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**INHERENT INSTABILITY IN BANKING:  
THE FREE BANKING EXPERIENCE**

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Historically, even some of the staunchest proponents of laissez-faire have viewed banking as inherently unstable and so requiring government intervention. According to this view, left to unfettered market forces, banks are prone to periodic runs and failures simply because of unpredictable private decisions about the form in which individuals hold their money.

This view arose not from any explicit theory that points to an inherent problem with a laissez-faire banking system, but from experience with U.S. banking that goes back at least 150 years. In particular, the Free Banking Era (1837-63) is often cited as an example of what would happen if banking were unregulated. It was a period when banks were subject to few restrictions, fewer than any other period in U.S. banking history. And it has often been characterized as chaotic, with many different kinds of paper money, with numerous bank runs and failures, and with substantial losses and inconvenience to holders of bank notes. Some even claim that the U.S. economy would not have grown as robustly as it did late in the 19th century if the free banking system had been left in place (Cagan 1963).

In this paper we reexamine the view that banking is inherently unstable by taking a closer look at the free banking experience. Based on rather extensive empirical evidence recently accumulated on this experience, we find that the problems with free banking were not caused by anything inherent in banking. Rather, we find that the problems were caused by economic shocks that caused many banks to fail but did not lead to bank runs or panics.

We proceed as follows. Since many readers may not be familiar with the Free Banking Era, first we briefly discuss how a free bank was regulated and operated and briefly review what happened under this sys-

tem. Then we discuss the concept of inherent instability in banking by contrasting two common notions of it. One is that banking problems arise because of extrinsic uncertainty; bank creditors randomly decide to withdraw their funds. Enough of these withdrawals can become contagious and lead to a run on the whole system. The other notion is that banking problems arise because of intrinsic uncertainty; local real shocks reduce the value of some banks' assets, and their creditors begin to withdraw funds. Because of asymmetric information about the quality of bank assets generally, these withdrawals can become contagious and lead to a run on the whole system. Next we present evidence from the Free Banking Era on the causes of banking problems and conclude that the free banking experience did not fit either notion of inherent instability. Finally, we examine possible reasons for these findings and discuss their implications for bank regulation.

### An Overview of Free Banking

#### Bank Laws and Operations

Before 1837, all new U.S. banks had to be chartered by a state legislature. Although these charters differed from bank to bank and from state to state, generally they established reserve and capital requirements for a bank and limited the types of loans it could make. In practice, the chartering system was a cumbersome and very political process that severely limited the number of banks opened.

The Free Banking Era derives its name from the free entry provision of the general banking laws passed by many states starting in 1837. (By 1860, a majority of the 33 states in the Union had passed such laws. See Table 1.) Free entry meant that a legislative charter was no longer required for a bank to be established. The free banking laws essen-

Table 1  
States with and without Free Banking Laws by 1860

States with Free Banking Laws	Year Passed Law	States without Free Banking Laws
Michigan	1837 <sup>a</sup>	Arkansas
Georgia	1838 <sup>b</sup>	California
New York	1838	Delaware
Alabama	1849 <sup>b</sup>	Kentucky
New Jersey	1850	Maine
Illinois	1851	Maryland
Massachusetts	1851 <sup>b</sup>	Mississippi
Ohio	1851	Missouri
Vermont	1851 <sup>b</sup>	New Hampshire
Connecticut	1852	North Carolina
Indiana	1852	Oregon
Tennessee	1852 <sup>b</sup>	Rhode Island
Wisconsin	1852	South Carolina
Florida	1853 <sup>b</sup>	Texas
Louisiana	1853	Virginia
Iowa	1858 <sup>b</sup>	
Minnesota	1858	
Pennsylvania	1860 <sup>b</sup>	

<sup>a</sup>Michigan prohibited free banking in 1840 and allowed it again in 1857.

<sup>b</sup>According to Rockoff 1975, very little free banking was done under the laws in these states.

Source: Rockoff 1975, pp. 3, 125-30

tially allowed anyone to open a bank, issue their own currency (bank notes), take deposits, and make loans.

