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The Causes of Free Bank Failures: A Detailed Examination*

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ABSTRACT

In this paper we propose and test a new explanation of bank behavior during the Free Banking Era, 1837–1863. Arguing against the conventional view that free bank failures were due to wildcat banking, we claim they were caused by falling asset prices. Confronting both explanations with our new and detailed data set developed from state auditor reports, we find that the falling asset price explanation of free bank failures explains far more failures than does the wildcatting hypothesis.

*The views expressed herein are those of the authors and not necessarily those of the Federal Reserve Bank of Minneapolis or the Federal Reserve System.

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1. Introduction

The Free Banking Era (1837–1863) was a unique experiment in U.S. banking history that has generally been considered a failure. However, given the uniqueness of this period in U.S. banking history and the influence it has had in shaping our views about the need to closely supervise and regulate banking, we know surprisingly little about what went wrong. Most of the literature simply tells us something did. The period is characterized as chaotic, with a plethora of different bank notes circulating at different prices, with merchants regularly checking bank note reporters to assess the worthiness of money, and with periodic bank failures and substantial losses to bank creditors.^{1/}

While most agree that free banking had problems, little work has been done in formulating and testing explanations of the causes. In fact, until Rockoff's recent work (1974, 1975), there were no explanations that had confronted the empirical evidence. Rockoff argues and finds some empirical support for the hypothesis that free bank failures and noteholder losses occurred, for the most part, when states opened the door to "wildcat banking" by allowing free banks to value the bonds securing their notes above market value.^{2/}

As we will show below, however, there are difficulties with the wildcat banking explanation of free banking problems. We propose a more plausible explanation of free bank failures and noteholder losses. Specifically, we argue that most free bank failures were caused not by wildcat banking but by exposure to term structure risk. Free banks held state bonds and other risky assets as a large portion of their portfolios. Yet free

bank liabilities were mostly fixed in nominal value. Fluctuations in asset prices, therefore, had to cause fluctuations in the net worth of free banks, and when asset prices fell substantially, many free banks had to fail. We refer to our view of the problems with free banking as the falling asset price explanation.^{3/} Confronting both explanations with our new and detailed data set developed from state auditor reports, we find that the falling asset price explanation of free bank failures explains far more failures than does the wildcatting hypothesis.

The paper proceeds as follows. In section 2, we review the provisions of free banking laws and present a simple explanation of how a free bank operated. In section 3, we present our definition of a free bank failure; we present both the wildcat banking and falling asset price explanations of free bank failures; and we develop the empirical implications of these competing explanations. Our data are described in section 4, and in section 5 we confront the two explanations with the data. The final section contains a summary and conclusions.

2. A prototypical free bank

A brief review of the major provisions of the free banking laws will be an aid in understanding the competing explanations of free bank failures. A listing of the major provisions of the free banking laws of four selected states is presented as table 1. It shows that, although free banking laws varied from state to state, they generally contained four major provisions:

1. Entry into free banking was relatively easy. Unlike earlier state laws, free banking laws did not require prospective bankers to obtain a special legislative charter; any individual with a certain minimum amount of capital could establish a bank.
2. Free banks had to deposit designated state bonds with the state auditor as security for all notes issued. (Some states also allowed federal bonds.)
3. Free banks had to pay specie (gold or silver) for notes on demand. Failure to redeem even one note meant that the state would close the bank and sell all of the assets deposited with the state auditor to pay off noteholders. Further, in many cases noteholders had preference over other bank creditors in terms of claims on the remaining assets of the bank.
4. Free banks were limited liability companies.

Under these laws, a prototypical free bank would be established and operate as follows. Suppose that a potential banker had \$50,000 in capital. To establish a free bank, the banker would purchase state bonds with this capital and deposit the bonds with the state auditor. In exchange, the banker would receive \$50,000 in bank notes to be issued by the new bank. Presumably, these notes would get into circulation by being exchanged for other assets (more state bonds, loans, or specie). The balance sheet of the prototypical free bank would look something like table 2. (Table 2 assumes the free banker exchanged \$50,000 in notes for \$40,000 of loans and \$10,000 in specie.) The profitability of free banking was due to the leverage provided by the bank notes.

3. Two competing explanations of free bank failures

The provisions that notes had to be backed by state bonds and redeemed in specie on demand were clearly attempts by the framers of the free banking laws to protect all noteholders, but these attempts appeared unsuccessful. As the balance sheet in table 2 shows, the notes of our prototypical bank seem safe. However, in an earlier study [Rolnick and Weber (1983, p. 1085)], we found that 104 of the 709 free banks established in Minnesota, Indiana, Wisconsin, and New York closed with losses to noteholders.

In this paper, we categorize such banks as failures; that is, we only define as failures banks that closed and were unable to redeem all their notes at par (or face) value. (They closed below par.) Those banks that closed and paid off noteholders in full are not considered failures under this definition, even if they did not pay off all creditors. We define a free bank failure in this way because a major intent of the free banking laws was to provide a safe currency. The laws made no attempt to protect depositors or shareholders against losses.

Given the protection offered noteholders by the bond backing and specie redemption provisions, why were there so many free bank failures?

3.1. Wildcat banking

One explanation for the numerous free bank failures—the explanation which has been proposed and tested by Rockoff (1974, 1975)—is that they were due to wildcat banking.^{4/} According to Rockoff, the necessary condition for wildcat banking to occur was that states allowed free banks to value the bonds securing their notes at par value when the bonds were selling below par. We will refer to this necessary condition as the absence

of a market valuation restriction. Rockoff argues that, in such cases, wildcat banks could make a quick and easy profit. For example, by paying \$50,000 for bonds that had depreciated 50 percent, a free banker could deposit these bonds at the state auditor's office and receive \$100,000 in new bank notes. Once the notes were circulating, the wildcat banker would close the bank's doors and leave town as soon as possible. In the example, the noteholders would only have \$50,000 worth of bonds to cover their \$100,000 worth of claims. The wildcat banker would pocket the difference.

The difficulty with the wildcat banking explanation for free bank failures is that it ignores the assets which the wildcat banker purchases with bank notes. (In the above example, which is shown in table 3, these assets are the \$100,000 worth of loans made by the bank.) The free banking laws generally gave noteholders first lien on all of the assets of free banks, not merely on the state bonds deposited with the state auditor (see table 1). Thus, it is more appropriate to consider the notes of a free bank as backed by all of the assets of the bank, not just the state bonds deposited with the state auditor. Once that is done, it seems clear that bankers could only earn a profit by wildcatting if they could somehow abscond with the bank's assets (by making bad loans to relatives, for example) and those assets exceeded the value of the bank's capital.

Although there may have been instances of this kind of fraud during the Free Banking Era, it is hard to believe, without any direct evidence, that it could have been widespread enough to explain the majority of the free bank failures. None of the evidence that Rockoff presents in favor of the wildcatting explanation addresses the issue of fraud, and finding direct evidence of fraud would probably be difficult now. Nonetheless, two other empirical implications of the wildcat banking explanation can be examined given the data we have collected.

The first implication is that free bank failures would have occurred almost exclusively when state bonds were selling below par and a market valuation restriction was not in effect. The reason is that, according to this hypothesis, wildcat banking is profitable only when these conditions are fulfilled, and the profits from wildcat banking can only be realized when the bank fails.

