The United States' Experience with State Bank Notes: Lessons for Regulating E-Cash (A Progress Report)*

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> We do not pretend, that a National Bank can establish and maintain a sound and uniform state of currency in the country, in spite of the National Government; but we do say that it has established and maintained such a currency, and can do so again, by the aid of that Government; and we further say, that no duty is more imperative on that Government, than the duty it owes the people, of furnishing them a sound and uniform currency.
>
> Abraham Lincoln

1. Introduction

For well over a hundred years, the United States has benefited from having a safe and uniform currency. Since 1863, banks have been essentially prohibited from issuing notes that do not have the full backing of the federal government, and since 1879 virtually all currency has circulated at par. The possible introduction of electronic monies has some people concerned that the situation could change, however. The concern is that, without government backing, these electronic monies will be unsafe currencies that do not always circulate at par. As a result, market participants could be subject to unnecessary risks and transactions costs.

The historical experience that appears to give rise to most of these concerns is that of the United States from its founding until the establishment of the National Banking System in 1863. This was a period in which individual banks were subject to state regulation, but the notes they issued had no government guarantees or backing, either implicit or explicit.[1] A casual look at this history of private bank notes could lead one to think that a safe and uniform currency can only be provided if the government intervenes to provide some type of backing or insurance. During this period the notes of hundreds of different banks were in circulation, bank failures were relatively frequent, and bank notes traded at varying discounts outside their local area.

In this paper we take a closer and more extensive look at this experience. While we would agree with the characterization given above, we think there is more to the story. That is, we would agree that many different bank notes were in circulation, that banks did fail frequently, and that notes usually traded at discounts when used outside their local area. However, we also think the evidence from this period suggests that, with some notable exceptions, bank notes were relatively safe. Further, under the Suffolk Banking System there was a long period of time

[1] There are a few cases where a bank was actually owned by a state and had the backing of the state for its notes. However, these are the exceptions rather than the rule.

when the notes of a large number of different banks exchanged at par throughout New England. Thus, in our opinion, the evidence from this period suggests that electronic monies can be safe without government backing. Additionally, par circulation of electronic monies is a possible equilibrium, but the evidence from this period suggests that it is not the only nor the most likely outcome.

The paper proceeds as follows. The next section discusses the evidence on the safety of notes issued by state-chartered banks. Here we show that large numbers of banks, each issuing its own notes, were in existence; that bank failures were relatively common; that, with some notable exceptions, losses to noteholders were relatively small; and that most banks were relatively long-lived. The third section considers the extent to which state bank notes constituted a uniform currency. It begins by discussing the discounts on bank notes. Here we show that banknotes typically exchanged at discounts except in New England where the Suffolk Banking System led to the par pricing of the notes of that region's banks.

2. The safety of private bank notes

The experience of the United States with privately issued bank notes in the period prior to the establishment of the National Banking System has been conventionally portrayed by historians and others as a period in which unscrupulous bankers set up short-lived (in existence for a year or less) banks whose major purpose was to issue large quantities of notes of dubious value and then go out of business. Allegedly, this was particularly true of the Free Banking Era (1837-1863) during which so-called wildcat banks supposedly issued large quantities of notes and located their redemption offices in hard to find places with the result that the public ended up holding worthless pieces of paper and suffering large losses.

However, the more recent literature, which largely focuses on the Free Banking Era, paints a much more favorable picture in several regards:

1. Although there was a large amount of entry and exit into banking during this period, banks were not, in general, short-lived institutions.

2. During periods of general convertibility of bank notes, the notes generally were safe, low-risk monies. When banks went out of business, generally, their notes were eventually paid off at par or at a small discount. There were a few exceptions, however, in which noteholders suffered large losses.

In this section we examine the experience with bank notes during the period prior to the establishment of the National Banking System. We present new evidence for the states of Maine, Massachusetts, and Maryland. We also review previous evidence we have collected on the experiences of New York, Indiana, and Wisconsin under free banking.[2]

Because this history may not be familiar to many readers, we begin with a discussion of how banks operated under bank charters and free banking laws. Then we discuss the longevity of banks and the overall safety of bank notes prior to the establishment of the National Banking System.