The Free Banking Era was not a period of laissez-faire banking, however, since banks established under the free banking laws were subject to certain restrictions. Most of the free banking laws were patterned on that passed by the New York legislature in 1838 (and amended in 1840). They thus contained its three regulations intended to insure the safety of free bank note issue:

- Free banks had to deposit designated state bonds with the state banking authority (state auditor or treasurer) as security for all notes issued. (Some states also allowed federal bonds.)
- Free banks had to pay specie (gold or silver) for notes on demand. Failure to redeem even one note meant that the state banking authority would close the bank and sell all of the assets deposited with it to pay off noteholders. Further, in many states, noteholders had preference over other bank creditors in terms of legal claims on the remaining assets of the bank.
- In general, free bank stockholders were liable for bank losses in an amount up to the value of their stock even though free banks were limited liability companies. This double liability provision meant that, if a bank failed, someone with, say, \$25,000 of free bank stock not only might lose this investment, but also would be liable for an additional \$25,000 of personal wealth to cover bank losses (including those on notes).

Under these laws, a prototypical free bank would be established and operate as follows. Suppose that a potential banker had \$50,000 of capital. To establish a free bank, that person would buy state bonds with this capital and deposit them with the state auditor. In exchange, the person would receive \$50,000 of notes that the new bank could issue.

Presumably, these notes would get into circulation by being exchanged for other assets (loans, specie, or more state bonds, for example).

The balance sheet of a prototypical free bank would look something like Table 2. This table assumes the free banker exchanged the initial \$50,000 of notes for \$25,000 of state bonds and \$25,000 of loans. These additional \$25,000 of bonds were then deposited with the auditor for another \$25,000 of notes which were finally exchanged for another \$15,000 of loans and \$10,000 of specie.

As Table 2 clearly illustrates, the profitability of free banking was due to the leverage provided by the bank notes. Here the free banker obtained \$115,000 of earning assets with only \$50,000 of capital.

This example also shows that the double liability provision did not assure the safety of a free bank's notes. Here the value of the bank's assets plus the \$50,000 additional liability of stockholders would be insufficient to pay off noteholders if the value of the bank's state bonds and loans fell below \$15,000.

### Bank Failures

In a previous study (Rolnick and Weber 1983) we presented detailed evidence on the free banking experience of four states: New York, Indiana, Wisconsin, and Minnesota. Our evidence, which was based on state auditor data, indicated that, although free banking in these states had problems, the problems were not as severe as has been thought. These were our major findings:

- Very few free bank closings involved losses to noteholders; that is, by our definition, very few failed.<sup>1/</sup> Between 1838 and 1863, 709 free banks operated in the four states and 48 percent of them closed. However, only about one-third of the closings resulted in any losses to noteholders.

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Table 2  
Balance Sheet of a Prototypical Free Bank

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Assets		Liabilities and Capital	
State Bonds	\$ 75,000	Liabilities: Notes Outstanding	\$ 75,000
Loans	40,000		
Specie	10,000	Capital	50,000
Total	\$125,000	Total	\$125,000

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- Free bank notes were quite safe. For most years and most states, the expected loss from holding a randomly selected bank note for one year was zero. Further, when noteholders suffered losses, they ranged from an average of about 25 cents on the dollar in New York and Wisconsin to an average between 10 and 15 cents on the dollar in Indiana. (We exclude Minnesota here because we think our earlier loss calculations for that state are far too high. We explain why in Rolnick and Weber 1985.)
- Most of the free banks were not short-lived. Between 1838 and 1863, New York, Wisconsin, and Indiana free banks were in business a mean of 6.3 years. To put this calculation in perspective, note that Wisconsin and Indiana did not pass free banking laws until 1852. (Minnesota, excluded here too, did not pass a free banking law until 1858.)

### Inherent Instability in Banking

There is no agreement on a precise definition of inherent instability in banking. However, the conventional view is that inherent instability means that bank runs and panics can occur without economy-wide real shocks. There seem to be two general explanations for how this can happen.

One explanation depends on some extrinsic uncertainty in the economy causing individuals to randomly change their demand for bank notes relative to specie for apparently irrational reasons (attributed to, for example, sunspots or animal spirits). If the direction of the demand switch is from bank notes to specie, then even good banks (banks with assets greater than liabilities) will have trouble meeting the demand for specie because only a fraction of their notes are backed with perfectly safe assets.<sup>2/</sup> This trouble spreads as noteholders begin to worry about other banks, and this contagious effect (the bank panic) leads to widespread bank failures. An explicit model that incorporates this view of inherent instability is Diamond and Dybvig's (1983).



