Federal Reserve Bank of Minneapolis
Research Department

Bank Liability Insurance Schemes in the U.S. Before 1865*

Warren E. Weber

Working Paper 679

February 9, 2011

ABSTRACT

Prior to 1861, several U.S. states established bank liability insurance schemes. One type was an insurance fund. Member banks paid into a state-run fund that would pay losses of bank creditors. Another type was a mutual guarantee system. Member banks were legally responsible for the liabilities of any bank that became insolvent. Both schemes did well at insuring bank creditors, but neither prevented bank panics. Bank failure rates were somewhat higher for banks that were part of these schemes. The experience with these schemes shows that regulatory incentives matter for controlling moral hazard. The schemes that best controlled moral hazard were those in which participating banks could potentially sustain large losses should another bank fail and in which banks were able to directly monitor and regulate the behavior of other banks. The paper also uses the Suffolk Banking System to illustrate the same points. The EFSF is also discussed.
Keywords: deposit insurance, moral hazard, banknotes
JEL: E42, N21

*Warren E. Weber, Federal Reserve Bank of Minneapolis, e-mail: wew@minneapolisfed.org. I thank Todd Keister, Robert Lucas, Cyril Monnet, Arthur Rolnick, Eugene White, Ariel Zetlin-Jones, Ruilin Zhou, and participants at seminars at the Board of Governors and the Federal Reserve Bank of Chicago for helpful comments. The views expressed herein are those of the author and not necessarily those of the Federal Reserve Bank of Minneapolis or the Federal Reserve System.

1. Introduction

The Federal Deposit Insurance Corporation (FDIC), established by the Banking Act of 1933,was not the first scheme to insure liabilities of banks in the United States. Beginning in 1909, eight states enacted deposit insurance programs. These programs came to an end in the 1920s. Even earlier, notes issued by national banks were explicitly guaranteed by the U.S. Treasury by provisions in the National Currency Act of 1863, which established the National Banking System. And prior to the establishment of the National Banking System, two states enacted schemes to insure the notes issued by banks and four states enacted schemes to insure all the liabilities of banks. It is these early bank liability insurance schemes that are the focus of this paper.

These early bank liability insurance schemes were of two basic types. One type was an insurance fund. In the insurance fund scheme, member banks paid a percentage of capital to a state banking authority. This authority would then use this fund to reimburse the creditors of member banks that subsequently became insolvent. Payments to creditors were capped initially by the amount in the fund. However, after such payments were made the banks that remained solvent (survivors) could potentially be required to once again contribute to the fund to restore it to its requisite level. If the fund was not able initially to cover all the liabilities of the failed banks, payments were made as the additional contributions to the fund by survivors were received. Three states - Michigan, New York, and Vermont - established such insurance funds.

The second type was a mutual guarantee system. Under this system, banks did not contribute to an insurance fund. Instead, member banks were legally responsible for making good on the covered liabilities of any bank in the group that became insolvent. Payments to creditors of a failing bank were only limited by the market value of the assets of all banks in the system. Three states - Indiana, Ohio, and Iowa - established such mutual guarantee systems.

Although the motives behind the adoption of these insurance schemes were probably numerous and likely varied across the states that enacted them, it appears that at least two of the motives were to "prevent panic runs and pay real losses" (this from Golembe and Warburton (1958), p. II-7, f. 2). These reasons are much the same as those given for the adoption of the FDIC by Representative Henry B. Steagall, one of its principal proponents. He said the purpose deposit insurance was to provide the public with "money as safe as though it were invested in a government bond" and to "prevent bank failures, with depositors walking in the streets."[1]

The experiences of the states that enacted these bank liability insurance schemes shows that neither of them achieved both of two objectives of preventing bank panics and preventing losses to bank creditors. Bank panics and bank runs occurred when these schemes were in place, and only the mutual guarantee schemes prevented bank creditors from suffering losses, in the sense that their claims were paid in full in a timely manner. Thus, it appears that the mutual guarantee schemes did better at achieving these objectives than the insurance fund schemes, which raises the question of why.

One obvious place to look for an answer would be the extent to which these schemes worked to mitigate the moral hazard problem that arises with any insurance scheme. That

[1] *New York Times* May 21, 1933, and June 14, 1933.

moral hazard could be a problem with bank liability insurance schemes was recognized from the beginning. According to Chaddock (1910) (p. 265), during the debate on the New York Safety Fund law

> another representative, Mr. Hubbell, pointed out that the very existence of such a fund would relax "public scrutiny and watchfulness which now serve to restrain or detect malconduct."

One way to replace this relaxation of public scrutiny is through some form of supervision and regulation of the insured banks. This point was made in recent testimony before the House Financial Services Committee by Allan Meltzer, who stated:

> We cannot have deposit insurance without restricting what banks can do. The right answer is to use regulation to change incentives - making bankers and their shareholders bear the losses. (U.S. Congress. House. Committee on Financial Services (2010))

My purpose in this paper is to examine the incentives in the regulations on bank that were part of these early bank liability insurance schemes. Specifically, I examine the extent to which the differences in outcomes of these schemes in terms of creditor losses and bank failures can be attributed to differences in incentive structures. I find that the structure of incentives plays a large role in explaining the differences.

All of the pre-Civil War bank liability insurance schemes had mutuality of losses, in the sense that all banks participating in the scheme could potentially be called on to pay off the creditors of a failing bank should the assets of that bank prove insufficient. In this paper, I examine the degree of exposure by the insured banks in each of these schemes to losses caused by the failure of other insured. That is, I determine the amount of potential losses ("skin in the game") that banks had to the creditors of other banks under each scheme. I find that this did not seem to much affect the differences in outcomes under the different schemes.

Instead, what appears to matter more is the extent to which participants in each scheme had the ability to monitor and to directly affect incentives and affect the behavior of other participants. The greater this ability, the more likely a scheme was to achieve the two desired outcomes mentioned above.

