection problem. It is important for any deposit insurance program to have a good regulation and supervisory

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system in combination with good enforcement powers and the ability to use those enforcement powers. Further, to promote an efficient regulation and supervisory system, good communication and cooperation with field supervisory agencies should be in place.

DIS Funding

This is the second factor that plays a significant role in determining the success or failure of any insurance program. After reviewing the U.S. insurance programs, we note that in three of the six 19th century state bank insurance programs--New York, Vermont, and Michigan--and in all eight early 20th century state bank insurance programs, each member had to pay a fixed annual assessment (Nebraska had a semi-annual assessment). Moreover in all eleven of those state programs, in the case of an emergency, such as insufficient insurance funds, special limited assessments were applied (FDIC: The First Fifty Years 1984, 16, 25-27). Therefore, all eleven programs experienced problems with fund deficiencies. When funds were not available, the special assessment did not help much because it had an upper limit. In the remaining three states of Indiana, Ohio, and Iowa, there were no insurance funds. Instead, there was "mutual guarantee," where each member bank had to pay a special unlimited assessment as needed to cover notes or deposits of failed banks (Calomiris 1989, 6, 14). One element that helped in the success of the Indiana, Ohio and Iowa programs was the availability of funds whenever they were needed through the "mutual guarantee" system.

Further, in the federal insurance programs, the fixed annual assessment rate that each insured bank or savings and loan institution paid and the invested returns were the main sources of FDIC and FSLIC incomes. To meet its obligations in the event of

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emergencies, the FDIC was allowed to borrow from the treasury (FDIC: The First Fifty Years 1984, 52-53). The FSLIC was allowed to borrow in case of emergencies, but it was limited to a certain level. Fund deficiency was one of the problems that led to the FSLIC's collapse, and to the FDIC's struggles in the 1980s. In the NCUSIF, all credit unions are responsible for covering any fund shortage (Kane 1996). Two main elements have aided the success of the NCUSIF: 1) the fund is owned by insured credit unions and therefore each credit union feels that it is their responsibility to keep the NCUSIF in sound condition; and 2) the responsibility of insured credit unions to cover any fund shortage has kept the NCUSIF solvent even during economic difficulties.

In summary, DIS funding plays an essential role in determining success or failure of any insurance program. Failed insurance programs such as the FSLIC experienced difficulties in maintaining enough funds to cover emergencies. Availability of funds in case of emergencies is crucial to the success or failure of any program. Successful insurance programs, such as those of Indiana, Ohio, Iowa, and the NCUSIF, did not use premiums; instead they were able to maintain adequate funds in any time period through "mutual guarantee." This supports the second hypothetical best-practice strategy of this dissertation--H2: *The insurance fund should come from the member banks.* Thus by depending on the members' funds, not only on its own funds, the DIS would be able to utilize the huge resources of the banking system in controlling any financial instability rapidly and efficiently.

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Insurance Coverage

This is the third factor that plays a significant role in determining the success or failure of any bank insurance program. In the six 19th century state bank insurance programs, the Ohio and Iowa programs provided 100 percent coverage of notes only. However, New York, Vermont, Michigan, and Indiana provided 100 percent coverage of both notes and deposits. Further, all eight 20th century state programs (except Kansas for a short period) provided 100 percent coverage of deposits only; those states were Oklahoma, Texas, Nebraska, South Dakota, North Dakota, Washington, and Mississippi (FDIC: The First Fifty Years 1984, 24). On the other hand, in all federal deposit insurance programs--those of the FDIC, the FSLIC, and the NCUSIF--coverage is limited to $100,000.

Generally all the previous programs provided high coverage--according to this dissertation, greater than two times per capita GDP. Moreover most of them were able to eliminate bank runs, especially during their first years of operation. This factor is consistent with one of this dissertation's five hypotheses--H3: *A high level of coverage is necessary*. In any financial crisis, only a small portion of depositors--large deposit customers--would run to the banks and withdraw their deposits; however, the majority of depositors would keep their deposits, and that would enable the financial system to maintain soundness during any panic.

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Backing up the Fund

This is the fourth factor that plays a significant role in determining the success or failure of any bank insurance program. None of the six 19th century state bank insurance programs or the eight early 20th century state bank insurance programs were backed up by government. The government did support two of the three federal programs--those of the FDIC and the FSLIC- but not the NCUSIF.

Programs that are backed up by government, such as the FDIC and the FSLIC, tend to experience strong government intervention in conducting their policies during any financial crisis. For example, during the 1980s the FDIC and the FSLIC faced a serious problem when their funds were not sufficient to bail out their customers; the government practiced the agency problem by allowing insolvent banks and savings and loans to stay in business longer than they should have. The government put its own interest first and the interests of other parties, such as customers and taxpayers, second. The absence of a government back-up fund reduces the opportunities for government intervention in DIS operations. This factor is consistent with one of this dissertation's five hypotheses--H4: *The government should not provide a back-up fund.* Lack of a government back-up fund would minimize government intervention in DIS decisions, such as practicing forbearance. Furthermore, it would prevent banks from relying on government support. This would make the banking system independent from any unwise decisions that are usually based on political situations rather than economic conditions.

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Membership

This is the fifth factor that plays a significant role in determining success or failure of any bank insurance program. In all six 19th century state bank insurance programs (except Michigan) and all eight early 20th century state bank insurance programs membership was voluntary. Moreover, membership was almost mandatory for all three federal deposit insurance programs--those of the FDIC, the FSLIC, and the NCUSIF. Though applying mandatory membership might eliminate the adverse selection problem, other problems may arise. For example in a weak DIS, efficient banks will pay for the mistakes of other, less efficient banks. However, a well-designed DIS will attract most banks to be members even though membership is voluntary. This is consistent with one of this dissertation's five hypotheses--H5: *Membership should not be compulsory*. Compulsory membership is not the right solution for the adverse selection problem, and the use of risk-based premiums requires an ideal financial system, which is not available in most countries of the world. The best solution for the adverse selection problem is to establish a well-designed DIS by applying excellent regulations and supervision.

The Evaluation of the Garcia-IMF Model

Based on these lessons drawn from the U.S. bank insurance history, the next step would be the evaluation of the Garcia-IMF model. To evaluate that model this dissertation has applied it to the U.S. insurance programs. Adapting the same selective Garcia-IMF model measurements to U.S. history covering the six 19th century state bank insurance programs, the eight early 20th century state bank insurance programs, and the

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three federal deposit insurance programs, the results are as follows: the FSLIC was a good insurance program; 11 states plus the NCUSIF, and the pre-1991 FDIC plans, were average insurance programs; and 3 state plans were poor insurance programs. Yet, looking at these three groups, we note that 100 percent of the programs categorized as poor are in fact the most successful state insurance programs-- those being Indiana, Ohio, and Iowa. Further, a program categorized as good (FSLIC) is in fact a failed program (see tables 6.1 and 6.2).

Table 6.1 U.S. Insurance Programs, Based on the Garcia-IMF Best Practice model.

State or Insurance Program	Compulsory Membership	Has Fund	Provides Low Coverage	No Bankers on Board of Directors	Government Back-up of Fund	DIS Rank
The six 19th century programs						
New York		✓		✓		2
Vermont		✓		✓		2
Indiana						0
Michigan	✓	✓		✓		3
Ohio						0
Iowa						0
The eight 20th century programs						
Oklahoma		✓				1
Kansas		✓		✓		2
Nebraska		✓		✓		2
Texas		✓		✓		2
Mississippi		✓		✓		2
South Dakota		✓				1
North Dakota		✓		✓		2
Washington		✓				1

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Table 6.1 U.S. Insurance Programs, Based on the Garcia-IMF Best Practice model (continued).

State or Insurance Program	Compulsory Membership	Has Fund	Provides Low Coverage	No Bankers on Board of Directors	Government Back-up of Fund	DIS Rank
Federal Programs						
FSLIC	✓	✓		✓	✓	4
NCUSIF	✓			✓		2
Pre-1991 FDIC:						
Banking Act of 1933						
Temporary plan		✓	✓	✓		3
Permanent plan		✓		✓		2
Banking Act of 1934						
Extending temporary plan		✓		✓		2
Banking Act of 1935		✓		✓	✓	3

Table 6.2 U.S. Insurance Programs Ranking, Based on the Garcia-IMF Best Practice model.