An alternative, but closely related, explanation for bank runs and panics relies on intrinsic uncertainty in the form of local real shocks and on asymmetrically informed noteholders.<sup>3/</sup> According to this explanation, a local real shock to the economy causes the value of the assets of some banks to fall below the value of their liabilities and thus causes individuals to want to redeem the notes of these banks. The desire of these noteholders to switch to specie or to notes of other banks is quite rational, and if noteholders have full information no panic or run will result. Since the real shock is local, it does not affect the assets of some banks, so informed noteholders will not withdraw funds from them.

Asymmetrically informed noteholders, however, can turn the local shock into a bank run. If noteholders are ill-informed about the value of bank assets, then they cannot perfectly distinguish the sound banks from the unsound ones. Thus, they interpret the runs at some banks as a signal that other banks may be in trouble. That is, here as in the other explanation, bank runs are contagious because noteholders use the observation of runs at some banks to revise their views about the safety of others.

The following quotation shows that this type of explanation of bank runs corresponds to that of Friedman and Schwartz (1963, p. 308) for the events of 1930:

A crop of bank failures, particularly in Missouri, Indiana, Illinois, Iowa, Arkansas, and North Carolina, led to widespread attempts to convert demand and time deposits into currency. . . . A contagion of fear spread among depositors, starting from the agricultural areas, which had experienced the heaviest impact of bank failures in the twenties. But such contagion knows no geographical limits.

An important additional aspect of the inherent instability which is attributed to asymmetric information is that the general fear can turn some financially sound banks into insolvent ones. Obviously, the local real shock will cause the value of some assets to fall because some banks will have to liquidate assets. With complete information, depositors with rational expectations would be able to determine the new level of asset prices, and banks with assets sufficient to cover liabilities would not be run. With asymmetric information, however, asset prices can be lower than their full information level because the specie demands of fearful depositors will cause more banks to have to liquidate assets. And at these lower asset prices, fewer banks will have assets sufficient to cover liabilities.<sup>4/</sup>

#### Inherent Instability in Free Banking

Here we examine the empirical evidence from the Free Banking Era for its implications about the inherent instability of banking. First we examine whether the problems free banks experienced seem to be traceable to "sunspots" or to local real shocks. Then we examine whether free bank failures were contagious.

#### *Extrinsic vs. Intrinsic Uncertainty*

To determine whether free bank failures were due to extrinsic or intrinsic uncertainty, we first identify periods when many free bank failures occurred. We restrict our attention to such periods because a cluster of failures would seem to be necessary for inherent instability. Next we attempt to determine whether or not a local real shock occurred before these time periods. If such a local real shock can be identified, then these failures can be assumed to be due to extrinsic uncertainty. Otherwise, the intrinsic uncertainty explanation may be more appropriate.

In a previous study (Rolnick and Weber 1984) we identified 104 free bank failures in New York, Indiana, Wisconsin, and Minnesota, and we obtained reasonably precise closing dates for 96 of these banks. In Table 3 we show these free bank failures grouped by time period. Our previous study found that most (76 of the 96) free bank failures occurred during periods of falling asset prices, as measured by large declines in the prices of either Indiana or Missouri state bonds. The breakdown of these failures by period is reproduced at the top of Table 3. At the bottom of the table are grouped the remaining 20 failures, which occurred during periods of steady or rising bond prices. Since these periods were generally longer than those of price declines, they are subdivided to exclude lengthy intervening periods when no failures occurred.

The results in Table 3 show that 80 of the 96 free bank failures seem to fall into four major clusters. (The remaining 16 failures did not occur in large groups.) Further, we are confident that three of these clusters (a total of 68 of the 80 failures) can be associated with local real shocks:

- January 1841-April 1842, when 20 banks failed in New York. The local real shock here was the possibility, which arose as early as 1839, that some states would default on their debts. In fact, Florida, Mississippi, Arkansas, and Indiana defaulted in 1841, followed by Illinois, Maryland, Michigan, Pennsylvania, and Louisiana in 1842.
- May-September 1859, when 7 banks failed in Minnesota. The local real shock here was the suspension of construction on Minnesota's railroads in the late spring of 1859. This caused a drop in the price of Minnesota 7s (the so-called railroad bonds) which backed the notes of several Minnesota free banks. We have determined that the failure of at least 5 Minnesota free banks was related to the suspension of railroad construction (Rolnick and Weber 1985).