The second implication is that free banks which failed would only have existed for short periods of time. If the profits to wildcat banking were obtained by absconding with bank assets rather than earning interest on them, wildcat banks would have closed as soon as their notes were circulated. In fact, in discussing wildcat banking, Rockoff (1975, p. 8) sets a year as the upper bound on the time a wildcat bank would have existed.^{5/}

3.2. Falling asset prices

We offer an alternative explanation for the large number of failures under the free banking laws, an explanation which does not rely on fraudulent behavior being planned by the individuals starting banks. Our explanation is based on the observation that free banks held risky assets in their portfolios while their notes were callable on demand at par. It is our hypothesis, therefore, that free bank failures were due to the inherent term structure risk in operating this type of financial intermediary.^{6/}

Under this explanation, a free bank failure would occur in the following way. Suppose an economic disturbance caused the market value of the assets held by a free bank to fall below the par value of the bank's outstanding note circulation. Assuming at least some of the noteholders were aware of the bank's capital loss and the loss exceeded the bank's capital, these noteholders would attempt to go to their bank as soon as pos-

sible and redeem notes for specie at par. At this point, the free banker had two choices: (1) The banker could redeem the outstanding circulation. To do so, however, would mean that the banker would have to invest additional capital in the bank and so suffer the entire capital loss. (2) The banker could allow the notes to be protested, close the bank, and let the state auditor pay off noteholders with the state bonds deposited for that purpose and with any other assets remaining in the bank. This second course of action would let the banker share part of the capital loss with the noteholders.^{7/} We hypothesize that free bank failures occurred when asset prices fell and bankers chose this second course of action.

Notice that under our explanation it is irrelevant whether the free banking laws allowed notes to be issued in excess of the market value of state bonds. Consider the balance sheet of the free (wildcat) bank in table 3 once more. Recall that we assumed the state bonds had a par value of \$100,000 and could therefore support \$100,000 worth of notes even though they had been purchased for \$50,000. A problem would only arise if there was a capital loss that exceeded \$100,000 on the state bonds and the other assets. If no such loss occurred, a free bank could easily be long-lived, safe for its noteholders, and profitable for the banker. Thus, whereas under the wildcatting explanation the absence of a market valuation restriction implies profits to a free bank failure, under our explanation it does not. Instead, under our explanation, it increases the leverage and consequently the profitability of free banks only if they remain in business.

The empirical implication of the falling asset price explanation of free bank failures differs sharply from those of the wildcat banking explanation. Since the falling asset price explanation argues that free bank failures were caused by declines in asset prices, it implies that bank fail-

ures would cluster in periods corresponding to periods of asset price declines. That is, under this explanation, there is no necessary correlation between free bank failures and the absence of a market valuation restriction and there is no necessary relationship between the length of time a free bank existed and its probability of failure.^{8/}

4. The data

As part of an earlier study [Rolnick and Weber (1983)], we compiled an extensive data set on free banks in Minnesota, Indiana, Wisconsin, and New York which can be used to test the implications of the competing explanations of free bank failures. These data were obtained from original state auditor reports and cover the free bank populations in each of these four states. For the purposes of this paper, we consider only the subset consisting of the 104 free banks which failed in the four states between the time they adopted their free banking legislation and 1863. For almost all of the banks we were able to estimate a date when failure occurred, and for many of them we were able to determine their holdings of state bonds and other assets at the time of failure. An estimate of the length of time each bank had existed before it failed was also calculated.^{9/} This information is presented in tables 4-8.

In order to examine the relationship between free bank failures and market valuation restrictions, the data must include periods in which a market valuation restriction was present and periods in which it was absent. Table 1's summary of the free banking laws in the four states shows that, even though the free banking laws in these states were generally quite similar, they did differ with regard to when they included a market valuation restriction. Specifically, the laws in New York and Minnesota explicitly permitted bonds to be valued at par, at least for a while. Par valuation

existed in New York from 1838 until 1840. Minnesota's 1858 law initially required the state auditors to use market prices, but it was amended that year to allow par valuation of Minnesota's railroad bonds and U.S. bonds. Both Indiana's and Wisconsin's laws, however, always included a market valuation restriction. Nonetheless, Rockoff claims that sometimes their state auditors accepted certain bonds at par. This is reportedly true for Indiana between 1852 and 1855 and for Wisconsin around 1856.^{10/}

5. The tests

In this section we confront first the wildcat banking explanation and then the falling asset price explanation of free bank failures with our data on the 104 free bank failures in Minnesota, Indiana, Wisconsin, and New York.

5.1. Wildcat banking

Recall that the two empirical implications of the wildcat banking hypothesis are (1) that free bank failures would have occurred when the market valuation restriction was absent and state bonds were selling below par and (2) that failed free banks would have existed for a year or less. Since the times at which market valuation restrictions were in effect are important to the discussion, and these times were different for each state, we present the results of the tests state by state. Overall, we find little support for the wildcat banking explanation.

Minnesota. Of the four states we consider, Minnesota is thought by historians to have had the worst free banking experience, and our empirical evidence indicates that most of Minnesota's free bank failures are consistent with wildcatting.

The nine below-par closings in Minnesota are listed in table 4 in order of closing date. Even though Minnesota's free banking legislation contained a market valuation restriction, Minnesota 7s (the railroad bonds) were accepted by the auditor at 95 percent of par. In addition, the ledgers of the state auditor show that Minnesota 8s and Minnesota 10s (the University bonds) were also accepted by the auditor at par. Further, even though we have not been able to find actual prices for these bonds, evidence from Patchin (1917) indicates that the railroad bonds were selling well below par during at least the first half of 1859; and when these bonds were sold to redeem notes on May 23, 1860, they were sold for between 16 and 17 cents on the dollar. Minnesota's bonds, therefore, were almost certainly selling below par during this period, so that all nine of Minnesota's failures are consistent with the first implication of the wildcat banking explanation. With respect to the second implication, seven of the nine failures were in business for less than a year. The other two, however, were longer-lived. Thus, potentially seven of Minnesota's free bank failures are consistent with wildcat banking.^{11/}

Indiana. Even though historians regard Indiana as having a mixed experience with free banking, the evidence does not indicate Indiana's problems were attributable to wildcat banking.

The 24 free bank failures in Indiana that we have been able to identify are listed in table 5 in order of closing date.^{12/} We are reasonably sure that all but three of these failures occurred before February 1855, a time, Rockoff (1975, p. 100) claims, that the Indiana state auditors were accepting Indiana bonds at par even though the law required market valuation. Thus, 21 of Indiana's 24 free bank failures would seem to be consistent with the wildcatting explanation. However, the evidence on the

prices of Indiana state bonds suggests that wildcatting was not profitable during this period since profitable wildcatting requires state bonds to sell below par. The prices of Indiana 5s for the period 1841-1865 are plotted in fig. 1. These data show that there was only a slight divergence of the par and market values of Indiana state bonds between the passage of Indiana's free banking legislation on May 28, 1852, and August 25, 1854. In fact, the lowest bond price during this period was 95 percent of par value on August 15, 1852. This spread hardly seems sufficient for wildcatting to have been profitable. Thus, the evidence from Indiana state bond prices shows that at most nine of the Indiana failures are consistent with the first implication of the wildcatting explanation (the eight banks which appeared in no condition reports and the Merchants' Bank, Springfield).

The data on duration provides a great deal of support for the second implication of the wildcatting hypothesis. We estimate that only one of the banks that failed had existed more than one year.^{13/} Nonetheless, we argue that the bond price evidence is stronger than the duration evidence, leaving at most 9 of the 24 Indiana failures consistent with the wildcatting explanation.

Wisconsin. Historians consider Wisconsin's free banking experience to have been similar to Indiana's. We find, however, that Wisconsin provides even less evidence to support the wildcat banking explanation than did Indiana.