Poor DIS (rank 0)	Average DIS (rank 1,2&3)			Good DIS (rank 4)
Indiana	Oklahoma	New York	Michigan	FSLIC
Ohio	South Dakota	Vermont	FDIC: Temporary plan	
Iowa	Washington	Kansas		
		Nebraska	FDIC: Banking Act of 1935	
		Texas		
		Mississippi		
		North Dakota		
		FDIC: Permanent plan		
		FDIC: Extending temporary plan		
		NCUSIF		

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A Modified Proposal for the Best Practice Deposit Insurance System

Based on the previous outcomes, the Garcia-IMF model needs to be modified in the light of this dissertation's hypotheses. Banks are an essential part of any financial system, and they play a significant role in channeling resources between savers and investors. Thus a stable banking system will lead to a stable financial system and that will help in maintaining economic growth.

Bank runs are an important reason for bank failure, which inevitably leads to financial instability. To maintain financial stability, public confidence in banks should be improved; one way to improve public confidence in banks and in the financial system as a whole is by creating a good DIS. To create a good DIS, the following points should be noted. First, nowadays banks have huge assets, which in most countries exceed those of central banks and affect the ability of a DIS to resolve some bank failures. Thus any DIS should have enough funds to maintain banking and financial stability during any bank disturbances. Second, the DIS should eliminate bank runs by providing adequate deposit coverage. Third, well-trained and expert directors should control the DIS. Fourth, the DIS should be free from any political intervention. Finally, a good DIS should not require mandatory membership.

In previous chapters, this dissertation covered the major U.S. bank insurance programs, those known as providing the longest and richest bank insurance history in the world. After noting which programs failed and which programs succeeded, and what reasons led to the failure or success, and after pointing out the weaknesses of the Garcia-IMF model, this dissertation is ready to propose a model for the best-practices DIS.

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Based on the successful U.S. insurance programs--those in Indiana, Ohio, Iowa, and the NCUSIF--this study established the best practices of a DIS. These newly established practices differ from the Garcia-IMF model in the following ways: 1) membership should be voluntary; 2) the insurance program should depend on a fund supplied by insured banks and not on its own fund; 3) coverage should be high; 4) bankers should be on the board of directors; and 5) government should not back up the fund.

After applying this study's best-practice measurements to all countries that have an explicit DIS, we found that 3 DIS are good, 27 DIS are average, and 39 DIS are poor. Looking more closely at those DIS that are ranked good, we note that all of them are in countries with well-developed financial systems. On the other hand, looking at the DIS that are ranked as poor, we note that more than 70 percent of them are in countries with less-developed financial systems (see tables 6.3 and 6.4).

Table 6.3 Worldwide DIS, Based on Proposed Best Practice Factors.

Continent, Country, or Province	Voluntary Membership	Has No Fund	Provides High Coverage	Bankers on Board of Directors	No Government Back-up of Fund	DIS Rank
AFRICA						
Cameroon	✓		✓	✓		3
Central African Rep.	✓		✓	✓		3
Chad	✓		✓	✓		3
Congo Republic	✓		✓	✓		3
Equatorial Guinea	✓		✓	✓		3
Gabon	✓			✓		2
Kenya			✓			1
Nigeria			✓			1

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Table 6.3 Worldwide DIS, Based on Proposed Best Practice Factors (continued).

Continent, Country, or Province	Voluntary Membership	Has No Fund	Provides High Coverage	Bankers on Board of Directors	No Government Back-up of Fund	DIS Rank
ASIA						
Tanzania				✓		1
Uganda			✓			1
MIDDLE EAST						
Bahrain		✓		✓	✓	3
Lebanon				✓		1
Oman			✓			
ASIA						
Bangladesh			✓			1
India			✓			1
Japan			✓	✓		2
Korea			✓			1
Marshall Islands	✓		✓		✓	3
Micronesia	✓		✓		✓	3
Philippines			✓			1
Sri Lanka	✓					1
Taiwan Prov. of China	✓		✓			2
EUROPE						
Austria		✓		✓		2
Belgium				✓		1
Bulgaria				✓		1
Croatia			✓			1
Czech Republic			✓			1
Denmark				✓		1
Estonia				✓		1
Finland				✓		1
France		✓	✓	✓	✓	4
Germany						
Official				✓	✓	2
Private	✓	✓		✓	✓	4
Gibraltar		✓		✓	✓	3

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Table 6.3 Worldwide DI, Based on Proposed Best Practice Factors (continued).

Continent, Country, or Province	Voluntary Membership	Has No Fund	Provides High Coverage	Bankers on Board of Directors	No Government Back-up of Fund	DIS Rank
Greece				✓	✓	2
Hungary				✓		1
Iceland				✓	✓	2
Ireland					✓	1
Italy		✓	✓	✓		3
Latvia						0
Lithuania			✓			1
Luxembourg		✓		✓	✓	3
Macedonia	✓			✓		2
Netherlands		✓				1
Norway			✓	✓		2
Poland					✓	1
Portugal					✓	1
Romania				✓		1
Slovak Rep.			✓	✓		2
Spain				✓		1
Sweden						0
Switzerland	✓	✓		✓	✓	4
Turkey			✓			1
Ukraine					✓	1
United Kingdom		✓		✓	✓	3
WESTERN HEMISPHERE						
Argentina			✓	✓	✓	3
Brazil			✓	✓	✓	3
Canada			✓			1
Chile		✓				1
Colombia			✓		✓	2
Dominican Rep.	✓		✓	✓		3
Ecuador			✓			1
El Salvador			✓			1
Jamaica						0
Mexico			✓			1
Peru			✓	✓		2
Trinidad & Tobago						0
U.S.			✓			1
Venezuela				✓		1

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Table 6.4 World DIS Ranking, Based on Proposed Best Practice Factors.

Poor DIS (rank 0 & 1)		Average DIS (rank 2 & 3)		Good DIS (rank 4 & 5)
Sweden	Chile	Greece	Marshall Is.	France
Latvia	Belgium	Japan	Micronesia	Switzerland
Jamaica	Kenya	Taiwan Prov. of China	Brazil	Germ. (Private)
Trinidad & Tobago	Croatia	Germ.(Official)	Cameron	
	Nigeria	Iceland	Central African Rep.	
	Czech Rep.	Norway	Chad	
	Uganda	Peru	Congo Rep.	
	Estonia	Slovak Rep.	Equatorial Guinea	
	Tanzania	Colombia	Gibraltar	
	Denmark	Gabon	Dominican Rep.	
	Bulgaria	Austria	Argentina	
	Ireland	Macedonia	Italy	
	Finland		Bahrain	
	Lithuania		Luxembourg	
	Hungary		United Kingdom	
	Poland			
	Romania			
	Spain			
	Turkey			
	Ukraine			
	Portugal			
	Canada			
	U.S.			
	Mexico			
	El Salvador			
	Venezuela			
	Netherlands			
	Oman			
	Lebanon			
	Bangladesh			
	India			
	Korea			
	Philippines			
	Sri Lanka			
	Ecuador			

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Moreover, by applying this study's best-practice measurements to the historic U.S. insurance programs, the results were that 3 state insurance programs were ranked as good, 11 state insurance programs plus the NCUSIF and the pre-1991 FDIC plans were ranked as average, and the FSLIC was ranked as poor. Further, looking more closely at the previous three groups, we note that 100 percent of the programs that were categorized as good were in fact the most successful state insurance programs, and a program that ranked poorly is in fact a failed program (see tables 6.5 and 6.6).

Table 6.5 U.S. Insurance Programs, Based on Proposed Practice Factors.

State or Insurance Program	Voluntary Membership	Has No Fund	Provides High Coverage	Bankers on Board of Directors	No Government Back-up of Fund	DIS Rank
The six 19th century programs						
New York	✓		✓		✓	3
Vermont	✓		✓		✓	3
Indiana	✓	✓	✓	✓	✓	5
Michigan			✓		✓	2
Ohio	✓	✓	✓	✓	✓	5
Iowa	✓	✓	✓	✓	✓	5
The eight 20th century programs						
Oklahoma	✓		✓	✓	✓	4
Kansas	✓		✓		✓	3
Nebraska	✓		✓		✓	3
Texas	✓		✓		✓	3
Mississippi	✓		✓		✓	3
South Dakota	✓		✓	✓	✓	4
North Dakota	✓		✓		✓	3
Washington	✓		✓	✓	✓	4

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Table 6.5 U.S. Insurance Programs, Based on Proposed Practice Factors (continued).