Table 3

Free Bank Failures During Periods of Falling  
and Stable or Rising Asset Prices, 1841-61

Periods When Asset Prices Were	Number of Bank Failures in				
	New York	Indiana	Wisconsin	Minnesota	Four States
<u>Falling</u>					
Jan. 1841-Apr. 1842	20	—*	—	—	20
May 1844-July 1846	2	—	—	—	2
July-Dec. 1854	1	11	0	—	12
Mar.-Oct. 1857	1	0	0	—	1
June 1860-June 1861	1	1	37	2	41
Total	25	12	37	2	76
<u>Stable or Rising</u>					
May 1842-Apr. 1844	3	—	—	—	3
December 1847	1	—	—	—	1
October 1851	2	—	—	—	2
Jan. 1853-June 1854	2	1	0	—	3
Jan. 1855-June 1856	0	3	0	—	3
Jan.-Dec. 1858	1	0	0	0	1
May-Sept. 1859	0	0	0	7	7
Total	9	4	0	7	20
All Periods	34	16	37	9	96

\*A dash (—) indicates that the state did not have a free banking law during the particular period.

Source: Rolnick and Weber 1984

- June 1860-June 1861, when 37 banks failed in Wisconsin and 4 more failed in the other three states. The real shock here was obviously the onset of the Civil War. The shock can be considered local in the sense that the prices of Southern state bonds were affected more than those of Northern state bonds.

One cluster of failures we have not yet been able to definitely associate with a real local shock: the July-December 1854 group of 11 failures in Indiana and 1 failure in New York.<sup>5/</sup> These failures may have been caused by extrinsic uncertainty. Nonetheless, of the free bank failures that occurred in clusters, 85 percent (68 of 80) seem consistent with an intrinsic uncertainty explanation of their cause.

#### Contagion

Either view of inherent instability in banking requires that bank failures somehow be contagious. That is, for a banking system to be inherently unstable, a run on one or more banks and their subsequent failure must lead to the failure of other banks. We test for evidence of contagion by determining whether failures in one state were followed by failures in other states. This test is suggested by Friedman and Schwartz's (1963, p. 308) view that "contagion knows no geographical limits." (Some evidence on intrastate contagion is given in footnote 7.)

The clusters of bank failures just discussed show that free bank failures were quite localized. However, only three of the four clusters can provide evidence for our test of contagion. Of our four sample states, only New York allowed free banking before 1852. So only post-1852 clusters are useful here. None of these three clusters provide evidence that bank failures are contagious. Specifically,

- Between July and December 1854, 11 banks failed in Indiana. This is almost a quarter of the 46 free banks operating in that state in July 1854, which might indicate that bank failures spread through Indiana. However, they seem to have stopped there. Only 1 of the 232 free banks operating in New York in September 1854 and none of the 19 banks operating in Wisconsin in July 1854 failed during this period.
- Between May and September 1859, over half of Minnesota's free banks failed (7 of the 12 banks that had issued notes by June 1, 1859). However, during this period none of the approximately 390 free banks operating in New York, Indiana, and Wisconsin failed; failure seems to have been limited to Minnesota.
- Between June 1860 and June 1861, over a third of the free banks operating in Wisconsin in January 1860 failed (37 of the 107 banks). However, only 1 of the 273 free banks operating in New York in December 1859 and only 1 of the 17 free banks operating in Indiana in January 1860 failed during this period.<sup>6/</sup> Again, free bank failures were virtually confined to one state.

Overall, these three clusters of failures show that free banking had little if any inherent instability because whatever contagion might have existed was limited to specific states. The data do not indicate that free banks experienced the type of widespread contagion which Friedman and Schwartz (1963) see in 1930.

Why weren't free bank failures contagious? That is, why didn't the bank failures in one state spread to other states? A possible explanation is that the requirement that free banks keep a reserve of state bonds behind their notes provided some public information about free bank portfolios which helped noteholders distinguish good banks from bad ones when local real shocks occurred.

Consider the cluster of seven free bank failures in Minnesota between May and September 1859. The local real shock here affected only the price of Minnesota 7s (the railroad bonds discussed above), and these bonds backed the notes of five of the banks that failed. There was no reason for the Minnesota failures to spread because the public knew that Minnesota 7s did not back the notes of banks in any other state. In New York, notes were differentiated by whether they were backed by state bonds alone or by state bonds and mortgages, and after 1840 the state allowed only New York or U.S. bonds to back notes. In Indiana and Wisconsin, Minnesota 7s could have backed free bank notes, but publicly available reports by state banking authorities indicate that none did.