2.1. State-chartered and free banks

During the colonial era, the English colonies in North America had virtually no chartered banks.[3] The first bank chartered in the United States was the Bank of North America in Philadelphia. It was chartered by the Continental Congress in 1781. However, from this time until the establishment of the National Banking System, with the exception of the First and Second Banks of the United States, state governments authorized and regulated the business of banking in the United States. To start a bank, one obtained permission from the state in which the bank was to be located.[4]

States granted banking privileges in two ways. Before 1836 a bank had to receive a special charter from its state legislature, which was often granted under a proviso that the bank would help finance some desired public project. With the demise in 1836 of the Second Bank of the United States and the loss of its branches throughout the country, many states were in need of increased banking services. To help fill the hole left by the closing of the Bank of the United States, many states eventually decided to pass what were called free (or general) banking laws. Such laws made it unnecessary to receive a special legislative approval to open a bank. Instead, under free banking laws, the essential requirement was that a bank back its note issue by providing the state's banking authority with collateral in the form of state and federal bonds. Between 1840 and 1863 many

[2]We recognize that our selection of states does not include any from the South, which may bias our discussion toward making bank notes look safer than they in fact were. We hope to remedy this defect in the near future.

[3]Two banks operated briefly in Massachusetts around 1740.

[4]One notable exception to this policy occurred in 1791 when the Bank of the United States received a 20-year charter from the federal government. This charter expired in 1811; Congress renewed it in 1816, but revoked it in 1836.

banks were started under these laws.

2.1.1. State-chartered banks

A bank charter was a legislative action permitting a bank to be established and setting the conditions under which it could operate. At least for a time, individuals and partnerships could also engage in the activities that we would consider banking – issuing notes and discounting. The advantage to having a charter was that it limited the liability of shareholders. The liability limits were not usually as strict as those in place today, however. Double liability (shareholders could not only lose the value of their equity, but were also liable for an amount equal to the value of their shares) was quite common, for example.

The charter a bank obtained specified the amount of capital the bank was to have. Changes in the amount of capital typically required legislative approval.

Shares of bank stock were sold by subscription; payments for stock were usually permitted to be made in several installments. Not all the payments had to be made in specie. In was quite common for a bank charter to require that the first installment, say, a third, be paid in specie or the notes of specie-paying banks. Later installments, however, could be paid in state bonds. In some cases, it was possible to pay for later installments with stock notes – shareholders would pledge their existing stock holdings as collateral for loans, which they then used to pay the next installment. A charter usually permitted a bank to begin operations once a specified amount of capital had been paid in the form of specie.

In many cases the charter would also provide for the state to have partial ownership by reserving a certain amount of capital for the state to buy.[5] Typically, the state did not pay for this capital with specie but rather with state bonds. This was a method for the state to obtain revenue from the note issuing capacity of banks. (States were not permitted to issue notes directly because of the Constitutional prohibition on states' issuing bills of credit.) States would earn the difference between the dividends paid by the bank and the interest rate on their bonds. States also obtained revenues from banks through taxes, which were either levied either on their capital or their note issue (circulation) or were simply flat yearly fees.

In the vast majority of cases, bank charters also contained provisions that limited the activities a bank could undertake. On the liability side of the balance sheet, there were restrictions on the quantity of notes a bank could issue, usually

[5] In some states there were banks where the state was the sole owner.

expressed as a ratio to capital. Thus, a charter might restrict a bank's circulation to its capital or to twice its capital, for example. There were often also restrictions on the minimum denomination of the notes that could be issued. Such minimum denomination restrictions became universal around 1830. These minimums were commonly $1 and were sometimes $5.[6] In some cases, a bank was permitted to have only a specified fraction of its circulation in notes with denominations of less than $5.