State or Insurance Program	Voluntary Membership	Has No Fund	Provides High Coverage	Bankers on Board of Directors	No Government Back-up of Fund	DIS Rank
Federal Programs						
FSLIC			✓			1
NCUSIF		✓	✓		✓	3
Pre-1991 FDIC:						
Banking Act of 1933						
Temporary plan	✓				✓	2
Permanent plan	✓		✓		✓	3
Banking Act of 1934						
Extending						
temporary plan	✓		✓		✓	3
Banking Act of 1935	✓		✓			2

Table 6.6 Ranking of U.S. Insurance Programs, Based on Proposed Practice Factors.

Poor DIS (rank 1)	Average DIS (rank 2,3&4)			Good DIS (rank 5)
FSLIC	Michigan	FDIC:	Oklahoma	Indiana
	FDIC:	Permanent plan	Washington	Ohio
	Temporary	FDIC: Extending	South Dakota	Iowa
	plan	temporary plan		
	FDIC: Banking	Nebraska		
	Act of 1935	Kansas		
		Texas		
		Mississippi		
		North Dakota		
		New York		
		Vermont		
		NCUSIF		

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Based on the previous results, we conclude that the Garcia-IMF model for a DIS should be modified, mainly in the following ways:

1- Bankers should be on the main board of directors of the insurance fund. Historical evidence suggests that, when DIS are controlled by bankers themselves, they become more practical than when they are controlled by government, because bankers will watch each other more closely and prevent bank officials from practicing moral hazard behavior. For example, the most successful U.S. insurance programs were controlled by bankers, not by government, including the Indiana bank insurance program, the Ohio bank insurance program, and the Iowa bank insurance program. On the other hand, most of the failed U.S. insurance programs were controlled by government, not by bankers, including the eight 20th century state deposit insurance programs and the FSLIC.

With the large number of banks nowadays, it may be impossible to allow all member banks to participate on the DIS board of directors. As a solution to this problem, each county could create a county banking board and all banks in that county should participate on the board. The board should choose one member to be its representative on the DIS board of directors. The number of directors on the DIS board of directors may vary from one country to another; a small country may have five directors and a large country may have nine directors.

1- A mutual guarantee system should be applied, thus ensuring that the banking system will usually have huge resources that are able to bail out any bank quickly and efficiently. A DIS that uses annual or semi-annual assessments as a funding method usually has limited resources that are not always enough to bail out some banks in the

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most efficient way, and that may lead officials to practice the agency problem. For example, in the case of the FSLIC during the 1980s, authorities did not interfere at the right time due to fund deficiency; instead they practiced the agency problem by allowing insolvent savings and loans associations to stay in business longer than they would have otherwise. On the other hand, availability of funds using the "mutual guarantee" system helped the Indiana state insurance program and the NCUSIF to deal with any problem promptly, which minimized loss to their insurance programs as well as to their insured members. In this system each insured bank would participate in providing funds to the DIS, and each member bank's participation portion should reflect the ratio of its insured deposit to the total of insured banks' deposits.

3- Coverage should be greater than two times per capita GDP. Low coverage will not eliminate bank runs, since in any bank crisis, depositors of uninsured deposits will run to the bank and withdraw their deposits, and that will worsen the bank's situation. However, providing high deposit coverage will result in a reduction of the number of depositors who panic during any bank difficulty. Bank runs were the main reason for bank failures in the early 1930's, when public confidence in the banking system reached an extremely low level and large numbers of customers rushed to withdraw their deposits at the same time.

4- Government should not back up the fund because such support will lead to government intervention in the DIS; moreover, the government will protect its own interests rather than banks' or depositors' interests by such acts as practicing the agency problem. For example, the absence of government back-up for the NCUSIF minimized

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government intervention in that insurance program. On the other hand backing up the FSLIC gave the government the opportunity to interfere in the FSLIC's work and alter their decisions in a way that put government interests first and other parties' interests second.

5- Membership should be voluntary because mandatory membership is not the right way to eliminate the adverse selection problem nor to create a good DIS. On the other hand, creating a good DIS will lead all banks to seek membership. Further, applying mandatory membership in a weak DIS will force good banks to pay for the poor banks' mistakes. The successful state bank insurance programs of Indiana, Ohio, and Iowa minimized the adverse selection problem by applying a prudential regulation and supervision system, not by applying mandatory membership.

An additional lesson from the history of U.S. bank insurance programs should be noted. Creating an explicit DIS during a time of crisis helps in maintaining financial stability. Most of the U.S. state programs and the FDIC were started during a time of crisis and were able to maintain public confidence in the financial system, especially during their first years of operation. For example, state deposit insurance programs that were initiated after the 1907 crisis succeeded in returning their financial systems to stability, especially during the early years of their operations, as for example in the Oklahoma bank deposit insurance program, the Nebraska bank deposit insurance program, and the Kansas bank deposit insurance program. Moreover, the FDIC, established after the early 1930s financial difficulties, succeeded in restoring public confidence in the banking system shortly after its creation.

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CHAPTER SEVEN

SUMMARY AND CONCLUSION

Summary

Lately, financial instability has emerged as a serious problem in many countries. A strong relation between financial stability and long-run growth has been observed in the real world. To maintain financial stability and long-run economic growth, some countries have created or are about to create a DIS. However, a poor DIS can be expected to suffer from one or more of the following fundamental problems: moral hazard, adverse selection, and the agency problem. In contrast, these three fundamental problems are eliminated or at least minimized in any good DIS.

As an international lending institution, the IMF is involved in different countries with financial instabilities, and has tried to propose solutions to these financial problems. Creating a DIS is the most commonly proposed solution that has been adapted by the IMF lately. Gillian Garcia of the IMF has provided her own model for the best DIS, which IMF authorities are using as a model for countries that are about to adopt a DIS.

In this dissertation, Garcia model or the Garcia-IMF model (as this dissertation names it), was applied to all world countries that have explicit DIS. Based on this model, countries were categorized into three groups: good DIS, average DIS, and poor DIS. DIS that were ranked as "good" were found mostly in countries with less-developed financial

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systems, and DIS that were ranked as "poor" were found mostly in countries with well-developed financial systems, a counter-intuitive discovery.

This unrealistic result raises many questions about the Garcia-IMF model and its eligibility to be a world model. One problem with the model is that it is based only on post-1991 experience of the U.S. and other countries. Further, it omits the experience of the individual U.S. states, the FSLIC, NCUSIF, and pre-1991 FDIC.

The extensive history of U.S. bank insurance was studied, starting with six state bank insurance programs that were launched in the 19th century, then eight state bank insurance programs that were launched in early 20th century, ending with the national programs of the FDIC, FSLIC, and NCUSIF.

When the Garcia-IMF model was applied to the U.S. bank insurance programs, the results were again unrealistic because successful insurance programs were classified as poor programs and failed insurance programs were classified as good programs. Therefore the extensive U.S. history was used to improve the model. Factors that were behind the success or failure of the U.S. insurance programs and which are closely related to this dissertation's hypotheses were grouped into five factors: 1) Board of directors, 2) DIS funding, 3) Insurance coverage, 4) Back-up of the fund, and 5) Membership. Then these factors were used to improve the Garcia-IMF model.

Factors that played a significant role in determining the success of the successful U.S. insurance programs were used to modify the Garcia-IMF model: use of a mutual guarantee fund, provision of high coverage, control of the DIS by bankers, absence of government back-up, and voluntary membership.

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The modified DIS model, or, as this dissertation calls it, "this study's best-practice measurement," was applied to all countries that have an explicit DIS. The results were realistic, as good DIS were found in countries with well-developed financial systems, and poor DIS were found mostly in countries with less-developed financial systems. Furthermore this modified model was applied to the U.S. bank insurance programs, and the result again proved realistic, since programs rated as "good" were those programs that were known to be the most successful, and programs rated as "poor" were those known to be failures.