Proposals to increase the amount of capital that banks are required to hold are aimed at increasing possible shareholder losses and thus give an incentive for shareholders to limit the risk that banks take. The pre-Civil War experience suggests that it could be useful to think about expanding the class of agents that could (should?) be made to bear losses from a bank's behavior beyond the shareholders of that bank. Requiring banks to issue some kind of contingent convertible debt is one way to do this. However, the experience with these insurance schemes suggests going even further and permitting the class of agents that face potential losses to have the power or authority to modify the incentives faced that the other banks that are covered by the insurance scheme.

It should also be noted that some of the aspects of these early liability insurance schemes bear some resemblance to an insurance schemes discussed that is in the current news. This scheme is the European Financial Stability Fund, a 440 billion fund to bailout

Euro-zone nations experiencing financial difficulties. Germany, in particular has proposed that countries be able to monitor and directly affect the incentives of other countries, for example by placing a cap on a country's level of public debt and by limited the types of contracts that can be implemented.

The paper proceeds as follows. In the next section, I give some brief details about the monetary and banking arrangements in the United States prior to the Civil War to provide context in which to understand the workings of the different insurance schemes. In Section 3, I describe the basic structure of the insurance fund scheme, and in Section 4, I do the same for the mutual guarantee schemes. In Section 5, I examine the outcomes of both schemes in terms of preventing bank panics. In Section 6, I look at the bank failure rates under the schemes and compare them to failure rates for similar banks that are not part of a liability insurance scheme. In Section 7, I do the same for how well bank creditors were protected and the amounts that banks in the schemes were assessed due to these failures.In Section 8, I summarize the results of the preceding sections, and in Section 9, I discuss the Suffolk Banking System and how it controlled moral hazard. The final section has some concluding remarks.

2. Monetary and Banking Arrangements before 1865

During the period covered by this study, the United States was on a commodity money standard. The unit of account was the dollar, which was defined in terms of so many grams of fine silver and so many grams of fine gold. The governmentally issued money consisted of gold and silver coins (specie). There was no central bank. Changes in the stock of coins were determined by inflows or outflows of gold and silver due to exports or imports, and by the propensity of bullion holders to turn gold or silver into coins.

Coins made up only a small fraction of the circulating media of exchange, however. By far the predominant media of exchange were the notes issued by banks. Deposits were not a large or important part of the circulating medium until the late 1850s.

Virtually every bank in existence during this period issued its own notes. These notes were distinguishable by the issuing bank and were redeemable in specie on demand at that bank.[2] A large number of banks were in existence during this period - for example, there were 356 banks (2.8 banks per 100,000 people) in 1830, 705 in 1840 (4.1 banks per 100,000 people) and 737 (3.2 banks per 100,000 people) in 1850. By 1860, this number had grown to 1,421 (4.5 banks per 100,000).[3] To put these numbers in perspective, today there are 2.6 banks per 100,000 people.[4] Bank regulation was on a state-by-state basis. In the majority of states, banks were restricted to a single location, although branching was permitted in some, mostly southern, states.

Two major bank panics occurred between 1830 and 1865, the period covered by this study. The first began in 1837 and took the form of two different periods of suspension. The first period of suspensions began on May 4, 1837, with banks in Natchez, Mississippi, suspending payments. The fear of bank runs with noteholders demanding specie for their

[2]Some banks also maintained accounts with banks in financial centers such as New York and Philadelphia for the redemption of their notes in those locations.

[3]All numbers are end of year.

[4]This calculation is based on the 7,948 FDIC-insured banks as of April 8, 2010.

notes soon led to banks in New York suspending on May 9 and banks in Philadelphia, and Boston suspending the next day. From there, the suspension spread to the rest of the country. For example, the State Bank of Indiana suspended on May 18. By May 19 virtually all banks in the country had suspended payments.[5]

These suspensions generally came to an end in the middle of 1838. However, a second wave of suspension began with banks in Philadelphia and North Carolina suspending on October 9, 1839. The suspensions soon spread to most of the rest of the country, although notable exceptions were the banks in New York and New England, which did not suspend for a second time.

The second major bank panic occurred in 1857. There is no consensus as to the cause, although one common explanation is the failure of the Ohio Life and Trust Company on August 24 of the year.[6] Banks in Philadelphia suspended on September 25.[7] Banks in New York suspended on October 13 and banks in Boston on the next day.[8]

3. Insurance Funds

Insurance fund (sometimes called the Safety Fund) schemes to insure bank liabilities were enacted in three states, Michigan, New York, and Vermont. Here, I focus solely on New York and Vermont, because the Michigan fund was short-lived with "all but one of the participating banks closed within three years." (Golembe and Warburton (1958), p. I-12)

The New York Safety Fund was established in 1829; the Vermont fund in 1831. Both funds technically lasted until 1863. However, as I argue below, the New York fund effectively stopped providing insurance after 1842. The Vermont fund had no banks participating in it beginning in 1859.

In New York, banks that were chartered after the Safety Fund law was passed were required to join the fund. Banks chartered before the law was passed did not have to join it. However, 16 of the 40 existing banks chose to be recharted and be a part of the system, and 11 new banks were chartered when the law was passed. A later law permitted banks to leave the Fund once their charter expired, but they could continue as banks only if they then became so-called free banks.[9] Upon the expiration of its charter, a Safety Fund bank was entitled "to receive its proportional share of said bank fund ..."[10]

In Vermont, banks chartered after 1831 were required to join the insurance fund.

[5] Note that bank suspensions during this period were not like the Bank Holiday in March 1933 when banks closed their doors. Suspended banks remained open for business but would not redeem their notes or deposits for specie.

[6] note the contrary Calomiris Schweikert

[7] This is the date when the Bank of Pennsylvania failed and there was a partial suspension by Philadelphia banks. There was a complete suspension the next day.Van Vleck (1967), p. 69.