Next consider the cluster of 41 free bank failures between June 1860 and June 1861, which occurred mostly in Wisconsin. The local shock here was the onset of the Civil War. The important feature of this shock from the standpoint of noteholder information is that the prices of bonds of Southern states declined far more than the prices of bonds of Northern states. For example, during this period the price of North Carolina 6s declined 56 percent; Missouri 6s, 57 percent; and Virginia 6s, 59 percent. In contrast, the price of Indiana 5s declined only 20 percent. All of these state bonds were traded on the New York Stock Exchange, so current market price information was readily available to the public.

That the rash of free bank failures in Wisconsin can be attributed to the decline in Southern bond prices is clear in Table 4. There we present a breakdown of the bonds deposited with the Wisconsin state treasurer as backing for notes as of January 31, 1860, by both the state of origin and whether or not the bank subsequently failed. (The report used to prepare this table included 107 banks, 35 of which subsequently failed.)

Table 4  
Par Value of State Bonds Deposited with the State Treasurer  
by Wisconsin Free Banks, January 31, 1860

State Bonds	All 107 Banks		35 Banks that Failed in 1860 and 1861		Other 72 Banks	
<u>Southern</u>						
Missouri 6s	\$1,974,000	(40.6) <sup>a</sup>	\$1,016,000	(48.8)	\$ 958,000	(34.5)
Tennessee 6s	738,000	(15.2)	320,000	(15.4)	418,000	(15.0)
North Carolina 6s	409,500	(8.4)	197,000	(9.5)	212,500	(7.6)
Virginia 5s and 6s	233,340	(4.8)	86,600	(4.2)	146,740	(5.3)
Louisiana 5s and 6s	150,500	(3.1)	88,000	(4.2)	62,500	(2.2)
Other Southern	62,000	(1.3)	36,000	(1.7)	26,000	(0.9)
Total	\$3,567,340	(73.4)	\$1,743,600	(83.8)	\$1,823,740	(65.6)
<u>Northern</u>						
Illinois 6s	\$ 542,020	(11.1)	\$ 132,420	(6.4)	\$ 409,600	(14.7)
Ohio 6s	225,000	(4.6)	86,000	(4.1)	139,000	(5.0)
Michigan 6s	185,500	(3.8)	60,000	(2.9)	125,500	(4.5)
Wisconsin 6s	100,000	(2.1)	39,000	(1.9)	61,000	(2.2)
Other Northern	241,500 <sup>b</sup>	(5.0)	19,500	(0.9)	222,000 <sup>b</sup>	(8.0)
Total	\$1,294,020	(26.6)	\$ 336,920	(16.2)	\$ 957,100	(34.4)
<u>All State Bonds</u>	\$4,861,360	(100.0)	\$2,080,520	(100.0)	\$2,780,840	(100.0)

<sup>a</sup>Numbers in parentheses are percentages of grand total (total for all state bonds).

<sup>b</sup>Includes \$77,000 of bonds of Wisconsin railroads.

Source: Wisconsin 1860



The table shows that, on average, Wisconsin banks had a high percentage of Southern state bonds backing their notes. In particular, the banks that failed had close to 84 percent of their notes backed by Southern bonds.

Why didn't the Wisconsin failures trigger failures in New York and Indiana, the other two states we examined which had free banking systems of any size at the time? We think it did not because the public knew that Southern bonds were a much smaller part of the note backing in these states than in Wisconsin. As noted above, after 1840 New York only allowed New York or U.S. bonds as backing for notes. In Indiana, the state auditor regularly reported the bond backing of notes on a bank-by-bank basis. That auditor reported on November 1, 1859, that only 44 percent of the notes of Indiana's free banks were backed by bonds of Southern states. (In addition, the average ratio of notes issued to the par value of securities deposited to back them was substantially lower in Indiana than in Wisconsin.)<sup>7/</sup>

### Conclusion

The evidence we have gathered on the Free Banking Era indicates that the problems of this period are not consistent with the view that banking is inherently unstable. Further, we have argued that the reason we did not find evidence of inherent instability is that the state bond requirement, by providing information on bank portfolios to noteholders, prevented the failure of a bank or a group of banks from spreading.<sup>8/</sup>