The 37 below-par closings in Wisconsin are listed in table 6 in order of closing date. Since the Wisconsin free banking legislation contained both a market valuation restriction and a provision which allowed the bank commissioner to demand that a bank provide more security in the event of a depreciation in the value of the bonds deposited, none of these

failures is consistent with the first implication of the wildcatting hypothesis. Further, even if we accepted Rockoff's (1975, p. 107) claim that the Wisconsin state auditor was valuing Wisconsin state bonds at par sometime before 1857, all of Wisconsin's failures occurred in 1860 and 1861, three or more years later. Thus, they would still not be consistent with wildcatting.

Not even the second implication of the wildcatting hypothesis holds up in Wisconsin, although it did in Indiana. While most free banks that failed in Indiana were in business less than a year, in Wisconsin at least 35 of the 37 failed banks had existed for more than a year (see tables 6 and 8). Consequently, we conclude that none of the Wisconsin failures is consistent with the wildcatting explanation.

New York. Finally, we examine free banking in New York, which historians consider to have generally worked well although it did have some wildcatting. We find only very weak evidence in New York to support the wildcat banking explanation.

The 34 free bank failures in New York are listed in table 7 in order of closing date. The New York free banking law did not require market valuation of bonds until late 1840, so that the 15 failures occurring before September 30, 1841, could be considered as occurring when there was no market valuation restriction. Further, the evidence in Homer (1977, pp. 301-306, 322-326) suggests that the bonds of some states (Indiana and Illinois, for example) were selling below par during the late 1830s and early 1840s. Thus, these 15 failures are consistent with the first implication of the wildcatting hypothesis. Further, the New York free banking law allowed mortgages to be security for note issue. Since market valuation of mortgages was difficult, a market valuation restriction for mortgages can be assumed to never have been in effect, and free banks could have engaged in

wildcatting based on mortgages instead of state bonds. Of New York's 19 below-par closings after 1841, 8 did not hold mortgages, so that 11 more failures may be consistent with the wildcat banking hypothesis, giving an upper bound of 26.^{14/}

However, if we examine the data with regard to the other implication of the wildcatting explanation, the support weakens considerably. Tables 7 and 8 show that only 5 of the 34 New York banks that closed below par had existed for a year or less. With one addition, New York had a total of only 6 banks that are consistent with the wildcatting hypothesis. We added the Bank of New Rochelle to the wildcat list, in spite of its long duration, because the conditions of its failure fit the wildcatting explanation.^{15/}

Four states. In summary, considering the aggregate experiences of these four states, wildcat banking does not appear to be an explanation for free bank failures. The only clear support for the wildcat banking explanation is provided by Minnesota, where potentially 7 of the 9 failures are consistent with wildcatting. The evidence for the other three states argues against it since at most 9 of Indiana's 24 failures, none of Wisconsin's 37 failures, and no more than 6 of New York's 34 failures satisfy the conditions for wildcat banking.

5.2. Falling asset prices

We now examine the consistency of the data with the alternative explanation that free bank failures were caused by falling asset prices. Recall that, under this hypothesis, the greatest number of free bank failures would occur during periods of falling asset prices and few, if any, would occur when asset prices were stable or rising. Not surprisingly, we were unable to obtain prices for all of the many types of assets free banks

held. Prices for state bonds, though, are generally available and should serve as a reasonably good proxy for any overall movement in asset prices. In particular, we collected data on the prices of Indiana and Missouri state bonds.^{16/} The reasons for these choices are that Indiana 5s made up a large portion of the securities deposited against note issue by the banks that failed in New York and Indiana and Missouri 6s made up a large portion of the securities deposited against note issue by the banks that failed in Wisconsin. As mentioned above, we have been unable to obtain price data for Minnesota bonds.

The data on the prices of Indiana 5s (fig. 1) show four distinct periods of major declines between 1841 and 1865. The first is from January 1, 1841, to April 15, 1842, when prices fell from 73 to 16 percent of par, a fall of approximately 80 percent. During this period, there were fears that states such as Indiana would default on or repudiate their debts, and, in fact, Indiana did default on its debt during 1841.^{17/} The second period of major decline is from the end of May 1844 until the end of July 1846, when Indiana bond prices fell approximately 33 percent. This decline may have been caused by the failure about this time of the movement to have the federal government assume the debts of the states.^{18/} The third decline occurred from the end of June 1854 until the end of December of the same year. During this period, Indiana bond prices fell about 26 percent. Finally, there is the period from the beginning of March until the middle of October 1857, when Indiana bond prices fell 24 percent.

The data on the prices of Missouri 6s (fig. 2) show one additional major decline which is of interest. This decline corresponds to the onset of the Civil War and occurs from June 1860 to June 1861. During this period, the price of Missouri bonds fell about 57 percent.^{19/}

The majority of free bank failures occurred during these five periods of declining bond prices. In table 9, we have classified the below-par closings which occurred in New York, Indiana, Wisconsin, and Minnesota by whether or not they occurred during a period of declining bond prices. We find that 25 of New York's 34 failures, 12 of Indiana's 16 failures, and all 37 of Wisconsin's failures occurred during price declines.^{20/} The only state whose experience does not confirm our falling asset price theory is Minnesota; only 2 of its 9 failures occurred during periods of bond price declines.^{21/} To summarize, we find that 76 of the 96 below-par closings (79 percent of them) are consistent with the falling asset price hypothesis. [Note that the periods we have identified as periods of falling bond prices cover, at most, 7 years of the 22 years (32 percent) of the free banking experience we consider. Thus, most free bank failures occurred during the relatively short periods when asset prices were falling.]

5.3. A direct comparison

To see more clearly how the falling asset price explanation of free bank failures compares with the wildcat banking explanation, we compute how many of the 96 failures we are able to date can be explained by one hypothesis which cannot be explained by the other. In New York, 2 below-par closings are consistent with both hypotheses, 3 closings with just the wildcatting hypothesis, 23 with just the falling asset price hypothesis, and 6 with neither hypothesis. In Indiana, only 16 failures can be dated; 1 is consistent with just the wildcatting hypothesis, 12 with just the falling asset price hypothesis, and 3 with neither hypothesis. In Wisconsin, all 37 failures are explainable only by the falling asset price hypothesis. In Minnesota, 7 failures are explained solely by wildcatting and the other 2 solely by falling asset prices.

Aggregating the four states (table 10), we find that 87 of the 96 below-par closings are consistent with at least one explanation. However, 74 are solely explainable by falling asset prices whereas only 11 are solely explainable by wildcat banking.

6. Summary and conclusions

In this paper, we have examined and rejected the notion that free bank failures were primarily due to wildcat banking. We have also proposed, examined, and found considerable support for the hypothesis that free bank failures were caused by falling asset prices. The support found for our hypothesis, however, should not be interpreted as indicating that no questionable banking practices occurred during the Free Banking Era. No doubt there were some. The conclusion which should be drawn from our analysis is that these practices were not responsible for the vast majority of free bank failures.

Stated in other terms, our results indicate that, for the most part, free bank failures were not caused by individuals establishing free banks with the intention of having them fail. Rather, free banks failed when economic times turned bad and the value of their portfolios declined. Thus, the problems of banks during this period do not appear to have been different from those encountered by banks in other periods or by other types of industries.

The research presented in this paper and the conclusions which can be drawn from it suggest several avenues for future research on banking in general and free banking in particular. One is to examine the micro data on the individual banks to determine the reasons why some banks failed when times turned bad while others continued in business or closed without losses to noteholders under the same conditions. Another avenue

for future research is closely connected to the first and is suggested by an observation early in this paper. Free banks could have provided safe notes if they had purchased safe assets with their circulation. They did not, and we wonder why non-interest-bearing bank notes circulated when they were not safe. Research into this question could also determine whether the risk-taking of free banks was due to the regulations under which they operated or whether these regulations reduced the amount of risk which free banks undertook. Such research would shed light on the question of whether the problems of free banks were due to underregulation or overregulation.