In general, charters did not explicitly state that banks had to redeem their notes in specie on demand. However, after 1810 there were usually penalty provisions for nonpayment. Some of these provisions required a bank to pay interest to noteholders (at rates of between six and twelve percent) for the period of time that specie payments were suspended. Others stated that a bank would forfeit its charter if it suspended payments; these penalties were rarely enforced, however.

Other restrictions on bank liabilities limited either total liabilities or liabilities other than circulation to some multiple of the bank's paid-in capital.

On the asset side of the bank's balance sheet, the charters contained restrictions on the activities a bank could engage in. Two common restrictions were prohibitions on holding real estate, except the land and buildings necessary to conduct business, and on the buying and selling of merchandise. Another was on dealing in public stocks (bonds), although some banks were required by their charters to buy the stocks of railroad or canal companies.[7]

2.1.2. Free banks

When a state enacted a free banking law, the "free" did not mean that the state established laissez-faire banking. Banks established under free banking laws had to operate under certain restrictions that will be described below. The "free" simply referred to the fact that entry into banking was free in the sense that no special legislative action was required in order to obtain a charter to establish and operate a bank.

Although there were some differences in the various state laws under which free banks operated, the free banking laws shared some key provisions. These provisions were all part of the first free banking law, which was passed by the

[6] A minimum denomination restriction of $1 in 1830 would be approximately equivalent to a $40 restriction today.

[7] For a more complete discussion of the typical provisions of state bank charters prior to the establishment of the National Banking System, see Dewey (1910).

New York legislature in 1838.[8] The key provisions were as follows:

1. Collateral constraint. Free banks had to deposit designated state (and in some cases federal) bonds with the state banking authority as security for all notes issued. They could issue notes (N) only up to some fraction (α) of minimum of the market (p) or par value of the collateral deposited (B); that is,

$$N \leq \alpha \min(p, 1)B.$$

   Typical values for α were 1 and 1/1.1, the latter arising when the laws stated that bonds deposits had to be 110 percent of note issue.

2. Demand redemption. Free banks had to pay specie for notes on demand. Failure to redeem even one note meant that the state could close the bank and sell off all the collateral deposited with the state and any other assets to pay off creditors. In many cases noteholders had first lien on the assets of the bank.

3. Limited liability. Shareholders in free banks had limited liability, but its form was usually of the double liability variety and, thus, similar to that enjoyed by the shareholders of state-chartered banks.

2.2. The longevity of banks

Some historians have contended that the period prior to the establishment of the National Banking System was characterized by the entry and exit of a large number of short-lived banks. In this section, we show that while it is the case that there was a large amount of turnover in the banking industry during this period, typically banks were not short-lived institutions.

The period prior to the establishment of the National Banking System was certainly characterized by a large amount of entry into and exit out of the banking system. This is shown in Table 1. There we show that in the six states we have studied to this point, 1106 banks existed during this period.[9] Of this number,

[8] To be factually correct, the first free banking law was passed by the Michigan legislature in 1837. However, the Michigan law was modeled almost verbatim on the legislation that was under consideration in New York at the time, although New York did not pass its free banking law until the next year.

[9] Actually, this is an undercount of the actual number of banks that existed in these states, because we are only counting free banks for New York, Indiana, and Wisconsin. We will remedy this as the study progresses.

459, or slightly over 40 percent, went out of existence before 1861.

However, the banks that were entering and exiting during this period were generally not short-lived. This is shown in Figures 1 through 6, where we have plotted the frequency distribution of bank lives for the states in our sample. Some summary statistics for the lengths of time banks were in existence are given in Table 2. There we see that banks in Massachusetts were in existence for an average of 20.5 years with a median existence of about 14 years. Maryland and Maine banks were in existence for an average of about 18 and 13 years, respectively, with a median existence of about 8 or 9 years. Banks in New York were in existence for a shorter period of time (mean and median of about 8 years), but it must be remembered that a much shorter period of time is being considered for New York than for Massachusetts, Maine, and Maryland. Banks in Wisconsin were in existence for an even shorter period of time (mean and median of about 4 years), but the time period considered is also quite short. The only state for which it could be argued that banks were short-lived is Indiana, where banks were in existence for an average of only 2 years with a median existence of 1 year.[10]

In looking at the evidence on longevity, we uncovered a fact that we will explore further as this research progresses. This fact is that the longevity of banks in Baltimore was quite a bit longer than that for other Maryland banks. Specifically, we found that the average length of time Baltimore banks were in existence was 28.7 years (median 26 years) as compared to only 12.9 years (median 7 years) for non-Baltimore banks. We will explore whether this seems to be true for other large cities (specifically Boston and New York) versus nonurban banks.