[8] Van Vleck (1967), p. 73

[9] Free banks were those that did banking under the General Banking Law of 1837. Under this law, banks were permitted to issue notes, but only if they deposited state bonds with the New York banking authority such that the minimum of the market or par value of these bonds was greater than or equal to their note circulation. These banks were referred to as free banks because under this law, there was free entry into banking in the sense that a charter was not required. However, in no sense did free banking mean laissez-faire banking. Other states adopted laws with similar provisions and such banks were also referred to as free banks.

[10] Cleaveland and State of New York (1857),§13, p. 33

However, after 1841 newly chartered and rechartered banks could choose whether or not to join (newly chartered) or continue in (rechartered) the fund. If a bank chose not to participate in the fund, the bank's directors had to post personal bonds equal to the bank's capital. If a rechartered bank chose not to rejoin the Vermont fund, its contribution was returned as was the case with New York Safety Fund banks.

Both insurance funds had virtually the same basic structure. Both guaranteed all of the liabilities of banks. However, when a bank failed, creditors would not be paid by the fund until the liquidation of the assets of the failed bank had been completed.

The one exception was that beginning in 1837 New York provided that noteholders, but not depositors or other creditors, would be paid immediately. However, payments from the New York Safety Fund to noteholders could only continue as long as one-third of the capital of the fund (which amounted to $914,342.24 on January 1, 1841) was held to meet debts of insolvent banks other than notes.

Banks that were part of the fund were required to pay a percentage of their capital into a fund managed by the state. These rates were 0.5% per year up to a maximum of 3% of capital in New York and 0.75% per year up to a maximum of $4\frac{1}{2}$% of capital in Vermont.

The insurance fund schemes in both states had at least partial mutualization of losses. Participating banks were subject to additional assessments at rates not exceeding those stated above if the fund was reduced by insurance payments to failed banks. These assessments continued until the funds returned to their requisite amounts, so that in effect banks could continue to be assessed without limit. However, I view the mutualization of losses under these schemes as partial for two reasons. First, there was a limit on how much a bank could be required to contribute in any year. Second, a bank could opt of the fund when its charter expired and get back at least part of its contributions to the fund even if the fund was not back up to the requisite level at that time.

The moral hazard problem with insurance was recognized before the New York Safety Fund law was passed, and the laws establishing the funds in both New York and Vermont contained provisions to attempt to at least partially mitigate moral hazard. For one, banks participating in these insurance funds were subject to the following restrictions on their activities:

1. Notes were restricted to be no more than two times capital stock (shareholder equity) in New York and no more than three times capital stock in Vermont.
2. Total loans and discounts were restricted to be no more than 2.5 times capital stock in New York. Vermont had no such restriction.
3. Loans and discounts to directors were restricted to be no more than $\frac{1}{3}$ times capital stock in New York. Vermont had no such restriction.

A second provision was that the laws established bank commissioners who were responsible for supervising the banks participating in the fund. The establishment of such supervisory agencies was an innovation at the time. The bank commissioners were given full access to bank records and were empowered to get injunctions to close banks that were either insolvent or had violated the law.

The supervision of the Safety Fund banks in both New York and Vermont, however, had two problems:

1. There were only three bank commissioners to supervise all the banks in the fund.
2. Commissioners did not have the power to close banks merely for bad banking practices.

Bank commissioners were prohibited from owning stock in any bank. As a result, they had no direct stake in the gains or losses from the activities of the banks they supervised.

4. Mutual Guarantee Systems

The second type of bank liability insurance schemes were mutual guarantee systems. Three states - Indiana, Ohio, and Iowa - had such systems. Because the Iowa system was in operation only for a short period of time, I will consider only the Indiana and Ohio systems.

All of the mutual guarantee systems went under the name of "State Bank of . . . ," or "Bank of the State of . . . .“ The banks that were members of the systems were called branches. Thus, for example, the bank in Indianapolis that was a member of the Indiana system was called the "Indianapolis Branch of the State Bank of Indiana." The State Bank of Indiana had 13 branches. The State Bank of Ohio had 41 branches, although through most of its existence only 36 were in operation. The State Bank of Indiana was in existence from 1834 until 1857, when it ceased doing business before its charter expired in 1859. It was replaced by the Bank of the State of Indiana, which was another mutual guarantee system. The State Bank of Ohio began in 1845 and lasted until 1863, when its branches converted to national banks.

Despite being called branches, the members banks of these systems were independent banks. They were not branches of a parent bank. Each branch had its own stockholders and issued its own notes that were redeemable only at that branch. Further, "its own profits [were to] be divided among its own Stockholders" (sec 14 of the Indiana law). The entity known as the "State Bank of . . . " did no actual banking business whatsoever.

The members of these systems were subject to the same types of restrictions on the note issuance, loans and discounts, and loans and discounts to directors as were the New York and Vermont banks discussed above. Stockholders State Bank of Indiana branches may also have subject to liability beyond the amount of their stock, but the extent of this exposure is not clear in the legislation.

The feature of these systems that made them different from the insurance funds is that each member of the system was mutually responsible for at least some of the liabilities of the other banks in the system. In Indiana, the branches mutually guaranteed "all debts, notes, and engagements of each other."[11] In Ohio, "[e]ach solvent branch shall contribute . . . to the sum necessary for redeeming the notes of the failing branch."[12]

In other words, in these systems the other branches had a direct, one-sided financial stake in the outcome of the branches they regulated. They did *not* share in the profits (the upside) of another branch. The profits of a branch went strictly to the shareholders of that branch. However, a branch could possibly share the losses (the downside) incurred by another branch.

The chief regulation to deal with the moral hazard problem with these mutual guarantee schemes was a state board comprising members appointed by the state legislature and

[11] State of Indiana (1849), sec. 9, p. 6
[12] State of Ohio (1845), sec. 26, p. 35

one director from each branch. The state board acted as the system regulator. It had the power to close a branch, to limit a branch's dividend payments, and to restrict the ratio of its loans and discounts to capital. The board examined each branch two to three times per year. Thus, although the "regulators" could face losses from the actions of the branches, they also had the power to change the incentives that the branches faced.