Footnotes

*Part of Rolnick's work was done while he was Visiting Professor at Boston College, and part of Weber's work was done while he was Professor at Virginia Polytechnic Institute and State University. We thank the participants of the money workshops at Carnegie-Mellon University and the University of Rochester for many useful comments on an earlier version of this paper. We gratefully acknowledge the research assistance of Susan Mendesh, Herbert Miller, Maureen O'Connor, and Judy Sargent and the editorial assistance of Kathleen Rolfe. The views expressed are our own and not necessarily those of the Federal Reserve Bank of Minneapolis or the Federal Reserve System.

1/For quantitative evidence on the experiences of four states with free banking laws, see Rolnick and Weber (1983).

2/The term wildcat banking will be defined in section 3 (footnote 4). Rockoff is not the first to have proposed wildcat banking as the cause of free bank problems. For example, Dillistin (1949) offered the same explanation. However, Dillistin never attempted to test the empirical validity of the hypothesis. For a discussion of the origins of the term wildcat banking, see Dillistin (1949, pp. 61-63).

3/Falling asset prices is a standard explanation for other problem banking periods. See, for example, Fisher (1922, pp. 64-65). Our explanation of bank failures, therefore, does not rely on characteristics peculiar to free banking.

4/Rockoff's explicit definition of a wildcat bank is that it was a "bank that issued notes in a much greater volume than it could continuously redeem, and that came into being as a result of a liberal entry provision in a free banking law" (1975, p. 5). A similar definition is given by Dillistin

(1949). He defines a wildcat bank as "one which, before the enactment of the National Bank Act in 1863, issued notes in excess of its capacity to redeem them. . . . The first move of many organizers after getting their bank notes ready was to find a locality in which to circulate them remote from the point of issue, so that their return for redemption should be as tedious and difficult as possible" (1949, pp. 59-60).

Note that by this definition many of today's banks are wildcats since they could not "continuously redeem" their demand deposits if "continuously" is interpreted to mean "in all possible states of the world." Obviously, the concepts of continuous redemption and capacity for redemption of bank notes are too rigid for a definition of wildcat banks since they could be interpreted to mean that the only banks that were not wildcats were those with a value of safe assets equal to note (or deposit) issue, that is, those holding 100 percent specie reserves.

^{5/}These implications of the wildcatting explanation are different from those drawn by Rockoff (1975). He used increases in the number of free banks, increases in currency plus deposits, declines in the specie-to-note ratio, and declines in the currency-to-note ratio as indicators that wildcat banking was occurring. The major difficulty with these indicators is that they do not address the question of whether or not any free bank failures actually occurred since such behavior of aggregate statistics is consistent with a well-functioning, problem-free banking system responding to the economy. Our implications address the question of failure directly, and our tests consider individual bank experiences.

^{6/}One difficulty with our explanation of free bank failures is that it treats the capital structure of banks as exogenous. Thus, it does not address the question of why free banks did not use their circulation to

purchase safe assets, in which case their notes would have been safe and no failures, by our definition, could have occurred. An alternative way of forming this question is, Why did anyone hold risky free bank notes when safe specie was available? Some preliminary speculation on this question is given in Rolnick and Weber (1984). Here, however, we simply posit that such a demand for free bank notes did exist, in which case banks took on some term structure risk to increase their expected return.

7/ Under this explanation, the failure of a free bank is the way in which the value of the bank's notes depreciates in response to the depreciation of its portfolio. Another method by which this depreciation could have been achieved would have been to allow for temporary suspension of the requirement that bank notes had to be redeemed at par. During such a temporary suspension, bank notes could have traded at a discount for specie. Such temporary suspensions, however, were not permitted under the free banking laws, although a few occurred. Note depreciation, therefore, generally occurred through bank failures.

8/ Since we argue that the market valuation restriction is irrelevant to explaining free bank failures, we do not expect any implications of the wildcat banking hypothesis to be confirmed by the data. Nonetheless, since our hypothesis does not constitute a proper alternative to wildcat banking in a statistical sense, we cannot interpret evidence against that hypothesis as evidence in favor of ours.

9/ For New York, the time at which a free bank failed was determined from Dillistin (1946). For the other states, it was taken to be the time period between the date when the bank last appeared in a condition report and the date when the next set of condition reports appeared. Tables showing the dates at which banks appeared in condition reports are

given in an appendix to Rolnick and Weber (1983), which is available upon request. A description of the procedure to determine the length of time free banks existed in Indiana, Wisconsin, and Minnesota is also given in that paper.

10/We are uncertain of the basis for Rockoff's (1975, p. 107) claim that the Wisconsin bank commissioner was valuing Missouri state bonds at par sometime in the 1850s. Although the "Extracts from Governor Randall's message to the legislature of the state of Wisconsin, January 15, 1858," which Rockoff references at this point, does refer to some questionable practices in the state auditor's office, it does not refer to Missouri bonds being accepted at par.

11/We suspect, however, that two of Minnesota's seven short-lived failures, the Bank of the State of Minnesota and the Nicollet County Bank, went out of business for reasons unrelated to wildcat banking; capital losses on bank assets have been reported to be responsible [Patchin (1917), pp. 156-157]].

12/In addition to these 24 below-par closings, Indiana had 27 free banks which closed, but about which we were unable to obtain redemption rate information. Thus, it is possible that some or all of those were failures. Including them in our sample, however, would not change our major findings.

13/Recall that we have deliberately underestimated the amount of time that eight of these banks existed (see note c to table 5). The first condition report on Indiana banks was dated December 31, 1853, a year and a half after the free banking law was passed. In estimating the time banks existed, we have assumed that banks listed in this report opened in September 1853. Thus, it is possible that several of these banks did in fact exist longer than one year if they were started before September 1853.

^{14/}Rockoff's upper bound appears to be even lower than ours. He seems to suggest that the number of failures in New York due to wildcatting is 15 (those before September 30, 1841). He states, "In 1840 the law of 1838 was modified to permit only bonds and mortgages issued in New York State to serve as security for free bank notes. With this modification in place the free banking system was for the most part free of wildcat banking during the following decades" (1975, p. 119).

^{15/}The 1852 report of the New York superintendent of banks indicates that after 1849 the Bank of New Rochelle changed location twice and that the losses to noteholders occurred primarily due to an overvalued mortgage used to secure circulation [New York, Bank Department (1852, pp. 49-53)].

^{16/}The Indiana data are end of month prices; the Missouri data, end of week prices. For both series, some additional observations are included to illustrate extreme prices. The data are collected from various issues of the Bankers' Magazine and Hunt's Merchants' Magazine and Commercial Review. We have not been able to obtain bond prices before 1841.

^{17/}Since the possibility of states defaulting on or repudiating their debts arose as early as the fall of 1839, the decline in Indiana state bond prices may have begun before January 1841 and been more severe than our numbers indicate. See Ratchford (1941, pp. 96-100).

^{18/}Because of the scarcity of data, the end of this decline is very difficult to date. The decline may have been shorter and more severe.

^{19/}For comparison during this period, the prices of Virginia 6s declined about 59 percent; North Carolina 6s, 56 percent; and Louisiana 6s, 53 percent. In contrast, the price of Indiana 5s only declined 20 percent. Note also that, after June 1861, the prices of state bonds (both northern and southern) rose throughout the rest of the Civil War.