There is another aspect of the longevity data that we will explore further. The evidence in Table 2 seems to indicate that banks in the West were in existence less long than banks in the East. Our discussion above attributes much of this to the fact that the period of time being covered is shorter. We will examine whether this conjecture is correct.

[10] Our computation of the lengths of time banks were in existence are underestimates in a way for two reasons. First, if a bank is ever listed in a statement of bank balance sheets, then we have computed the time in existence as the difference between the time it first appears and the time it last appears. Since the time between such reports is a year, on average, our estimates could be low by as much as two years. Second, we assume that all banks went out of existence in 1863. However, many banks continued to exist under national bank charters after this time. The time they existed as national banks is, thus, not included in our estimates.

2.3. Noteholder losses

Historians often described the bank notes issued prior to the establishment of the National Banking System with such colorful names as "shinplasters" and "red dogs" issued by "wildcat" banks. Such descriptions suggest that these bank notes were risky instruments issued by banks of dubious quality. The implication is that noteholders suffered large losses when these banks went out of business. In this section, we present evidence that this impression is not correct. In general, as long as convertibility was maintained, bank notes were safe, low-risk monies during this period. Further, in general, when banks went out of business, their notes were eventually paid off at par or at a small discount. There were a few exceptions, however, in which noteholders suffered large losses.

We first present evidence that bank notes were safe, low-risk monies. This evidence is presented in Table 3, some of which is selected from Rolnick and Weber (1983). In Table 3, we calculate the expected value of a randomly selected bank note held as of the date of various condition reports. These expected values are computed by multiplying the circulation of each bank in the condition report by the rate at which noteholders were paid off and dividing the result by the total circulation.

The evidence shows that free bank notes were relatively safe, although the degree of safety varied over states and over time within a state. The notes of New York free banks were the safest; the expected value of a randomly selected New York bank note never fell below 99 cents on the dollar, and for many years this expected value was one dollar. The safety of notes issued by banks in Maine was the next best. In several years, these notes had an expected value of one dollar, and it all other cases but one, the expected value was 95 cents or better.[11]

Wisconsin's experience was at first very similar to New York's, but the safety declined over time to a low of 88 cents on the dollar in 1861. This occurred because all of Wisconsin's bank failures occurred in 1860 and 1861. Our computations show that the Maryland bank notes were always subject to some risk, albeit small.[12] Indiana's banking problems occurred within two or three years after its

[11] The expected value of 82 cents for 1820 is computed assuming zero redemption values for the notes of the Castine, Passamaquoddy, and Winthrop banks, for which we have no redemption rate information as of yet. To the extent that the noteholders of these three banks did not suffer total losses, this expected value is an underestimate.

[12] This is due, to some extent, to the way we treated the large number of Maryland banks for which we had no information on redemption rates. The computations in the table assume that the redemption rate for these banks was zero. When the same computations are performed

free banking act became law in 1852. This is shown by the expected value of 92 cents in 1853. However, as early as 1856, Indiana's experience was also very similar to New York's and Maine's. (As this study progresses we will perform similar computations for Massachusetts.)[13]

The fact that when free banks failed they were more likely than not to pay their notes off at par is shown in Table 1. In the fourth and fifth columns of that table, we report, for those banks for which we were able to obtain the information, whether their notes were redeemed at par or below par when the bank closed. We find that, in general, banks that went out of business were twice as likely to redeem their notes at par than not to. New York banks were particularly good in this regard; they were about 3-1/2 times more likely to redeem at par than not to. The exceptions were Wisconsin and Maryland banks, which were about equally likely and less likely to redeem at par, respectively.[14]