This modified DIS is a model that can be applied by any country that is experiencing financial instability. Further, it can be applied by any country that is in the process of creating a DIS or developing its current DIS. For example, Japan has had a deposit insurance corporation (DIC) since 1971, and is currently re-organizing its system. This study's best-practice measurement may be a useful model for that country. Furthermore, by shifting the responsibility of bank stability from government to banker, this model may minimize the hitherto endless government support to the Japanese banks and save government funds.

Conclusion

The global financial system is very sensitive, and any financial problem in one market can easily affect other markets. Since all banks are interconnected either through inter-bank balances (depositing or lending) or inter-bank transfers (clearing payments), any problem in one bank can easily be transmitted to other banks, creating a systemic risk

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in banking and financial systems. Unlike other economic agents, a bank's failure can go beyond its owners and depositors; indeed, bank failure can damage the whole economy in a very short time by affecting other banks negatively. Furthermore, collapse of a country's banking system will affect other countries' financial systems. The IMF can play an effective role in maintaining world financial stability. Creating a DIS is advice that the IMF usually gives to any member country that experiences financial instability. However, this study shows that the Garcia-IMF model--which the IMF staff uses in advising member countries--is not the best-practice DIS. It proposes that the best-practice DIS is that based on the successful U.S. insurance program experiences, and that the IMF should adopt this best-practice DIS in advising its member countries.

It should be recognized that different countries have different institutional structures, and what is working for one country may not work in another. Though the financial system is a very advanced sector in most countries, local institutions have a strong effect on this sector. The banking system as a part of the financial system is also affected by local institutions. Taking into consideration these institutional differences, it is important to propose one DIS model that works for different institutional structures. Best-practice DIS emphasizes the main factors that are applicable for most countries; however, some countries need to adjust some factors according to their institutional structures.

Creating a good DIS is not a substitute for bank regulation and supervision because a good regulation and supervision system is needed to keep the DIS solvent, to reach its goals efficiently, and to overcome the most fundamental DIS problems. To

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promote a strong connection between national financial systems, world agencies should take the lead in providing regulation and supervision guidelines, which all countries should maintain to at least a minimum level.

Finally, according to this study's model, there are three countries which were found to have good DIS: France, Switzerland, and Germany. The next logical step would be to study the financial systems of these three countries, how their institutional structures are related, and what role their regulation and supervision systems have played in their successful DIS.

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APPENDIX A

The Six 19th Century State Bank Insurance Programs

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A-1: Data for insured banks in the six 19th century state bank insurance programs.

States & Years	Total bank numbers	Number of insured banks	%	Total obligation (thousands of dollars)	Insured obligation (thousands of dollars)	%
New York						
1829	43	23	53.49	N/A	N/A	N/A
1830	49	29	59.18	37,740	11,142	29.52
1831	63	51	80.95	33,333	26,027	78.08
1832	69	58	84.06	38,988	30,986	79.48
1833	79	69	87.34	46,958	38,353	81.68
1834	86	76	88.37	56,723	47,304	83.40
1835	86	77	89.53	73,382	59,201	80.68
1836	98	90	91.84	79,313	66,781	84.20
1837	95	88	92.63	48,272	41,314	85.58
1838	112	89	79.46	57,183	50,293	87.95
1839	172	91	52.91	44,456	32,346	72.76
1840	165	89	53.94	45,490	41,224	90.62
1841	155	85	54.84	43,656	33,229	76.12
1842	145	81	55.86	45,241	33,047	73.05
1843	134	80	59.70	63,596	47,099	74.06
1844	148	80	54.05	70,786	49,828	70.39
1845	148	78	52.70	71,953	50,551	70.26
1846	150	77	51.33	69,027	47,262	68.47
1847	167	77	46.11	81,948	57,040	69.61
1848	182	76	41.76	69,016	54,655	79.19
1849	190	75	39.47	84,602	53,959	63.78
1850	209	71	33.97	109,436	51,232	46.81
1851	243	69	28.40	92,730	49,806	53.71
1852	276	67	24.28	141,877	48,753	34.36
1853	322	57	17.70	134,592	36,735	27.29
1854	333	52	15.62	123,311	27,419	22.24
1855	286	42	14.69	151,398	23,816	15.73
1856	312	40	12.82	161,590	23,723	14.68
1857	294	32	10.88	129,360	13,175	10.18
1858	301	30	9.97	175,153	16,694	9.53
1859	303	28	9.24	164,050	15,328	9.34
1860	306	25	8.17	178,179	14,367	8.06
1861	302	24	7.95	196,581	17,311	8.81
1862	308	17	5.52	297,397	20,695	6.96
1863	309	10	3.24	311,399	19,881	6.38
1864	284	6	2.11	326,421	13,576	4.16

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A-1: Data for insured banks in the six 19th century state bank insurance programs, continued.

States & Years	Total bank numbers	Number of insured banks	%	Total obligation (thousands of dollars)	Insured obligation (thousands of dollars)	%
1865	99	2	2.02	56,969	710	1.25
1866	77	0	0	47,703	0	0
Vermont						
1831	10	N/A	N/A	1,405	N/A	N/A
1832	13	3	23.08	N/A	N/A	N/A
1833	17	7	41.18	1,502	454	30.23
1834	17	8	47.06	1,647	479	29.08
1835	19	9	47.37	1,856	697	37.55
1836	19	9	47.37	2,511	1,000	39.82
1837	19	10	52.63	1,784	873	48.93
1838	19	10	52.63	2,255	1,059	46.96
1839	19	10	52.63	2,249	1,029	45.75
1840	17	10	58.82	1,338	748	55.90
1841	17	13	76.47	1,791	1,353	75.54
1842	17	13	76.47	1,080	787	72.87
1843	16	13	81.25	1,513	1,179	77.92
1844	17	13	76.47	2,033	1,552	76.34
1845	17	13	76.47	1,688	1,321	78.26
1846	17	13	76.47	1,900	1,388	73.05
1847	18	13	72.22	2,768	1,936	69.94
1848	21	13	61.90	2,019	1,186	58.74
1849	23	11	47.83	2,673	1,329	49.72
1850	27	10	37.04	3,475	1,265	36.40
1851	31	9	29.03	4,099	1,276	31.13
1852	32	9	28.13	4,577	1,427	31.18
1853	33	9	27.27	5,552	1,659	29.88
1854	40	9	22.50	4,832	1,269	26.26
1855	42	9	21.43	4,571	1,323	28.94
1856	41	7	17.07	4,765	780	16.37
1857	41	6	14.63	5,024	644	12.82
1858	41	4	9.76	3,693	307	8.31
Indiana						
1834	10	10	100.00	N/A	N/A	N/A
1835	10	10	100.00	3,266	3,266	100.00

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A-1: Data for insured banks in the six 19th century state bank insurance programs, continued.

States & Years	Total bank numbers	Number of insured banks	%	Total obligation (thousands of dollars)	Insured obligation (thousands of dollars)	%
1836	11	11	100.00	5,603	5,603	100.00
1837	11	11	100.00	3,910	3,910	100.00
1838	13	13	100.00	3,941	3,941	100.00
1839	13	13	100.00	3,695	3,695	100.00
1840	13	13	100.00	3,652	3,652	100.00
1841	13	13	100.00	3,722	3,722	100.00
1842	13	13	100.00	2,182	2,182	100.00
1843	13	13	100.00	2,602	2,602	100.00
1844	13	13	100.00	3,538	3,538	100.00
1845	13	13	100.00	4,163	4,163	100.00
1846	13	13	100.00	3,960	3,960	100.00
1847	13	13	100.00	4,458	4,458	100.00
1848	13	13	100.00	4,260	4,260	100.00
1849	13	13	100.00	4,071	4,071	100.00
1850	13	13	100.00	4,177	4,177	100.00
1851	13	13	100.00	4,676	4,676	100.00
1852	28	13	46.43	6,184	5,094	82.37
1853	43	13	30.23	9,274	4,829	52.07
1854	103	13	12.62	15,433	3,733	24.19
1855	104	13	12.50	9,084	4,084	44.96
1856	53	13	24.53	7,196	4,195	58.30
1857	46	20	43.48	6,910	4,076	58.99
1858	38	20	52.63	7,450	5,643	75.74
1859	37	20	54.05	7,132	5,202	72.94
1860	40	20	50.00	9,185	6,997	76.18
1861	38	20	52.63	7,672	5,876	76.59
1862	38	20	52.63	10,130	7,898	77.97
1863	34	20	58.82	10,234	7,648	74.73
1864	30	20	66.67	6,527	4,419	67.70
Michigan						
1836	12	4	33.33	1,690	136	8.05
1837	55	47	85.45	2,657	1,391	52.35
1838	25	17	68.00	962	599	62.27
1839	9	4	44.44	387	202	52.20
1840	6	N/A	N/A	585	N/A	N/A

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A-1: Data for insured banks in the six 19th century state bank insurance programs, continued.