20/ As the notes to table 9 indicate, for New York we have classified the three below-par closings which occurred during 1840 and the two below-par closings which occurred during 1844 as being in periods of price declines, even though we cannot determine if this was true. Eliminating these five New York banks from the total which failed during periods of bond price declines, we still find that 59 percent of New York failures and 75 percent of all failures occurred during such periods.

21/ While we have been unable to find data on the prices of Minnesota railroad bonds which backed the note issue of the other seven below-par failures, we suspect that these prices declined over the summer of 1858 and could have caused the failures. Thus, the evidence from Minnesota could be consistent with our hypothesis.

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Table 1
Major provisions of the free banking laws
in 4 of the 18 states that adopted free banking

	NEW YORK		INDIANA		WISCONSIN		MINNESOTA	
Year law passed and years of major amendments	<u>1838</u> <u>1840</u> <u>1846</u>	(New constitution)	<u>1852</u> <u>1855</u> <u>1861</u>		<u>1852</u> <u>1858</u> <u>1861</u>		<u>1858</u> <u>1860</u> <u>1861</u>	
Bonds eligible to secure notes; rate of eligibility; maximum valuation	<u>1838</u> <u>1840</u>	US, NY, all states approved by comptroller, and mortgages; 100% valued at par. NY only and mortgages; 100%; minimum of market, par.	<u>1852</u> <u>1855</u> <u>1861</u>	US, IN, and states regularly paying interest; 100%; minimum of market, par. US, IN, and states regularly paying interest; 91%; minimum of market, par. IN only; 95%; minimum of market, par.	<u>1852</u> <u>1861</u>	US, WI, states paying full interest, and railroad bonds; 100%; minimum of market, par. US, WI; 100% if selling above par for the preceding 6 months, otherwise 90%.	<u>1858</u> <u>1858</u> <u>1860</u> <u>1861</u>	US, MN, and states paying full interest if not selling below par for the preceding 6 months; 100%; minimum of market, par. US bonds and MN railroad bonds at par; other bonds same as in original law. US and states paying full interest; 100%; minimum of market, par. US; 100%; market.
Capital requirement	<u>1838</u>	Minimum \$100,000.	<u>1852</u>	None.	<u>1852</u>	Minimum \$25,000; maximum \$500,000.	<u>1858</u>	Minimum \$25,000.
Liability of shareholders	<u>1838</u> <u>1846</u>	Limited liability. Individuals responsible for all bank debts above their stock, equal to their respective shares of stock, effective January 1, 1850.	<u>1852</u> <u>1855</u>	Individuals responsible for all bank debts above their stock, equal to their respective shares of stock. Responsible for debts of all free banks.	<u>1852</u> <u>1861</u>	Personal bond equal to 25% of notes issued. Individuals responsible for all bank debts above their stock, equal to their respective shares of stock. Liability extended to 6 months after shares sold.	<u>1858</u>	Personal bond equal to 25% of notes issued. Individuals responsible for all bank debts up to twice the amount of capital owned. Liability extends 1 year after shares sold.
Specie requirement	<u>1838</u> <u>1840</u>	12 1/2%. Repealed.	<u>1852</u> <u>1855</u>	12 1/2%. Omitted and never reenacted.	<u>1852</u>	None.	<u>1858</u>	None.
Note volume limitation	<u>1838</u>	No limit except bond requirement.	<u>1852</u> <u>1855</u>	No limit except bond requirement. Circulation of any one bank limited to \$200,000; all banks' total limited to \$6 million.	<u>1852</u> <u>1858</u> <u>1861</u>	No limit except bond requirement. Limited to capital stock. Limited to capital stock paid in.	<u>1858</u>	No limit except bond requirement.
Redemption failure penalty due note-holders	<u>1838</u> <u>1840</u>	14% per annum. 20% per annum.	<u>1852</u> <u>1855</u>	None. 10% per annum.	<u>1852</u>	5% per annum.	<u>1858</u>	None.
Noteholder protection besides bonds (public and personal)	<u>1846</u>	Noteholders had preference over all other bank creditors.	<u>1852</u>	Noteholders had preference over all other bank creditors.	<u>1852</u>	None.	<u>1858</u>	Noteholders had preference over all other bank creditors.
Rules for paying bank interest on bonds	<u>1838</u>	Banks were entitled to interest on bonds as long as they continued to redeem their notes and maintained value of bonds securing notes.	<u>1852</u>	Banks were entitled to interest on bonds as long as they continued to redeem their notes and maintained value of bonds securing notes.	<u>1852</u>	Banks were entitled to interest on bonds as long as they continued to redeem their notes and maintained value of bonds securing notes.	<u>1858</u>	Banks were entitled to interest on bonds as long as they continued to redeem their notes and maintained value of bonds securing notes.

Table 2

The balance sheet of a prototypical free bank

Assets		Liabilities and capital	
State bonds	\$ 50,000	Liabilities Notes outstanding	\$50,000
Loans	40,000	Capital	50,000
Specie	10,000		
Total	\$100,000	Total	\$100,000

Table 3

The balance sheet of a hypothetical wildcat bank

Assets		Liabilities and capital	
State bonds	\$ 50,000	Liabilities	
		Notes outstanding	\$100,000
Loans	100,000	Capital	50,000
Total	\$150,000	Total	\$150,000

Table 4

Estimated duration and bond holdings at closing
of Minnesota's failed free banks, 1858-1863

	<u>Estimated duration</u>		Months in business	<u>Bonds deposited with state auditor^b</u>		
	<u>Date^a</u>			Type	Amount	As of
	Opened	Closed				
Bank of Rochester	4/20/59	5/59-6/59	1	Minnesota 7s	\$52,000	6/15/59
Bank of Owatonna	3/7/59	7/59-9/59	5	Minnesota 7s	41,000	7/10/59
Chisago County Bank	3/9/59	7/59-9/59	5	Minnesota 7s	35,000	9/1/59
Exchange Bank	11/12/58	7/59-9/59	8	Minnesota 7s	64,000	8/1/59
Fillmore County Bank	5/28/59	7/59-9/59	3	Minnesota 7s	33,000	7/15/59
Bank of the State of Minnesota	11/11/58	10/59-12/59	11	Minnesota 8s Minnesota 10s	15,000 10,000	10/15/59
Nicollet County Bank	2/4/59	10/59-12/59	9	Minnesota 10s	20,000	11/1/59
Bank of St. Paul	1/15/59	6/22/61	30	Minnesota 7s	30,000	6/22/61
Central Bank	6/9/59	6/28/61	24	Minnesota 7s	27,000	6/28/61

^aDate opened taken to be when notes were first issued by the state auditor. Date closed based on appearances in condition reports or state auditor reports, as available.

^bType and amount of bonds are those on the ledger of the state auditor.