5. Bank Suspensions

In this section I consider whether either the insurance fund schemes or the mutual guarantee schemes prevented suspension of payments on banknotes. During this time, banks could not legally suspend payment on their notes. However, in cases in which large numbers of banks in a city or state faced the possibility on not being able to redeem their notes on demand with becoming insolvent, banking authorities would permit widespread suspensions of payments to occur.

None of these insurance schemes entirely prevented bank suspensions from occurring. However, the evidence also suggests that these schemes may have lessened the length of time that banks were suspended and may also have lowered the probability that banks would suspend during periods when banks that were not part of an insurance scheme did suspend.

The first major bank suspension episode that occurred after some of these insurance schemes were in place began in May 1837, as mentioned above. Banks in the three states that had insurance schemes at the time suspended payments. New York banks suspended payment on May 9, 1837. Vermont banks, as well as banks in Boston and the rest of New England, suspended on May 10. Branches of the State Bank of Indiana suspended prior to May 19.

The evidence from the 1837 bank panic, however, suggests that the insurance schemes might have lessened the amount of time that bank suspensions lasted. After suspending in May 1837, the banks in New York and New England resumed in May 1838. Banks in most of the rest of the country, including the branches of the State Bank of Indiana, did not resume until August of that year. (The branches of the State Bank of Indiana resumed on August 13.)

The evidence from the 1837 bank panic also suggests that the insurance schemes might have decreased the likelihood of a bank suspension. After resuming in the fall of 1838, Banks in New York and New England did not suspend for a second time in the fall of 1839, whenn banks in most of the rest of the country, again including the State Bank of Indiana, suspended once again. This second suspension lasted until early to mid-1842. In particular, the branches of the State Bank of Indiana suspended in November 1839 and did not resume until June 15, 1842.

It is not clear how much of this early resumption and lack of second suspension by banks in New York and Vermont can be attributed to the fact that they were part of an insurance fund, however. New York banks that were not part of the Safety Fund also did not suspend for a second time. Further, a large number of banks in the other New England states were not part of any insurance scheme but had the same suspension and resumption pattern as the Vermont banks. It may be that the suspension pattern of the New England banks was due to their being part of the Suffolk Banking System which allowed banks to economize on their specie holdings. The Suffolk Banking System will be discussed in more detail later.

The only insurance scheme that was effectively in existence during the Panic of 1857 was the State Bank of Ohio. The New York Safety Fund had essentially ceased being able to provide insurance, Vermont's insurance fund had almost no banks as members, and the State Bank of Indiana ceased doing business on January 1,1857.[13]

The branches of the State Bank of Ohio did not suspend during this panic. However, the mutual guarantee scheme may had not have been the reason that the branches did not suspend. The State Bank of Ohio took extraordinary actions to make it more difficult for noteholders to present notes for redemption. In particular, it permitted branches to pay out notes of other Branches (such a practice was usually prohibited) making it more difficult for notes to be presented for redemption. The help facilitate this "the clerk of the Board of Control, upon receiving notes from one Branch Bank, would return a mixed package of notes of other, distant, Branch Banks." (Golembe and Warburton (1958), p. VI-30) Further, other banks in Ohio that were not branches of the State Bank also did not suspend at this time with the exception of the Ohio Life and Trust Company.

6. Bank Failures

In this section, I present data on the failure rates of banks that operated under these insurance schemes. My general finding is that the failure rates for the insured banks were roughly the same or somewhat higher than those of uninsured chartered banks in the same state and in similar states.

A. New York

During the period 1830 to 1843, which is roughly the period in which the New York Safety Fund was actually insuring banks, there were two other types of banks in existence in New York: chartered banks that had been exempted for participating in the Safety Fund and free banks, which were discussed above. The number of each of these types of banks that were in existence, the number of banks that failed, and the failure rates during this period are shown in Table 1. The failure rate for Safety Fund banks was higher than that for chartered banks that were not in the Safety Fund. However, the failure rate for Safety Fund banks was much lower than that for free banks, more than a quarter of which failed.

	Number	**Failed**	**Failure Rate**
Safety Fund, chartered	90	10	11.1
Non-Safety Fund, chartered	10	0	0
Free	91	24	26.4

Table 1: Failure rates for New York Safety Fund and non-Safety Fund banks, 1830-1843

I next compare the failure rates for New York Safety Fund banks with those of banks in Massachusetts, New Jersey and Pennsylvania over the same period. These states were similar to New York in that they had large populations and well-developed banking systems

[13]The branches of the Bank of the State of Indiana, the mutual guarantee insurance system that replaced the State Bank of Indiana, also did not suspend during this panic.Van Vleck (1967),p. 73, f. 17.

since at least the early 1800s. Further, Massachusetts and Pennsylvania each had a major financial center. However, neither of them had a bank liability insurance scheme.

Table 2 shows that the failure rate for New York Safety Fund banks was approximately the same as that for banks in New Jersey and Pennsylvania. However, it was almost twice the failure rate for banks in Massachusetts.

State	**Number**	**Failed**	**Failure Rate**
New York Safety Fund	90	10	11.1
Massachusetts	134	9	6.7
New Jersey	32	4	12.5
Pennsylvania	52	5	9.6

Table 2: Failure rates for New York, Massachusetts, New Jersey, and Pennsylvania banks, 1830-1843

B. Vermont

I now make the same comparisons for Vermont banks for the time period 1832 to 1858. Table 3 compares the failure rate for Vermont banks when they were in the insurance fund with that for banks when they were not in the fund. The failure rate was more than twice as high for banks when they were in the insurance fund.