We recognize, however, that this is not the only plausible explanation for our findings. A competing explanation is that unregulated banking is not inherently unstable and that the U.S. free banking system closely resembled a laissez-faire banking environment. In our view, which of these explanations is correct remains an open question. We encourage further

study of other banking experiences in different regulatory environments—particularly of the availability of information on the value of bank assets.<sup>9/</sup>

Finally, a note of caution for those who argue that regulation is required to prevent banking panics: not all regulations perform this role. Contrasting the experience of the Free Banking Era with that of the National Banking System and the Great Depression makes it clear that regulations which do not provide information to holders of bank demand liabilities will not prevent bank runs and panics. In fact, as Kareken and Wallace (1978) have argued about the Great Depression, regulations which seem to provide information, but really don't, could be the cause of bank panics rather than the solution.

Notes

<sup>1/</sup>We define a free bank failure as a closing with losses to noteholders because a major intent of the free banking laws was to provide a safe currency. The laws made no attempt to insure depositors or stockholders against risk.

<sup>2/</sup>We define a perfectly safe asset as an asset with the same price in all possible states of the world. By definition, therefore, perfectly safe assets are also perfectly liquid.

<sup>3/</sup>A real shock is local if it only affects a particular geographic area or a particular class of assets. An economy-wide shock affects the entire country or large classes of assets.

<sup>4/</sup>It is this aspect of the local shock-asymmetric information explanation of bank runs which seems to motivate Friedman and Schwartz's (1963) emphasis on the high percentage of liabilities that many failed banks ultimately paid off after the Great Depression.

<sup>5/</sup>Clark Warburton (1962, pp. 75-76) states that "the Bank of England had a serious gold drain in 1853 and the early months of 1854 and raised its discount rate by a series of steps from 2 per cent at the beginning of 1853 to 5 1/2 per cent in May 1854." He also mentions a change in the U.S. balance of trade which occurred in 1854 (p. 76). However, these shocks do not appear sufficient to explain the free bank failures during this period.

<sup>6/</sup>In the above cluster discussion, all figures on the total number of operating free banks are from Rolnick and Weber 1983, p. 1088.

<sup>7/</sup>The state bond reserve requirement may have also limited intrastate contagion of free bank failures by providing noteholders with information about bank portfolios. For example, in Minnesota the banks

that did not fail and had more than a nominal circulation backed their notes by bonds which held their value—either Minnesota 8s (backed by explicit taxes) or Ohio 6s. Also, in Wisconsin, on average, the banks that failed had a far higher percentage of Southern bonds backing their notes than did the banks that did not fail (Table 4). New York banks follow this pattern, too. We collected data on the bond holdings of the banks in New York during 1841-42. On average, New York banks that failed then backed their notes with a much higher percentage of bonds of states which defaulted on their debt than did banks that did not fail.

<sup>8/</sup>Another lightly regulated banking system was the Scottish free banking system (1727-1844) studied by Lawrence White (1984). His evidence on this system is also not consistent with the view that banking is inherently unstable. Again, good noteholder information, in this case provided by the unlimited liability of most Scottish free bankers and good information on their wealth, is a possible explanation (pp. 41-42):

A Scottish creditor was legally entitled to the debtor's real and heritable estate as well [as the debtor's personal estate]. The amount of real and heritable estate an individual possessed could be easily determined by consulting public records. . . . It . . . enabled members of the public, if they wished, to ascertain the ultimate assets of a local banking partnership. The great security provided to creditors under Scots law helped immunize Scottish banks against any danger of a panic-induced run.

<sup>9/</sup>Some might be willing to accept the interpretation that the state bond reserve requirement prevented bank failures from spreading, but would argue that this regulation had the undesirable side effect of increasing the number of free bank failures. They would argue that this regulation, by requiring banks to back their note issue with risky state bonds, led

free banks to hold riskier portfolios than they would have without such a regulation. This issue is not addressed by the evidence we have presented. An argument against the proposition that the state bond reserve requirement increased bank failures is that free banks could still have made their notes perfectly safe by purchasing perfectly safe assets with them; that is, the regulation may not have been a binding constraint on free bank behavior (King 1983, p. 147, fn. 31).

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