Table 5

Estimated duration and bond holdings at closing
of Indiana's failed free banks, 1852-1863

	<u>Estimated duration</u>		Years in business	<u>Bonds deposited with state auditor^b</u>		
	<u>Date^a</u>			Type	Amount	As of
	Opened	Closed				
Merchants' Bank, Lafayette	6/52-12/53	1/54-6/54	0.5	Indiana 5s	\$ 22,400	12/54
Bank of Albany	6/52-12/53	7/54-1/55	1.0	Indiana 5s	23,000	12/54
Bank of Attica	1/54-6/54	7/54-1/55	0.5	Indiana 5s	108,800	12/54
Bank of Connorsville	6/52-12/53	7/54-1/55	1.0	Indiana 5s Ohio 6s	359,500 11,000	12/54
Elkhart County Bank	6/52-12/53	7/54-1/55	1.0	Indiana 2½s Virginia 6s	50,000 56,000	12/54
Government Stock Bank	6/52-12/53	7/54-1/55	1.0	Indiana 5s Missouri 6s	24,000 2,000	12/54
Kalamazoo Bank	1/54-6/54	7/54-1/55	0.5	N. Carolina 6s Virginia 6s	25,000 25,000	12/54
Laurel Bank	1/54-6/54	7/54-1/55	0.5	Indiana 5s	56,000	12/54
Public Stock Bank	6/52-12/53	7/54-1/55	1.0	Indiana 5s	50,000	12/54
State Stock Bank, Marion	1/54-6/54	7/54-1/55	0.5	Louisiana 6s Virginia 6s	25,000 23,000	12/54
State Stock Bank of Indiana	6/52-12/53	7/54-1/55	1.0	Indiana 5s	121,300	12/54
Wabash Valley Bank	6/52-12/53	7/54-1/55	1.0	Indiana 2½s Indiana 5s	117,299 10,000	12/54
Atlantic Bank ^c	—	—	0.0	Indiana 2½s Virginia 6s	23,589 5,000	12/54
Bank of America ^c	—	—	0.0	Indiana 5s	50,000	12/54
Bank of Bridgeport ^c	—	—	0.0	Indiana 5s	19,000	12/54
Bank of T. Wadsworth ^c	—	—	0.0	Missouri 6s	5,000	12/54

Table 5 (continued)

	Estimated duration		Years in business	Bonds deposited with state auditor ^b		
	Date ^a			Type	Amount	As of
	Opened	Closed				
Farmers' Bank, Jasper ^c	—	—	0.0	Indiana 5s Pennsylvania 5s	\$ 5,000 48,000	12/54
Green County Bank ^c	—	—	0.0	Indiana 5s	80,000	12/54
Northern Indiana Bank ^c	—	—	0.0	Indiana 5s	78,000	12/54
Traders' Bank, Nashville ^c	—	—	0.0	Indiana 5s	75,400	12/54
Merchants' Bank, Springfield	12/54-1/55	12/54-1/55	0.0	— ^d	— ^d	12/54
Bank of North America, Clinton	1855	1/56-6/56	1.0	Indiana 5s Missouri 6s Virginia 6s	7,000 6,000 4,000	1/56
Savings Bank	1855	1/56-6/56	1.0	Louisiana 6s Missouri 6s Virginia 6s	1,000 2,000 2,000	1/56
Bloomington Bank	7/56-6/57	7/60-12/60	3.5	Missouri 6s	100,000	10/60

^aDates are based on appearances in condition reports or state auditor reports, as available.

^bType and amount of bonds are those on state auditor reports.

^cThis bank did not appear in any condition reports, so we can only determine that it opened and closed between May 28, 1852, and January 25, 1855. Because the bank did not appear in any report, we assume it must have existed a very short time. Thus, we take years in business to be zero.

^dNot available.

Table 6

Estimated duration and bond holdings at closing
of Wisconsin's failed free banks, 1852-1863

	<u>Estimated duration</u>		Years in business	<u>Bonds deposited with state auditor^b</u>		
	<u>Date^a</u>			Type	Amount	As of
	Opened	Closed				
Bank of North America	7/58	1860	2.0	Illinois 6s Ohio 6s Tennessee 6s	\$ 9,200 78,000 13,000	2/60
Arctic Bank	8/57	1861	4.0	Missouri 6s Tennessee 6s Virginia 6s	185,000 2,000 43,000	2/60
Bank of Albany	9/59	1861	2.0	Missouri 6s	30,000	2/60
Bank of Appleton	1859	1861	2.0	Missouri 6s	58,000	2/60
Bank of Beaver Dam	11/59	1861	1.5	Missouri 6s Tennessee 6s	13,000 12,000	2/60
Bank of Eau Claire	9/57	1861	4.0	Illinois 6s Missouri 6s N. Carolina 6s Virginia 6s	20,530 ^c 18,000 1,000 51,000	1861
Bank of Fond du Lac	1/54-6/54	2/25/61	7.5	Indiana 5s Missouri 6s Tennessee 6s	9,000 16,000 22,000	2/60
Bank of Horicon	9/59	1861	2.0	Missouri 6s Tennessee 6s	48,000 3,000	2/60
Bank of Portage	1858	1861	3.0	Illinois 6s Michigan 6s N. Carolina 6s Tennessee 6s	18,200 14,000 16,000 2,000	2/60
Beloit Savings Bank	10/59	1861	2.0	Missouri 6s Tennessee 6s Virginia 6s	1,000 12,000 10,000	2/60
Chippewa Bank	11/56	1861	4.0	Illinois 6s N. Carolina 6s Ohio 6s Other	6,400 10,000 6,000 5,000	2/60
Citizens' Bank	11/59	1861	1.5	N. Carolina 6s	25,000	2/60

Table 6 (continued)

	<u>Estimated duration</u>		Years in business	<u>Bonds deposited with state auditor^b</u>		
	<u>Date^a</u>			Type	Amount	As of
	Opened	Closed				
City Bank, Beaver Dam	8/57	1861	4.0	Illinois 6s Missouri 6s Tennessee 6s Other	\$16,000 8,000 15,000 14,000	2/60
Dodge County Bank	1857	1861	4.0	N. Carolina 6s Tennessee 6s Other	11,000 10,000 1,000	2/60
Hall & Brother's Bank	1857	1861	4.0	Missouri 6s	60,000	2/60
Katanyan Bank	6/56	1861	5.0	Missouri 6s Tennessee 6s	46,000 3,000	2/60
Koshkonong Bank	1859	3/19/61	2.0	Missouri 6s N. Carolina 6s Other	25,000 ^c 12,000 11,000	3/19/61
Laborers' Bank	7/58	1861	3.0	Louisiana 6s N. Carolina 6s	24,000 11,000	2/60
Lake Shore Bank	12/58	1861	2.5	Missouri 6s N. Carolina 6s Wisconsin 6s Other	5,000 9,000 5,000 8,000	2/60
Manitowac County Bank	10/57	1861	4.0	Missouri 6s Wisconsin 6s Georgia 7s	2,000 10,000 20,000	2/60
Mechanics' Bank	1858	1861	3.0	Missouri 6s	20,000	2/60
Mercantile Bank	1856	1861	5.0	Louisiana 6s Missouri 6s Other	11,000 9,000 4,000	2/60
Northwestern Bank	1856	1861	5.0	Louisiana 6s N. Carolina 6s Tennessee 6s Virginia 6s	16,000 14,000 12,000 1,500	2/60

Table 6 (continued)

	<u>Estimated duration</u>		Years in business	<u>Bonds deposited with state auditor^b</u>		
	<u>Date^a</u>			Type	Amount	As of
	Opened	Closed				
Oconto County Bank	1858	1861	3.0	Michigan 6s Missouri 6s Tennessee 6s Wisconsin 6s Other	\$ 9,000 8,000 20,000 8,000 8,000	2/60
Osborne Bank of New London	1858	1861	3.0	Georgia 6s Louisiana 6s N. Carolina 6s Tennessee 6s	5,500 7,000 12,000 27,000	2/60
Portage County Bank	1859	1861	2.0	Missouri 6s N. Carolina 6s Other	33,000 19,000 4,000	2/60
Reedsburg Bank	1859	1861	2.0	Missouri 6s Tennessee 6s	2,000 34,000	2/60
Southern Bank	1860	1861	1.0	— d	— d	
State Stock Bank	1858	1861	3.0	Michigan 6s Missouri 6s Tennessee 6s Other	31,000 258,000 21,000 12,000	2/60
St. Croix River Bank	1857	1861	4.0	Illinois 6s Louisiana 6s Missouri 6s N. Carolina 6s Other	11,040 9,500 30,000 6,000 10,500	2/60
Tradesman's Bank	1858	1861	3.0	Missouri 6s N. Carolina 6s Tennessee 6s Virginia 6s	5,000 12,500 60,000 9,600	2/60
Waupun County Bank	7/58	1861	3.0	Illinois 6s Missouri 6s N. Carolina 6s Tennessee 6s Other	16,140 6,000 20,000 7,000 3,500	2/60