	Number	**Failed**	**Failure Rate**
In bank fund	22	2	9.1
Not in fund	41	2	4.9

Table 3: Failure rates for Vermont banks in and not in the insurance fund, 1832-1858

I next compare the failure rates for banks in the Vermont insurance fund with those of banks in Maine and New Hampshire. These were two states in the upper part of New England that were similar to Vermont in terms of demographics, but neither of which had insurance funds. The evidence in Table 4 shows that the failure rates for banks in these three states were quite similar.

State	**Number**	**Failed**	**Failure Rate**
Vermont, insurance fund	22	2	9.1
Maine	60	7	11.7
New Hampshire	28	2	7.1

Table 4: Failure rates for Vermont, Maine, and New Hampshire banks, 1832-1858

C. Ohio

I now compare the failure experience of the branches of the State Bank of Ohio with that of similar banks in the state at the time. During the period in which the State Bank of Ohio was in existence, there were effectively two other types of banks in the state. The two types of banks I compare the State Bank of Ohio to are:[14]

1. Independent banks – The law establishing the State Bank of Ohio also permitted banks to be organized under the same general restrictions as branches of the State Bank of Ohio except that instead of being part of the mutual guarantee system they had to "deposit with and transfer to the treasurer of state certificates of the funded debt of this state, or of the United States, at least equal in amount to the amount of its capital stock. ..."(State of Ohio (1845), sec. 30, p. 36)
2. Free banks – These were banks established after 1851 that operated under free banking laws similar to the New York law described above.

The failure experience of the State Bank of Ohio and these other types of banks during the period 1845 to 1860 is given in Table 5. The branches of the State Bank of Ohio had lower failure rates than the Independent banks unless the number of number of branches that received aid is combined with the number failing, in which case the failure rate of branches of the State Bank of Ohio becomes almost almost 28%. Free Banks had the lowest rate of failures.

	Number	**Failed**	**Failure Rate**	**Received Aid**
State Bank Branches	36	4	11.1	6
Independent banks	13	2	15.4	0
Free banks	15	1	6.7	0

Table 5: Failure rates for Ohio banks by type, 1845-1860

D. Indiana

There were no failures of the branches of the State Bank of Indiana, and unlike Ohio, branches were never called on to aid other branches. Thus, the experience of the branches of the State Bank of Indiana is an exception to the general finding that the failure rates for the insured banks were roughly the same as or slightly higher than those of similar banks in other states. In particular, Table 8 also shows that the failure experience of the branches of the State Bank of Ohio was noticeably worse that that of the branches of the State Bank of Indiana. I will have more to say about this in the next section.

7. Losses to Creditors and Survivor banks

In this section I examine whether insured bank creditors suffered losses under these insurance schemes and how much surviving solvent banks had to contribute to making up the losses of insured creditors of banks that failed. I consider each insurance plan in turn.

[14] I ignore the "Old banks," – banks chartered before 1845 that operated under their old charters because most of them were in shaky financial condition when the State Bank of Ohio went into operation.

A. New York

Between 1837 and 1842, 12 banks that were members of the New York Safety Fund made one or more claims on the Fund (4 banks made claims twice). Of these, 11 failed.[15] Two other banks that were members of the Fund also failed but did not make claims on the Fund. All claims on the Fund were fully paid, although there were long delays in payments to certain classes of creditors.

The number of claims made each year, the total insured obligations of these banks, the amount in the Safety Fund at the beginning of the year, and the payments made by the Fund for claims made in that year are shown in Table 6.

End of Year	Number of claims	Obligations of insolvent banks	Amount in Safety Fund	Claims against Fund	Payments by Fund
1837a	1	$221,000	$545,000	$36,000	$36,000
1837b	4	na			$147,000
1840	2	$696,000	$831,000	$446,000	$428,000
1841a	1	$589,000	$572,000	$286,000	$118,631
1841b	3	$1,803,000		$1,438,000	$113,000
1842	3	$1,027,000	$497,000	$532,000	na

Source: Golembe and Warburton (1958) Tables II-39 and II-44

Table 6: Bank failures and state of the Safety Fund, 1837-1842

There are two entries for 1837. Entry 1837a is for the Lockport Bank, which failed in May of that year. Entry 1837b is for four other banks that received help from the Fund over this period to redeem their notes, but did not fail until 1841. The Table shows that the Safety Fund was large enough to pay the noteholders of five of these banks.

There were two failures in 1840. The Table shows that the Comptroller paid $428,000 to redeem the notes of these banks, leaving a balance in the Fund of only $572,000 as shown in entry 1841a in the table. Entry 1841a is for the Commercial Bank of New York, which failed in September 1841. The Comptroller paid $118,631 to redeem the notes of this bank, which left the Safety Fund close to the lower limit to redeem debts other than notes as required by law. As a result, the Comptroller did not redeem the notes of the other four banks that failed in 1841 (entry 1841b) or the notes of the three banks that failed in 1842 until an act was passed on April 12, 1842 allowing him to do so. However, beginning in May 1843, the Comptroller was no longer permitted to make payments to noteholders of two of the four banks that failed in 1841 or any of the three that failed in 1842.

Payments to noteholders resumed and payments to all creditors began in 1845 after the state issued slightly less than $1 million in state bonds to make these payments, and all creditors of the failed banks were paid off by the end of 1847. Thus, in one sense no creditor suffered losses under the New York Safety Fund scheme.

[15] The exception was the Sacket's Harbor Bank. It had financial difficulties in 1837, but these were subsequently resolved with help from the Safety Fund.

However, in another sense at least some creditors suffered losses due to the time delay in receiving final payment from the fund. For example, consider the potential losses to holders of the notes of the banks that failed in 1841 and 1842. Between the time that one of these banks failed and July 1845 when payments to creditors were started from the proceeds of the sale of the bonds, the notes of these banks went at discounts of between 15 and 55 percent in New York City, with the most common discounts between 30 and 50 percent. To put these discounts in perspective, notes of similar banks went at discounts of between 0.375 and 0.75 percent. Thus, noteholders of these banks that wanted to redeem their notes relatively soon after the bank failed found that their insurance coverage was only between 45 and 85 percent.