States & Years	Total bank numbers	Number of insured banks	%	Total obligation (thousands of dollars)	Insured obligation (thousands of dollars)	%
1841	2	N/A	N/A	176	N/A	N/A
1842	2	N/A	N/A	250	N/A	N/A
Ohio						
1845	31	16	51.61	7,679	2,384	31.04
1846	34	18	52.94	9,453	4,095	43.32
1847	47	30	63.83	13,854	7,235	52.22
1848	54	38	70.37	14,286	9,331	65.32
1849	56	41	73.21	16,463	11,104	67.45
1850	57	41	71.93	17,467	11,878	68.00
1851	70	41	58.57	18,436	11,871	64.39
1852	67	39	58.21	20,205	12,355	61.15
1853	66	39	59.09	19,370	12,404	64.04
1854	58	37	63.79	14,359	8,863	61.72
1855	58	36	62.07	17,306	11,237	64.93
1856	57	36	63.16	16,963	10,796	63.64
1857	53	36	67.92	11,206	8,369	74.68
1858	54	36	66.67	13,398	9,887	73.79
1859	54	36	66.67	13,290	9,712	73.08
1860	55	36	65.45	13,838	9,523	68.82
1861	53	36	67.92	15,634	10,969	70.16
1862	53	36	67.92	20,002	13,166	65.82
1863	51	36	70.59	18,900	12,150	64.29
1864	37	28	75.68	16,267	9,721	59.76
1865	12	8	66.67	N/A	N/A	N/A
Iowa						
1858	8	8	100.00	342	342	100.00
1859	12	12	100.00	1,425	1,425	100.00
1860	14	14	100.00	1,980	1,980	100.00
1861	14	14	100.00	2,132	2,132	100.00
1862	14	14	100.00	2,283	2,283	100.00
1863	14	14	100.00	3,412	3,412	100.00
1864	15	15	100.00	4,326	4,326	100.00
1865	15	15	100.00	2,836	2,836	100.00

Sources: Federal Deposit Insurance Corporation, 1953; Golembe, H. and Warburton, C, 1958.

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A-2: Insured banks with financial difficulties in the six 19th century state bank insurance programs

States & Years	Number of insured banks	Number of insured banks with financial difficulties	%	Obligations of insured banks	Obligations of insured banks with financial difficulties	%
New York						
1837	88	5	5.68	$41314000	$1457000	3.53
1840	89	2	2.24	$41224000	$633000	1.54
1841	85	4	4.71	$33229000	$1830000	5.51
1842	81	5	6.17	$33047000	$1166000	3.53
1848	76	1	1.32	$54655000	$192000	0.35
1854	52	1	1.92	$27419000	$125000	0.46
1857	32	3	9.38	$13175000	$509000	3.86
Vermont						
1839	10	1	10.0	$1029000	$70000	6.80
1857	6	1	16.7	$644000	$102000	15.84
Indiana						
1843	13	1	7.69	$2602000	$78000	3.00
Michigan						
1838	44	16	36.4	$1423000	$449000	31.55
1839	34	18	52.9	$943000	$424000	44.96
1840	8	5	62.5	$395000	$219000	55.19
Ohio						
1850	41	2	4.88	$11878000	$432000	3.64
1852	39	1	2.56	$12355000	$179000	1.45
1854	37	3	8.11	$8863000	$511000	5.77
1857	36	4	11.1	$8369000	$872000	10.42
Iowa						
1860	14	1	7.14	$1980000	$95000	4.80

Source: Federal Deposit Insurance Corporation, 1953.

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A-3: Total number of banks with financial difficulties in the six 19th century state bank insurance programs.

State	Period	All banks	Insured banks	%
New York	1829-1866	78	21	26.92
Vermont	1831-1858	6	2	33.33
Indiana	1834-1865	70	1	1.43
Michigan	1836-1842	55	46	83.64
Ohio	1845-1866	23	10	43.48
Iowa	1858-1866	1	1	100.00

Source: Federal Deposit Insurance Corporation, Annual Report 1953.

A-4: Total obligations of banks with financial difficulties in the six 19th century state bank insurance programs.

State	Period	All banks (thousands of dollars)	Insured banks (thousands of dollars)	%
New York	1829-1866	14,119	6,893	48.82
Vermont	1831-1858	622	172	27.65
Indiana	1834-1865	3,151	78	2.48
Michigan	1836-1842	1,810	1,198	66.19
Ohio	1845-1866	8,158	2,947	36.12
Iowa	1858-1866	209	209	100.00

Source: Federal Deposit Insurance Corporation, Annual Report 1953.

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APPENDIX B

The Eight Early 20th Century State Bank Insurance Programs

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B-1: Data for insured banks in the eight early 20th century state bank insurance programs.

States & Years	Total number of banks	Number of insured banks	%	Total deposits (thousands of dollars)	Insured deposits (thousands of dollars)	%
Oklahoma						
1908	834	546	65.47	75238	31617	42.02
1909	887	668	75.31	105815	54769	51.76
1910	924	695	75.22	121012	61309	50.66
1911	914	631	69.04	106698	44004	41.24
1012	923	615	66.63	122802	45878	37.36
1913	913	582	63.75	135233	46131	34.11
1914	913	563	61.66	129301	44773	34.63
1915	903	557	61.68	158153	48460	30.64
1916	885	547	61.81	265349	84799	31.96
1917	901	566	62.82	381935	137392	35.97
1918	936	581	62.07	338998	120660	35.59
1919	944	599	63.45	513071	190900	37.21
1920	977	622	63.66	434364	160673	36.99
1921	938	556	59.28	359691	112579	31.30
1922	910	463	50.88	392990	75027	19.09
Nebraska						
1911	916	669	73.03	193591	73890	38.17
1012	935	694	74.22	204925	82528	40.27
1913	965	728	75.44	213726	92747	43.40
1914	983	765	77.82	216796	100812	46.50
1915	1007	803	79.74	240870	114488	47.53
1916	1031	839	81.38	342671	165528	48.31
1917	1110	920	82.88	419232	223499	53.31
1918	1133	942	83.14	477761	259875	54.39
1919	1188	999	84.09	513211	278769	54.32
1920	1196	1009	84.36	432113	255067	59.03
1921	1170	986	84.27	387641	216478	55.84
1922	1137	955	83.99	433992	238754	55.01
1923	1118	938	83.90	430220	239985	55.78
1924	1101	928	84.29	484897	271529	56.00
1925	1072	903	84.24	487291	281547	57.78
1926	1043	883	84.66	470090	275552	58.62
1927	1012	855	84.49	474300	274525	57.88
1928	882	726	82.31	461646	252460	54.69
1929	804	647	80.47	406850	191658	47.11

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B-1: Data for insured banks in the eight early 20th century state bank insurance programs. continued.