Table 6 (continued)

	Estimated duration		Years in business	Bonds deposited with state auditor ^b		
	Date ^a			Type	Amount	As of
	Opened	Closed				
Waupun Bank	8/56	1861	5.0	Indiana 5s Missouri 6s Other	\$10,000 15,000 3,000	2/60
Waushara County Bank	1860	1861	1.0	— ^d	— ^d	
Winnepago County Bank	9/55	1861	6.0	Missouri 6s Virginia 6s	19,000 10,000	2/60
Wisconsin Valley Bank	1858	1861	3.0	Missouri 6s Tennessee 6s Wisconsin 6s	65,000 25,000 10,000	2/60
Wood County Bank	1859	1861	2.0	Missouri 6s N. Carolina 6s Wisconsin 6s Other	19,000 15,500 5,000 10,000	2/60

^aDates are based on appearances in condition reports or state auditor reports, as available.

^bType and amount of bonds are those on state auditor reports.

^cActual amounts at time of closing.

^dNot available.

Table 7

Estimated duration and bond and mortgage holdings at closing
of New York's failed free banks, 1838-1863

	Estimated duration			Bonds and mortgages deposited		
	Date ^a		Years in business	with state auditor ^b		
	Opened	Closed		Type	Amount	As of
Bank of Tonawanda	1838	1840	2.0	Illinois 6s	\$ 20,000	12/39
Farmers' Bank of Seneca County	1839	1840	1.0	Alabama 5s	20,000	12/39
				Indiana 5s	6,000	
				Michigan 6s	10,000	
				Mortgages	19,534	
Millers' Bank of New York	12/38	1840	1.5	Michigan 5s	25,000	12/39
				Arkansas 6s	70,000	
				Mortgages	57,900	
Bank of America at Buffalo	1839	11/40-9/41	1.5	Indiana 5s	35,000	11/40
				New York 5s	15,000	
				New York 5½s	5,000	
				Mortgages	31,098	
Bank of Commerce at Buffalo	1839	11/40-9/41	1.5	Indiana 5s	65,000	11/40
				Illinois 6s	96,000	
Bank of Lodi	1839	11/40-9/41	1.5	New York 5s	3,000	11/40
				New York 5½s	1,000	
				Arkansas 6s	10,000	
				Illinois 6s	5,000	
				Michigan 6s	10,000	
				Mortgages	19,153	
Bank of Western New York	7/38	11/40-9/41	2.5	Indiana 5s	100,000	11/40
Binghamton Bank	1839	11/40-9/41	1.5	Indiana 5s	35,000	11/40
				Mortgages	7,600	
Cattaragus County Bank	1840	11/40-9/41	0.5	New York 5s	12,000	11/40
				New York 5½s	8,000	
				Arkansas 6s	5,000	
				Illinois 6s	7,000	
				Mortgages	26,300	
Erie County Bank	1838	11/40-9/41	2.5	Indiana 5s	91,000	11/40
				New York 5s	9,000	
				Mortgages	35,750	

Table 7 (continued)

	Estimated duration		Years in business	Bonds and mortgages deposited with state auditor ^b		
	Date ^a			Type	Amount	As of
	Opened	Closed				
Mechanics' Bank of Buffalo	1839	11/40-9/41	1.5	New York 5s Arkansas 6s Illinois 6s Mortgages	\$ 18,150 19,000 23,000 48,800	11/40
Merchants' Exchange Bank of Buffalo	1839	11/40-9/41	1.5	Indiana 5s Mortgages	110,000 20,000	11/40
Phoenix Bank of Buffalo	1839	11/40-9/41	1.5	New York 5s Arkansas 6s Mortgages	9,200 6,000 13,725	11/40
Union Bank of Buffalo	1839	11/40-9/41	1.5	New York 5s Illinois 6s	14,000 56,000	11/40
United States Bank at Buffalo	1838	11/40-9/41	2.5	Indiana 5s Arkansas 6s	4,000 20,500	11/40
Allegany County Bank	1839	3/42 ^c	2.5	Indiana 5s	20,000	11/40
Bank of Olean	1840	3/42 ^c	1.5	Indiana 5s New York 5s Illinois 6s Mortgages	7,000 53,000 19,000 40,231	11/40
St. Lawrence Bank	1839	3/42 ^c	2.5	Arkansas 6s Illinois 6s Mortgages	45,000 ^d 15,000 21,277	3/42
State Bank of New York at Buffalo	1839	3/42 ^c	2.5	Illinois 6s	5,000 ^d	3/42
Staten Island Bank	10/38	3/42 ^c	3.5	Indiana 6s Mortgages	36,000 41,500	11/40
New York Banking Co.	1838	10/42	4.0	Illinois 6s Michigan 6s	20,000 ^d 6,000	10/42
Chelsea Bank	1839	1/43	3.5	Arkansas 6s	1,000	12/41
Tenth Ward Bank	1838	1/43	4.5	Alabama 5s	25,000	12/39

Table 7 (continued)

	Estimated duration			Bonds and mortgages deposited		
	Date ^a		Years in business	with state auditor ^b		
	Opened	Closed		Type	Amount	As of
Bank of Brockport	1839	1/44-11/44	5.0	New York 5s Illinois 6s Mortgages	\$10,000 5,000 13,425	12/43 ^e
Clinton Bank	1839	1/44-11/44	5.0	Illinois 6s	35,000	12/41 ^f
Atlas Bank of New York	1847	12/47	0.5	— g	— g	
Bank of New Rochelle ^h	1844	10/51	7.0	New York 5s Mortgages	76,481 ^d 63,913	10/51
James Bank	1839	10/51	12.0	New York 5s U.S. 5s Michigan 6s New York 6s Mortgages	10,000 ^d 500 18,000 6,000 39,888	10/51
Farmers' Bank of Onondaga	1852	1853	1.0	— g	— g	
Merchants' and Mechanics' Bank of Oswego	1852	1/54	1.5	— g	— g	
Eighth Avenue Bank	1853	10/54	1.0	— g	— g	
Hamilton Exchange Bank	1850	1/57-9/57	7.0	New York 5s U.S. 5s New York 5½s U.S. 6s	26,000 14,000 1,000 10,000	12/50
Pratt Bank of Buffalo	1847	1/58-12/58	11.0	New York 5s U.S. 5s	25,000 25,000	12/50
Cataract Bank	1858	1/61-12/61	3.0	— g	— g	

Table 7 (continued)

^aDates are based on condition reports and Dillistin (1946).

^bType and amount of bonds and mortgages are those on state auditor reports.

^cDillistin (1946) lists these failures as occurring in "approximately March, 1842."

^dAmounts at time of failure.

^eEstimated date. The condition report is contained in a comptroller's report dated 1/31/44.

^fAlso listed in a report which we list as December 1843 (see note e). However, at that time, the holdings of Illinois 6s were only \$6,000.

^gNot available.

^hThis bank's major loss was from the mortgages that had been overvalued. Only the bank's assets deposited with the state auditor were sold at the time of failure.