The 1845 law under which these bonds were issued also stated that no new payments could be made from the Safety Fund until the bonds were paid off. This is the basis for my argument that the Safety Fund stopped insuring banks after 1845.

Banks that were still members of the Safety Fund were assessed at the original assessment rate beginning in January 1842. These additional assessments continued until 1866 when the bonds issued in 1845 were fully paid off. Further, these assessments were quite small averaging only approximately a total of $67,000 or approximately $2,600 per bank per year over this period.

B. Vermont

Two banks that were members of the Vermont insurance fund failed, and claims were made on the insurance fund in both cases. The claims of bank creditors were only fully paid in one case.

The first failure of an insured bank in Vermont was the Essex County Bank in 1839. All of the creditors of this bank were paid in full. However, because the fund was not permitted to pay off creditors until the bank's receiver had finished disposing of the bank's assets, payments from the fund did not occur until 1851.

The second failure, that of the Danby Bank, occurred in 1857. Less than half of the $31,000 in creditor claims on this bank that went to the insurance fund were paid, because the fund had only $17,022 in it at the beginning of 1857.[16]

Banks that were members of the insurance fund were assessed at the the original assessment rate between 1852 and 1855 to replenish the fund after payments had been made to the creditors of the Essex County Bank. These assessments totaled approximately $19,000 or approximately $535 per bank per year. No assessments were made after the failure of the Danby Bank, because there were no banks remaining in the fund.

C. Ohio

No noteholders of a branch of the State of Ohio ever suffered a loss. Four branches did become insolvent, and the other Branches were called on to make good on the notes of these banks. Holders of the notes of an insolvent could take them to another, solvent branch and have them redeemed in specie. Hence, the payments to noteholders were made without the types of delays experienced by noteholders of failed New York Safety Fund banks.

Solvent branches were assessed slightly over $291,000 to redeem the notes of failed

[16] These numbers based on the calculations in Golembe and Warburton (1958), Tables 19 and 20.

branches. In addition, there were six cases in which branches were called on to make advances of funds to other branches that were experiencing operating difficulties even though they were not insolvent. The total amount solvent branches were assessed for this assistance was approximately $350,000.[17] In total, the amount assess on solvent branches was $691,000 or approximately $2,225 per branch per year.

An interesting aside is the argument that John Andrews, the president of the State Board, made in 1855 to rationalize making the advances to the branches that were solvent but in difficulty:

> You are aware of the circumstances under which these advances are made, the object being to sustain the Branch during a period of general alarm, when [its] failure . . . would have, in all probability, carried several others with it. (as quoted in Golembe and Warburton (1958), p. VI-26)

Andrews' arguments sound very much like the arguments about preventing systemic risk made to justify some of the recent bailouts.

D. Indiana

Since no branch of the State Bank of Indiana ever failed, there were no losses to creditors, and solvent banks were never called on to make any payments to creditors of other banks.

8. Summary

A summary of the experience with these bank liability insurance is the following:

1. The insurance schemes did not prevent bank suspensions. In only three of the four insurance schemes did banks that were part of the insurance system not suspend when banks in other states suspended. This insurance scheme was the State Bank of Ohio, and suspension may have been prevented by some extraordinary practices by the oversight board.
   There is some evidence that the existence of an insurance scheme may have lessened the length of time that banks were suspended and may have lowered the probability that banks would suspend during periods when banks that were not part of an insurance scheme did suspend. However, it was also the case that banks in the same and similar states that were not part of any insurance scheme followed the same suspension pattern.
2. Creditors were completely paid off after all bank failures except one. However, creditors were paid off immediately only under the mutual guarantee schemes. Long delays were experienced by some creditors under the New York and Vermont insurance fund schemes. This was due to provisions in the laws governing when payments could be made from the funds.
3. There were bank failures under three of the four insurance schemes studied. However, failures rates were about the same or, at worst, only slightly higher than those of similar banks. The exception was the State Bank of Indiana. No branch in this mutual guarantee insurance system failed.

[17] All figures on the assessments are from Golembe and Warburton (1958), Table 37.

All of the bank liability insurance schemes studied here had the feature of mutualization of losses but not mutualization of gains. That is, if a bank took a high risk-high return bet (loan, say) financed by debt, then its shareholders and only its shareholders would gain if the bet paid off. But if the bet did not pay off, it would be the shareholders of all the banks in the scheme that would lose. This provided incentives for banks in the system to monitor the actions of the other banks in the scheme.

There are two, not mutually exclusive, possible reasons for the fact that three insurance schemes experienced bank failures whereas none of the branches of the State Bank of Indiana failed. The first reason fact differences in the ability of banks that were members of these systems to monitor the behavior of other member banks and to directly affect their behavior.

In the New York and Vermont systems, the extent to which banks could monitor each other was limited. For example, in New York the most that a bank could do was get a bank examined "more frequently than once every four months, if required to do so by any three of the moneyed corporations subject to the provisions of this act" (sec. 16). Vermont's law contained no provisions concerning member banks monitoring each other. And in neither state did the laws contain any provision for banks to directly affect the behavior of other banks.

In contrast, the mutual guarantee schemes of the State Bank of Indiana gave branches the power to directly monitor and regulate the activities of all branches in the system. A director of each branch in the system sat on the state board that had the regulatory powers described below. However, the State Bank of Ohio had the same organizational structure as the State Bank of Indiana

The second reason for the fact that three insurance schemes experienced bank failures whereas none of the branches of the State Bank of Indiana failed is differences in the power of the supervisors of these systems. The Board of Directors of the State Bank of Indiana had far stronger powers than did the overseers of the New York and Vermont systems.