States & Years	Total number of banks	Number of insured banks	%	Total deposits (thousands of dollars)	Insured deposits (thousands of dollars)	%
Kansas						
1909	1038	404	38.92	189360	45523	24.04
1910	1077	401	37.23	171039	46827	27.38
1911	1107	442	39.93	182694	54712	29.95
1012	1113	462	41.51	194176	63118	32.51
1913	1141	481	42.16	190739	66199	34.71
1914	1153	508	44.06	210952	74530	35.33
1915	1196	526	43.98	232978	86055	36.94
1916	1220	546	44.75	330129	118042	35.76
1917	1250	577	46.16	399976	152479	38.12
1918	1291	613	47.48	427824	169559	39.63
1919	1338	649	48.51	486973	204669	42.03
1920	1374	683	49.71	446622	190966	42.76
1921	1375	714	51.93	410932	180003	43.80
1922	1349	698	51.74	426727	179721	42.12
1923	1323	681	51.47	410617	167563	40.81
1924	1297	651	50.19	484437	195424	40.34
1925	1269	611	48.15	456972	168082	36.78
1926	1223	399	32.62	450608	79192	17.57
1927	1153	78	6.76	442600	7052	1.59
1928	1102	39	3.54	457251	3340	0.73
Texas						
1910	1203	472	39.24	274147	47443	17.31
1911	1308	582	44.50	299436	55070	18.39
1012	1370	643	46.93	299755	56795	18.95
1913	1442	704	48.82	395051	89151	22.57
1914	1536	788	51.30	358169	85484	23.87
1915	1551	790	50.93	305391	64163	21.01
1916	1532	777	50.72	390400	92934	23.80
1917	1530	789	51.57	605860	149248	24.63
1918	1572	828	52.67	762863	203935	26.73
1919	1579	841	53.26	642901	178632	27.79
1920	1641	907	55.27	1131551	321008	28.37
1921	1717	990	57.66	861550	265881	30.86
1922	1681	970	57.60	756042	227336	30.07

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B-1: Data for insured banks in the eight early 20th century state bank insurance programs, continued.

States & Years	Total number of banks	Number of insured banks	%	Total deposits (thousands of dollars)	Insured deposits (thousands of dollars)	%
1923	1647	936	56.83	913038	251775	27.58
1924	1645	916	55.68	1075190	289420	26.92
1925	1618	896	55.38	1159096	301704	26.03
1926	1582	337	21.30	1256277	95084	07.57
1927	1524	34	2.23	1065531	5925	00.56
Mississippi						
1914	308	273	88.64	62943	45493	72.28
1915	293	258	88.05	74977	55006	73.66
1916	293	258	88.05	103124	78531	76.15
1917	297	263	88.55	140639	106601	75.80
1918	299	266	88.96	159072	119986	75.43
1919	316	284	89.87	237097	187850	79.23
1920	337	306	90.80	160359	123164	76.81
1921	336	306	91.07	154460	116724	75.57
1922	331	300	90.63	186583	138558	74.26
1923	338	306	90.53	199519	147990	74.17
1924	335	299	89.25	210981	145954	69.18
1925	338	301	89.05	246036	167102	67.92
1926	325	289	88.92	226597	151365	66.80
1927	325	288	88.62	255097	171615	67.27
1928	321	285	88.79	250132	168305	67.29
1929	306	271	88.56	239856	160849	67.06
South Dakota						
1916	628	503	80.10	140676	83596	59.42
1917	639	514	80.44	195422	122535	62.70
1918	647	521	80.53	238650	150706	63.15
1919	673	543	80.68	280973	184098	65.52
1920	702	566	80.63	218592	145156	66.40
1921	702	566	80.63	202259	134721	66.61
1922	692	561	81.07	222324	149516	67.25
1923	662	535	80.82	226414	151298	66.82
1924	552	438	79.35	199116	122297	61.42
1925	495	385	77.78	179017	106116	59.28
1926	422	322	76.30	143188	78877	55.09

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B-1: Data for insured banks in the eight early 20th century state bank insurance programs, continued.

States & Years	Total number of banks	Number of insured banks	%	Total deposits (thousands of dollars)	Insured deposits (thousands of dollars)	%
North Dakota						
1917	866	703	81.18	171000	105000	61.40
1918	877	709	80.84	210361	122882	58.41
1919	899	723	80.42	229712	130837	56.96
1920	875	694	79.31	186769	103955	55.66
1921	844	661	78.32	158999	85489	53.77
1922	850	665	78.24	180123	95499	53.02
1923	744	569	76.48	162868	80006	49.12
1924	679	513	75.55	196818	88078	44.75
1925	643	482	74.96	197749	86351	43.67
1926	556	409	73.56	175182	69613	39.74
1927	513	371	72.32	175896	65159	37.04
1928	471	337	71.55	174184	59773	34.32
Washington						
1917	364	46	12.64	322232	39823	12.36
1918	364	85	23.35	363597	55663	15.31
1919	381	104	27.30	451176	79815	17.69
1920	401	116	28.93	395913	74882	18.91

Source: Warburton, C., 1955, 1958, and 1959.

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B-2: Insured banks with financial difficulties in the eight early 20th century state bank insurance programs.

States & Years	Number of insured banks	Number of insured banks with financial difficulties	%	Deposits of insured banks	Deposits of insured banks with financial difficulties	%
Oklahoma						
1908	546	1	0.18	$31617000	$37000	0.12
1909	668	3	0.45	$54769000	$2873000	5.25
1910	695	3	0.43	$61309000	$661000	1.08
1911	631	8	1.27	$44004000	$1144000	2.60
1912	615	4	0.65	$45878000	$656000	1.43
1913	582	16	2.75	$46131000	$1993000	4.32
1914	563	6	1.07	$44773000	$501000	1.19
1915	557	6	1.08	$48460000	$360000	0.74
1916	547	1	0.18	$84799000	$40000	0.05
1917	566	2	0.35	$137392000	$85000	0.06
1918	581	3	0.52	$120660000	$1203000	1.00
1919	599	6	1.00	$190900000	$1183000	0.62
1920	622	8	1.29	$160673000	$2375000	1.48
1921	556	28	5.04	$112579000	$6509000	5.78
1922	463	33	7.13	$75027000	$8404000	11.20
Nebraska						
1914	765	1	0.13	$100812000	$122000	0.12
1916	839	1	0.12	$165528000	$110000	0.07
1920	1009	5	0.50	$255067000	$1026000	0.40
1921	986	25	2.54	$216478000	$6041000	2.79
1922	955	22	2.30	$238754000	$4758000	1.99
1923	938	15	1.60	$239985000	$2418000	1.01
1924	928	13	1.40	$271529000	$1546000	0.57
1925	903	20	2.21	$281547000	$5154000	1.83
1926	883	22	2.49	$275552000	$5847000	2.13
1927	855	22	2.57	$274525000	$5629000	2.05
1928	726	46	6.34	$252460000	$7725000	3.06
1929	647	116	17.93	$191658000	$19835000	10.35
Kansas						
1910	401	1	0.25	$46827000	$155000	0.33
1919	649	1	0.15	$204669000	$648000	0.32

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B-2: Insured banks with financial difficulties in the eight early 20th century state bank insurance programs, continued.

States & Years	Number of insured banks	Number of insured banks with financial difficulties	%	Deposits of insured banks	Deposits of insured banks with financial difficulties	%
1920	683	2	0.29	$190966000	$219000	0.11
1921	714	8	1.12	$180003000	$2110000	1.17
1922	698	15	2.15	$179721000	$3357000	1.87
1923	681	19	2.79	$167563000	$7235000	4.32
1924	651	10	1.54	$195424000	$2593000	1.33
1925	611	15	2.45	$168082000	$2237000	1.33
1926	399	27	6.77	$79192000	$3600000	4.55
1927	78	17	21.79	$7052000	$2806000	39.79
1928	39	3	7.69	$3340000	$223000	6.68
Texas						
1911	582	2	0.34	$55070000	$230000	0.42
1012	643	1	0.16	$56795000	$35000	0.06
1913	704	1	0.14	$89151000	$125000	0.14
1914	788	4	0.51	$85484000	$207000	0.24
1915	790	3	0.38	$64163000	$513000	0.80
1916	777	3	0.39	$92934000	$3343000	3.60
1918	828	1	0.12	$203935000	$133000	0.07
1919	841	1	0.12	$178632000	$24000	0.01
1920	907	9	0.99	$321008000	$1255000	0.39
1921	990	30	3.03	$265881000	$12002000	4.51
1922	970	19	1.96	$227336000	$5815000	2.56
1923	936	10	1.07	$251775000	$2889000	1.15
1924	916	15	1.64	$289420000	$4246000	1.47
1925	896	21	2.34	$301704000	$4826000	1.60
1926	337	16	4.75	$95084000	$1833000	1.93
1927	34	2	5.88	$5925000	$151000	2.55
Mississippi						
1916	258	4	1.55	$78531000	$623000	0.79
1917	263	1	0.38	$106601000	$64000	0.06
1920	306	2	0.65	$123164000	$481000	0.39
1921	306	4	1.31	$116724000	$1469000	1.26
1922	300	10	3.33	$138558000	$1169000	0.84
1923	306	2	0.65	$147990000	$171000	0.12

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B-2: Insured banks with financial difficulties in the eight early 20th century state bank insurance programs, continued.