Table 8

Number of free bank failures, 1838-1863,
by number of years in business

Years	Banks in				
	New York (1838-1863)	Indiana (1852-1863)	Wisconsin (1852-1863)	Minnesota (1858-1863)	Four states
0.0 ^a	0	9	0	4	13
0.5	2	5	0	3	10
1.0	3	9	2	0	14
1.5	11	0	2	0	13
2.0	1	0	9	1	11
2.5	6	0	1	1	8
3.0	1	0	9	0	10
3.5	2	1	0	0	3
4.0	1	0	8	0	9
4.5	1	0	0	0	1
5.0	2	0	4	0	6
5.5	0	0	0	0	0
6.0	0	0	1	0	1
6.5	0	0	0	0	0
7.0	0	0	0	0	0
7.5	2	0	1	0	3
8.0	0	0	0	0	0
8.5	0	0	0	0	0
9.0	0	0	0	0	0
9.5	0	0	0	0	0
10.0	0	0	0	0	0
10.5	0	0	0	0	0
11.0	1	0	0	0	1
11.5	0	0	0	0	0
12.0	1	0	0	0	1
Total	34	24	37	9	104

^aBanks that did not appear in any condition report are counted in this row.

Table 9

Number of free bank failures during periods
of major declines in asset prices, 1841-1861

	Banks in				
	New York	Indiana	Wisconsin	Minnesota	Four states
<u>Periods of major declines</u>					
1/41-4/42	20 ^a	0	0	0	20
5/44-7/46	2 ^b	0	0	0	2
7/54-12/54	1	11	0	0	12
3/57-10/57	1	0	0	0	1
6/60-6/61	1	1	37 ^c	2	41
<u>Periods between major declines</u>					
5/42-4/44	3	0	0	0	3
8/46-6/54	5	1	0	0	6
1/55-2/57	0	3	0	0	3
11/57-5/60	1	0	0	7	8
<u>Total</u>					
All periods	34	16 ^d	37	9	96
Periods of declines	25 (74) ^e	12 (75)	37 (100)	2 (22)	76 (79)
Periods between declines	9 (26)	4 (25)	0 (0)	7 (78)	20 (21)

Table 9 (continued)

^aWe have included the three New York failures which occurred in 1840 in this total. (See footnote 17.)

^bThese failures are the Bank of Brockport and the Clinton Bank, which we could only determine closed between January and November 1844.

^cAll 37 Wisconsin failures are included here because the "Annual report of the bank comptroller for the year ending October 1, 1861" makes it clear that these failures were caused by the fall in the prices of the bonds of southern states.

^dOnly 16 of the 24 below-par closings in Indiana during this period are included since we cannot accurately date 8 closings. See table 5.

^eNumbers in parentheses indicate the percentages of the total.

Table 10

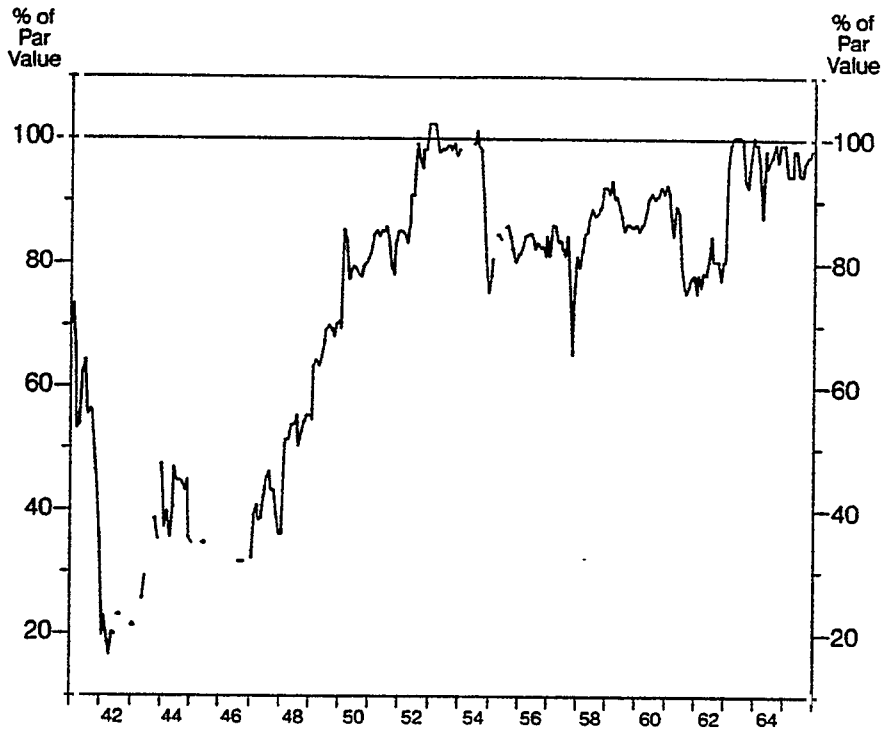
Consistency with competing explanations
of free bank failures in Minnesota, Indiana, Wisconsin, and New York

		Falling asset price explanation	
		<u>Consistent</u>	<u>Not consistent</u>
Wildcat banking explanation	Consistent	2	11
	Not consistent	74	9

Legends for figures

Fig. 1 Indiana state bond prices, 1841-1865
(prices of Indiana 5s).

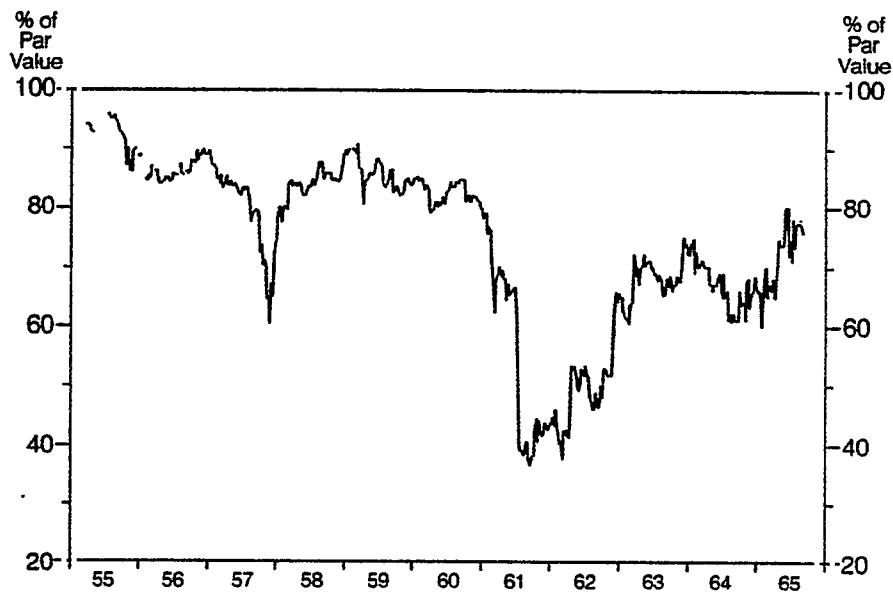
Fig. 2 Missouri state bond prices, 1855-1865
(prices of Missouri 6s).



Note: Most of the graph shows one plot per month, a price for a day near the end of the month, as available. More than one plot per month is shown as needed to illustrate extreme prices. Gaps in the line are due to unavailable data.

Sources: Hunt's Merchants' Magazine and Commercial Review, Bankers' Magazine

Fig. 1. Indiana state bond prices, 1841-65
(prices of Indiana 5s).



Note: The graph shows one plot per week, a price for a day near the end of the week, as available. Gaps in the line are due to unavailable data.

Sources: Hunt's Merchants' Magazine and Commercial Review, Bankers' Magazine

Fig. 2. Missouri state bond prices, 1855-65
(prices of Missouri 6s).