In all four of these systems, the supervising entity had the power to close a bank or branch in the case of the State Bank of Indiana and the State Bank of Ohio. However, in New York and Vermont, a bank could be closed only if it were "insolvent, or shall have violated any of the provisions of their act or acts of incorporation" (New York law, sec. 18). The bank commissioner of Vermont also could only close banks if they were insolvent or had violated the provisions of the act establishing the safety fund. Banks in the New York and Vermont insurance funds could not be closed simply for bad management or taking on too risky a portfolio of loans.

In contrast, the Indiana law provided much stronger powers to the Board of Directors of the State Bank of Indiana, the body overseeing the system. It was required to suspend a branch's operations if a branch was "insolvent, or *is mismanaging its affairs, whereby the interest of other Branches is endangered, . . . or [has] refused to comply with any legal order or directions of the Board of Directors of the State Bank. . . ."* (sec. 44, italics added). Further, It had the "power to limit and control the amounts of discounts and loans of the Branches after they amount to once and a quarter the amount of capital stock paid in" (sec. 40) and to "regulate and control the dividends of profits so that the capital stock shall never be diminished" (sec. 54).

And the Board of Directors of the State Bank of Indiana utilized these powers. For example, the Board of Directors wrote to the Lafayette Branch in 1838:

> The requirement of Mr. [the cashier of the branch]'s resignation was not considered by any one of the State Board as a matter personal towards him, but he had been guilty of several matters which the Branch board had refused to disapprove.... All that the State board expect is that your branch shall by its safe, prudent and honorable management recover and retain public confidence.... I suppose this might be done much more effectually even than by removing the Cashier if your Directors who are large borrowers would resign and the places could be supplied by prudent sensible men, not borrowers.... The State Board must have assurance that matters will be managed otherwise or you branch must and will be suspended. (taken from Golembe and Warburton (1958),p. IV-20)

The Cashier resigned. Others examples are that the Lawrenceburg branch was suspended for a time for showing favoritism to certain stockholders and directors in making loans and the Bedford, Michigan City, and South Bend branches were also criticized for their lending practices.[18]

The Board of Directors of the State Bank of Ohio, however, had the same powers at the Board of Directors of the State Bank of Indiana. Which leads to the following puzzle: The Indiana and Ohio scheme are virtually identical in terms of the powers of the regulatory board and the ability of branches to monitor and affect the behavior of other branches. Yet, the experience of the two systems was quite different. There were no failures of any of branches of the State Bank of Indiana, and branches were never called on to make good on any losses of other branches. However, the experience of the State Bank of Ohio was different and quite similar to that of the New York and Vermont banks operating under the insurance schemes. There were failures of four branches, six branches required some assistance to continue operating, and surviving branches did have to cover some losses.

The reason for the different outcomes of the two State Bank systems, in my opinion, was that the "skin in the game" of each of the branches of the State Bank of Indiana was much higher than that of the branches of the State Bank of Ohio. To show this I computed the fraction of its capital that the average branch would have to pay creditors of an average failing branch, assuming the assets of the failing branch were worthless.

The results for branches of the State Bank of Indiana are shown in Table 7 in the column headed "Exposure." Although these numbers vary between 8 and 38 percent, for the most part they are around 20 percent. What this means is that if one Branch were to fail and its assets were only enough to cover half of its outstanding liabilities, say, then every other Branch would be liable for an amount equal to approximately one-tenth of its capital stock.

In contrast, the exposure of branches of the State Bank of Ohio were much lower than those of the branches of the State Bank of Indiana. The branch exposure for the State Bank of Ohio are shown in Table 8. The exposures are on the order of 5 percent. Using the same calculation as done above, this means is that if one branch were to fail and its assets were

[18] **?**, p. IV-21

Date	Branches	Exposure	Date	Branches	Exposure
11/21/1835	10	30.8	11/21/1846	13	18.5
11/26/1836	11	37.8	11/20/1847	13	21.0
9/2/1837	11	25.3	11/17/1849	13	20.9
11/17/1838	13	16.4	11/16/1850	13	20.9
11/21/1840	13	12.5	10/31/1851	13	22.0
11/21/1841	13	12.5	11/2/1852	13	24.6
11/21/1842	13	8.0	10/31/1853	13	23.9
11/21/1843	13	11.9	10/31/1854	13	20.0
11/21/1844	13	15.8	10/31/1855	13	22.3
11/21/1845	13	18.7	10/31/1856	13	23.1

Table 7: Exposure of branches of the State Bank of Indiana, 1835-1856

only enough to cover half of its outstanding notes, say, then every other Branch would be liable for an amount equal to approximately one-fortieth of its capital stock. There were two reasons for the exposures of the branches of the State Bank of Ohio being lower: the guarantee in the State Bank of Ohio system was only on banknotes and there were more branches over which to spread the losses.

Date	Branches	Exposure	Date	Branches	Exposure
2/1/1846	14	10.3	2/1/1856	33	5.7
11/1/1846	15	12.7	11/1/1856	33	5.6
5/1/1848	32	5.3	2/1/1858	29	5.1
11/1/1849	35	5.3	11/1/1858	33	5.2
2/1/1851	36	5.3	2/1/1860	32	5.4
2/1/1854	34	5.4	2/1/1861	33	5.4
11/1/1854	34	4.9			

Table 8: Exposure of branches of the State Bank of Ohio, 1846-1861

The "skin-in-the-game" argument also applies to the banks in the New York and Vermont insurance fund systems. Although, they had to contribute a certain percentage of capital to the insurance fund, they did receive the income earned by this fund, so their skin-in-the-game in this regard was small and independent of whether or not any bank failed. Their exposure was also small and limited if a bank should fail because of the cap on the amount they could be called on to contribute in any year and that they were entitled to their "proportionate share of said bank fund, which such corporation may have contributed thereto, after deducting thereout a proportionate part of the charges upon the said fund..."(NY law, sec. 13).

9. The Suffolk Banking System

There was another system in place during the period that makes the same point about the importance of the incentives of the agents monitoring and having the ability of affect the behavior of banks that are members of a system in which there is mutualization of losses. This system is the Suffolk Banking System that was in existence in New England. The system started in 1825, and by the early 1830s, most banks in New England had become members of the system. The system came to an end in 1858.