States & Years	Number of insured banks	Number of insured banks with financial difficulties	%	Deposits of insured banks	Deposits of insured banks with financial difficulties	%
1924	299	3	1.00	$145954000	$571000	0.39
1925	301	5	1.66	$167102000	$1596000	0.96
1926	289	6	2.08	$151365000	$1454000	0.96
1927	288	6	2.08	$171615000	$2294000	1.34
1928	285	5	1.75	$168305 000	$1554000	0.92
1929	271	10	27.1	$160849000	$2172000	1.35
South Dakota						
1916	503	1	0.20	$83596000	$32000	0.03
1919	543	1	0.18	$184098000	$141000	0.07
1920	566	1	0.18	$145156000	$527000	0.36
1921	566	1	0.18	$134721000	$316000	0.23
1922	561	9	0.16	$149516000	$1991000	1.33
1923	535	39	7.29	$151298000	$10173000	6.72
1924	438	94	21.46	$122297000	$27751000	22.69
1925	385	38	9.87	$106116000	$6401000	6.03
1926	322	47	14.60	$78877000	$7889000	10.00
North Dakota						
1919	723	1	0.14	$130837000	$105000	0.08
1920	694	18	2.59	$103955000	$3478000	3.35
1921	661	27	4.08	$85489000	$4062000	4.75
1922	665	7	1.05	$95499000	$1071000	1.12
1923	569	77	13.53	$80006000	$9136000	11.42
1924	513	61	11.89	$88078000	$6745000	7.66
1925	482	25	5.19	$86351000	$2395000	2.77
1926	409	43	10.51	$69613000	$4383000	6.30
1927	371	33	8.89	$65159000	$3691000	5.66
1928	337	30	8.90	$59773000	$2160000	3.61
Washington						
1921	120	1	0.83	$71000000	$10443000	14.71

Source: Warburton, C., 1955, 1958, and 1959.

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B-3: Early years of the eight early 20th century state bank insurance programs.

State	year	Number of State banks	Number of national banks	Deposit of State banks (U.S. dollars)	Deposit of national banks (U.S. dollars)
Oklahoma	1907	370	294	16,300,000	48,300,000
	1910	685	215	48,000,000	38,900,000
Nebraska	1909	662	219	71,139,000	83,369,000
	1912	694	245	80,631,000	96,907,000
	1920	1008	175	291,100,000	98,800,000
Kansas	1909	757	202	84,800,000	61,700,000
	1912	890 (456 insured)	204	96,900,000	60,700,000
	1920	1096 (676 insured)	240	291,400,000	143,100,000
Texas	1910	584	485	42,100,000	104,900,000
	1920	992	520	297,100,000	339,800,000
Mississippi	1915	280	35	41,000,000	16,900,000
	1920	325	30	145,000,000	39,900,000
South Dakota	1916	486	124	70,500,000	52,700,000
	1920	558	136	173,500,000	90,300,000
North Dakota	1917	703	158	90,300,000	59,000,000
	1920	723	181	124,100,000	76,800,000
Washington	1917	46	N/A	37,379	N/A
	1921	120	N/A	71,000	N/A

Sources: American Bankers Association, 1933; Robb, 1921.

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B-4: Bank failures in the eight early 20th century state bank insurance programs.

State	Period	Number of State bank failures	Number of National bank failures
Oklahoma	1908-1920	54	2
	1921-1923	80	8
Nebraska	1811-1920	5	2
	1921-1929	329	31
Kansas	1909-1919	8 (2 insured)	0
	1920-1922	23 (17 insured)	0
	1922-1924	54 (42 insured)	4
	1924-1926	45 (35 insured)	2
Texas	1910-1920	17	4
	1920-1925	150	14
Mississippi	1915-1920	3	0
	1920-1930	53	3
South Dakota	1916-1921	3	0
	1924-1927	232	44
North Dakota	1921-1924	210	29
	1925-1929	175	32
Washington	1921	1	N/A

Sources: American Bankers Association, 1933; Robb, 1921.

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APPENDIX C

Federal Deposit Insurance Corporation (FDIC)

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Federal Deposit Insurance Corporation (FDIC).

Year	Coverage (U.S. $)	Effective assessment rates	Deposits at insured banks (millions of dollars)	Insured deposits at insured banks (millions of dollars)	Percentage of insured deposits	Failures of insured banks
1934	5,000	N/A	40,060	18,075	45.1	9
1935	5,000	0.0833%	45,125	20,158	44.7	26
1936	5,000	0.0833%	50,281	22,330	44.4	69
1937	5,000	0.0833%	48,228	22,557	46.8	77
1938	5,000	0.0833%	50,791	23,121	45.5	74
1939	5,000	0.0833%	57,485	24,650	42.9	60
1940	5,000	0.0833%	65,288	26,638	40.8	43
1941	5,000	0.0833%	71,209	28,249	39.7	15
1942	5,000	0.0833%	89,869	32,837	36.5	20
1943	5,000	0.0833%	111,650	48,440	43.4	5
1944	5,000	0.0833%	134,662	56,398	41.9	2
1945	5,000	0.0833%	157,174	67,021	42.4	1
1946	5,000	0.0833%	148,458	73,759	49.7	1
1947	5,000	0.0833%	154,096	76,254	49.5	5
1948	5,000	0.0833%	153,454	75,320	49.1	3
1949	5,000	0.0833%	156,786	76,589	48.8	5
1950	10,000	0.0370%	167,818	91,359	54.4	4
1951	10,000	0.0370%	178,540	96,713	54.2	2
1952	10,000	0.0370%	188,142	101,841	54.1	3
1953	10,000	0.0357%	193,466	105,610	54.6	4
1954	10,000	0.0357%	203,195	110,973	54.6	2
1955	10,000	0.0370%	212,226	116,380	54.8	5
1956	10,000	0.0370%	219,393	121,008	55.2	2
1957	10,000	0.0357%	225,507	127,055	56.3	2
1958	10,000	0.0370%	242,445	137,698	56.8	4
1959	10,000	0.0370%	247,589	142,131	57.4	3
1960	10,000	0.0370%	260,495	149,684	57.5	1
1961	10,000	0.0323%	281,304	160,309	57.0	5
1962	10,000	0.0313%	297,548	170,210	57.2	1
1963	10,000	0.0313%	313,304	177,381	56.6	2
1964	10,000	0.0323%	348,981	191,787	55.0	7
1965	10,000	0.0323%	377,400	209,690	55.6	5
1966	15,000	0.0323%	401,096	234,150	58.4	7
1967	15,000	0.0333%	448,709	261,149	58.2	4
1968	15,000	0.0333%	491,513	296,701	60.2	3
1969	20,000	0.0333%	495,858	313,085	63.1	9

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Federal Deposit Insurance Corporation (continued).

Year	Coverage (U.S. $)	Effective assessment rates	Deposits at insured banks (millions of dollars)	Insured deposits at insured banks (millions of dollars)	Percentage of insured deposits	Failures of insured banks
1970	20,000	0.0357%	545,198	349,581	64.1	7
1971	20,000	0.0345%	610,685	374,568	61.3	6
1972	20,000	0.0333%	697,480	419,756	60.2	1
1973	20,000	0.0385%	766,509	465,600	60.7	6
1974	40,000	0.0435%	833,277	520,309	62.5	4
1975	40,000	0.0357%	875,985	569,101	65.0	13
1976	40,000	0.0370%	941,923	628,263	66.7	16
1977	40,000	0.0370%	1,050,435	692,533	65.9	6
1978	40,000	0.0385%	1,145,835	760,706	66.4	7
1979	40,000	0.0333%	1,226,943	808,555	65.9	10
1980	100,000	0.0370%	1,324,463	948,717	71.6	10
1981	100,000	0.0714%	1,409,322	988,898	70.2	10
1982	100,000	0.0769%	1,544,697	1,134,221	73.4	42
1983	100,000	0.0714%	1,690,576	1,268,332	75.0	48
1984	100,000	0.0800%	1,806,520	1,389,874	76.9	79
1985	100,000	0.0833%	1,974,512	1,503,393	76.1	120
1986	100,000	0.0833%	2,167,596	1,634,302	75.4	138
1987	100,000	0.0833%	2,201,549	1,658,802	75.3	184
1988	100,000	0.0833%	2,330,768	1,750,259	75.1	200
1989	100,000	0.0833%	2,465,922	1,873,837	76.0	206
1990	100,000	0.1200%	2,540,930	1,929,612	75.9	168
1991	100,000	0.2125%	2,520,074	1,957,722	77.7	124
1992	100,000	0.2300%	2,512,278	1,945,623	77.4	120
1993	100,000	0.2440%	2,493,636	1,906,885	76.5	41
1994	100,000	0.2360%	2,463,813	1,896,060	77.0	13
1995	100,000	0.1240%	2,576,581	1,952,543	75.8	6
1996	100,000	0.0024%	2,642,107	2,007,447	76.0	5
1997	100,000	0.0008%	2,785,990	2,055,874	73.8	1
1998	100,000	0.0008%	2,996,396	2,141,268	71.5	3

Sources: Federal Deposit Insurance Corporation, 1996, and 1998.

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APPENDIX D

Federal Savings and Loan Insurance Corporation (FSLIC)

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D-1: Funding base in the Federal Savings and Loan Insurance Corporation (FSLIC).

Year	Coverage of each depositor's funds (U.S. $)	Assessments (annually)	Special assessments (annually applicable)
1934 (June 27)	5,000	0.25% (June 27)	0.125% (June 27)
1935	5,000	0.125% (May 28)	0.125%
1936	5,000	0.125%	0.125%
1937	5,000	0.125%	0.125%
1938	5,000	0.125%	0.125%
1939	5,000	0.125%	0.125%
1940	5,000	0.125%	0.125%
1941	5,000	0.125%	0.125%
1942	5,000	0.125%	0.125%
1943	5,000	0.125%	0.125%
1944	5,000	0.125%	0.125%
1945	5,000	0.125%	0.125%
1946	5,000	0.125%	0.125%
1947	5,000	0.125%	0.125%
1948	5,000	0.125%	0.125%
1949	5,000	0.125%	0.125%
1950 (June 27)	10,000	0.0833%	0.125%
1951	10,000	0.0833%	0.125%
1952	10,000	0.0833%	0.125%
1953	10,000	0.0833%	0.125%
1954	10,000	0.0833%	0.125%
1955	10,000	0.0833%	0.125%
1956	10,000	0.0833%	0.125%
1957	10,000	0.0833%	0.125%
1958	10,000	0.0833%	0.125%
1959	10,000	0.0833%	0.125%
1960	10,000	0.0833%	0.125%
1961	10,000	0.0833%	0.125%
1962	10,000	0.0833%	0.125%
1963	10,000	0.0833%	0.125%
1964	10,000	0.0833%	0.125%
1965	10,000	0.0833%	0.125%
1966 (Oct 16)	15,000	0.0833%	0.125%
1967	15,000	0.0833%	0.125%
1968	15,000	0.0833%	0.125%
1969 (Dec 23)	20,000	0.0833%	0.125%
1970	20,000	0.0833%	0.125%

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D-1: Funding base in the Federal Savings and Loan Insurance Corporation, continued.

Year	Coverage of each depositor's funds (U.S. $)	Assessments (annually)	Special assessments (annually applicable)
1971	20,000	0.0833%	0.125%
1972	20,000	0.0833%	0.125%
1973	20,000	0.0833%	0.125%
1974 (Oct 28)	40,000	0.0833%	0.125%
1975	40,000	0.0833%	0.125%
1976	40,000	0.0833%	0.125%
1977	40,000	0.0833%	0.125%
1978	40,000	0.0833%	0.125%
1979	40,000	0.0833%	0.125%
1980 (March 31)	100,000	0.0833%	0.125%
1981	100,000	0.0833%	0.125%
1982	100,000	0.0833%	0.125%
1983	100,000	0.0833%	0.125%
1984	100,000	0.0833%	0.125%
1985	100,000	0.0833%	0.125%
1986	100,000	0.0833%	0.125%
1987	100,000	0.0833%	0.125%
1988	100,000	0.0833%	0.125%

Notes:

-Beginning June 27, 1950, FSLIC was able to borrow from the Treasury Department up to $750 million (in case of emergencies).

-On September 8, 1961, a secondary reserve with a 2% annual assessment on anticipated net increases in total deposit was established.

-On August 16, 1973, payment to the secondary reserve was eliminated.

-On March 31, 1985, the special assessment of 0.125% was applied for first time.

-Beginning August 9, 1989, the Saving Association Insurance Fund (SAIF) replaced FSLIC as a result of the Financial Institutions Reform, Recovery, and Enforcement Act (FIRREA).

Source: Barth, 1991.

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D-2: Savings and loan associations, 1980-1988.

Year	Total number of associations	Total association deposits (billions of U.S. $)	Insured deposits (billions of U.S. $)	Percentage of insured deposits
1980	3,993	503	483	96.02%
1981	3,751	520	498	95.77%
1982	3,287	560	534	95.36%
1983	3,146	671	626	93.29%
1984	3,136	784	720	91.84%
1985	3,246	844	780	92.42%
1986	3,220	891	824	92.48%
1987	3,147	933	855	91.64%
1988	2,949	972	888	91.36%

Source: Barth, 1991.

D-3: Insolvencies among savings and loan associations, 1980-1988.

Year	Total number of associations	Insolvent associations	Percentage of Insolvent associations	Insolvencies resolved by FSLIC	Insolvencies resolved by FSLIC assets (millions of U.S. $)
1980	3,993	43	1.08%	11	1,458
1981	3,751	112	2.99%	28	13,908
1982	3,287	415	12.62%	63	17,662
1983	3,146	515	16.37%	36	4,631
1984	3,136	695	22.16%	22	5,080
1985	3,246	705	21.72%	31	5,601
1986	3,220	672	20.87%	46	12,455
1987	3,147	672	21.35%	47	10,660
1988	2,949	508	17.23%	205	100,660

Source: Barth, 1991.

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APPENDIX E

National Credit Union Share Insurance Fund (NCUSIF)

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E-1: First ten years of the National Credit Union Share Insurance Fund (NCUSIF).

Year	Total credit union number	Insured credit union number	%	Total credit union shares (millions of dollars)	Insured credit union shares (millions of dollars)	%
1971	23,253	13,510	58.10	18,365,261	10,890,600	59.30
1972	23,064	14,023	60.80	21,629,023	13,842,575	64.00
1973	22,877	14,344	62.70	24,522,738	16,332,144	66.60
1974	22,844	15,146	66.30	27,513,797	19,562,310	71.10
1975	22,603	15,777	69.80	33,032,707	24,972,727	75.60
1976	22,605	16,276	72.00	39,115,603	30,353,708	77.60
1977	22,445	16,632	74.10	46,549,418	37,332,634	80.20
1978	22,120	17,121	77.40	53,542,322	44,118,874	82.40
1979	21,747	17,507	80.50	57,542,342	47,702,604	82.90
1980	21,660	17,350	80.10	64,315,081	54,732,134	85.10

National Credit Union Share Insurance Fund, Annual Report, 1989.

E-2: The National Credit Union Share Insurance Fund during the 1980s.

Year	Number of insured credit unions	Insured credit unions with financial difficulties	%	Shares of insured credit unions (millions of dollars)	Shares of insured credit unions with financial difficulties (millions of dollars)	%
1980	17,712	1,018	5.75	51,542	2,400	4.66
1981	17,361	1,174	6.76	54,152	2,980	5.50
1982	16,654	1,192	7.16	62,990	4,590	7.29
1983	15,878	1,124	7.08	74,739	4,652	6.22
1984	15,191	872	5.74	84,254	4,071	4.82
1985	15,045	742	4.93	109,532	4,055	3.70
1986	14,693	794	5.40	134,185	6,611	4.93
1987	14,335	929	6.48	146,344	8,135	5.56
1988	13,878	1,022	7.36	159,648	10,600	6.64
1989	13,373	794	5.94	167,171	8,400	5.02

National Credit Union Share Insurance Fund, Annual Report, 1989.

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