The Suffolk Banking System was not a bank liability insurance scheme. Instead, it was a regionwide net-clearing system for banknotes run by a single Boston bank, the Suffolk Bank. It worked as follows: Member banks were required to keep an interest-free deposit at the Suffolk Bank (or at one of the other Boston member banks) of 2 percent of capital. These accounts acted very much like the member bank reserve accounts operate at the Fed today. The Suffolk Bank accepted and net cleared all the bank notes its members deposited at par. If a bank had a net positive position, then the Suffolk Bank credited that bank's account with it. It debited the accounts of banks with net negative positions.

The benefit to banks from belonging to the system was that the net clearing feature allowed them to economize on the amount of specie and other reserves they had to hold to redeem their circulation. The way this occurred was that the Suffolk Bank permitted a bank running a negative net clearing positions to borrow from it in the form of an overdraft. That is, instead of returning its notes to a bank for specie, the Suffolk Bank would hold on to the notes and extend a loan to the bank. It would then return the notes as the borrowing bank paid off the overdraft, which the borrowing bank could do as its loans or other assets matured. [19]

However, if the debtor bank was unable to payoff the overdraft and the Suffolk Bank was unable to redeem at par the notes it had already accepted and credited to other member bank accounts, then Suffolk would take the loss. To give some idea of the potential magnitudes of these losses, the amount that the Suffolk Bank had due from other banks averaged about $700,000 in the 1830s and 1840s, and the average amount increased to approximately $1 million from 1850 to 1858. Its holding of notes of other banks averaged approximately $450,000 in the 1830s, approximately $525,000 in the 1840s, and $700,000 from 1850 to 1858. To put these numbers in perspective, up to 1839 the capital stock of the Suffolk Bank was $750,000; in the years following, it was $1 million.

Thus, the Suffolk Bank had an interest in monitoring the actions of banks that were members of the system. And it did, as the following quote from a letter from the Suffolk Bank to the President of a Vermont bank, shows:

> It appears evident from you letter of the 16th inst. that too large a portion of your loan is in accommodation paper, which cannot be relied upon at maturity to meet your liabilities.... [W]e hope you will take measures to change the character of your loan, and render it more available in case of need.(Whitney (1878), p. 35)

Further, the Suffolk Bank had to power to affect the behavior of member banks:

[19] An additional benefit was that notes issued by members of the System exchanged at par throughout the region because of the Suffolk Bank's par-clearing policy for banknotes.

> ... a large part of the balance [due from other banks on the Suffolk's books] was in demand loans to the New England banks, being overdrafts bearing interest, for which the [Suffolk] bank held their circulating notes, payable on demand in specie, as collateral. And herein lay the great power of the Suffolk Bank. A pressure upon it from any cause induced it at once to notify the debtor banks to pay their overdrafts, on penalty of having their bills sent home for specie.(Whitney (1878), p. 37)

That the Suffolk Banking System may have had an effect on the behavior of New England banks is shown in Table 9 where I show the failure rates for banks in New England states in the top part of the table and those for banks in several other eastern states in the bottom part. The time period covered is 1830 to 1858 when the Suffolk Banking System was fully in operation. With the exception of the failure rate of Maine banks, the table shows that failure rates for New England banks were below those of other eastern states.

State	**Number**	**Failures**	**Failure Rate**
		New England States	
Massachusetts	214	11	5.14
New Hampshire	28	2	7.14
Vermont	52	4	7.69
Maine	60	7	11.67
		Other Eastern States	
New Jersey	86	8	9.30
New York (chartered)	100	14	14.00
Pennsylvania	95	15	15.79
Maryland	44	10	22.73

Table 9: Failure rates of banks in New England and other eastern states, 1830-1858

10. Conclusion

One way to control the moral hazard that comes with insuring bank liabilities is to have some agent or group of agents capable of changing or regulating the behavior of banks that face the potential of bearing significant losses if banks fail. These agents can be shareholders, as in Meltzer's testimony quoted in the introduction. The experience with these early U.S. state bank liability insurance schemes shows that it may be useful to consider broadening the class of agents that could potentially bear the losses from a bank failure beyond simply the shareholders of a failing bank. Even more importantly, the evidence shows that it may be useful to also give those agents the ability to directly monitor and affect the incentives facing other agents that are part of the insurance arrangement.

References

CHADDOCK, R. E. (1910): *The Safety Fund Banking System in New York State, 1829-1866.* S. Doc. No. 581, 61st Cong., 2nd sess., Government Printing Office, Washington, DC.

CLEAVELAND, J., AND STATE OF NEW YORK (1857): "Amendatory Act of April 2nd, 1829," in *The Banking System of the State of New York with Notes and References to Adjudged Cases*, pp. 29–38. John S. Voorhies, New York.

GOLEMBE, C. H., AND C. WARBURTON (1958): "Insurance of Bank Obligations in Six States During the Period 1829-1866," Federal Deposit Insurance Corporation.

STATE OF INDIANA (1849): "An Act Establishing a State Bank," in *Charter of the State Bank of Indiana*. Chapmans & Spann, Indianapolis.

STATE OF OHIO (1845): "An Act to Incorporate the State Bank of Ohio and Other Banking Companies," in *Acts of a General Nature Passed by the Forty Third General Assembly of the State of Ohio*, vol. 43, pp. 24–54. Samuel Medary, Columbus.

U.S. CONGRESS. HOUSE. COMMITTEE ON FINANCIAL SERVICES (2010): "Examining the Link Between Fed Bank Supervision and Monetary Policy," testimony of Allan H. Meltzer.

VAN VLECK, G. W. (1967): *The Panic of 1857, An Analytical Study.* AMS Press, Inc., New York.

WHITNEY, D. R. (1878): *The Suffolk Bank*. Riverside Press, Cambridge, MA.