Finally, we present some evidence that there were cases in which noteholders suffered large losses. This evidence is presented in Table 4, where we present in the first column the average loss per dollar for the notes of banks that did not redeem their notes at par. We find that there is quite a range – from a high of 70 cents on the dollar for Maine to a low of 15 cents or less for Maryland and Indiana. We find that the average loss per dollar was 56 cents for Massachusetts and around 25 cents for New York and Wisconsin. This evidence suggests that if one happened to be holding the note of a bank just before it was to fail (close and redeem its notes below par), then one could have potentially suffered a large loss.

3. Discounts on private bank notes and the Suffolk Banking System

We have seen that the pre-Civil War markets in privately issued bank notes were not the financial failure that some historians have claimed. Nevertheless, these markets may have failed in another way: bank notes did not always circulate at par. They did circulate at par when traded in the town where the issuing bank was located; but once the notes were circulating outside their locality, they

assuming a redemption rate of unity, the expected values are all 99 cents or higher.

[13]The discussion of the experience of New York, Wisconsin, and Indiana is adapted from Rolnick and Weber (1983).

[14]This result for Maryland may change as we obtain more information on the rates at which banks that went out of business redeemed their notes.

usually traded at a discount. The farther the notes were from the issuing bank, which usually meant the higher the cost of redemption, the larger the discount tended to be. Although there were government attempts to require banks to have their notes circulate at par, they were generally unsuccessful. For example, Pennsylvania failed to get par circulation in 1850 despite a law it passed to require all banks to redeem their notes at par in Philadelphia or Pittsburgh, subject to a penalty of two mills per annum for every dollar in circulation at less than par (Lake 1947, p. 189).

One might be tempted to conclude from this experience that privately issued bank notes, which circulated beyond their local area, did not generally trade at par. This was not the case, however, in one major region of the country. Between 1826 and 1858, the notes of up to 300 different banks circulated at par throughout New England. (These states include Connecticut, Maine, Massachusetts, New Hampshire, Vermont, and Rhode Island; but Rhode Island is a special case, which we will discuss below.) This widespread par exchange of so many different bank notes, which lasted over 30 years, appears to have been related to a net clearing system that was developed by a coalition of Boston banks.

In 1825, a group of banks in Boston formed a coalition that led to the first net clearing system for privately issued bank notes. Known as the Suffolk Banking System, it featured net clearing at par so that all notes issued by New England banks that cleared through the Suffolk Bank cleared at their face value. As a result, all Suffolk member bank notes exchanged at par throughout the region. The experience of the Suffolk Banking System shows that, at least under the right conditions, a private market for money can lead to a par (uniform) currency without government intervention. That we could not readily find another Suffolk-type system in other parts of the country, however, suggests that the right conditions might not be easy to reproduce. Moreover, it is not obvious that a net clearing system will always yield a par currency.

In this section of our paper we first examine how most bank notes were discounted as they circulated outside their local banking area. We then examine how the Suffolk Banking System was able to bring about a par currency in New England by establishing a highly profitable net clearing business. We conclude by trying to determine what the right conditions were that led to the New England experience and why these conditions were absent in the rest of the country.

3.1. The discounts on bank notes

[A brief review of the literature on bank note discounts and how the varied with the cost of redemption will be included in the next version of the paper.]

3.2. The Suffolk Banking System

In most parts of the country, bank notes circulated at a discount outside the city or town in which the bank of issue was located. In general, the discount was directly related to the cost of redemption; and the cost of redemption was largely a function of how far noteholders needed to travel to the bank of issue, that is, to a place where notes could be redeemed, at par, in specie. There was, however, one major exception to this nonpar pricing of bank notes. After 1825, the notes of virtually all the New England banks exchanged at par when circulating within the region.

The par exchange of New England bank notes was not a purposeful outcome of a government intervention. Instead, it appears to have been a spin-off from an innovation the Suffolk Bank brought to the payment systems. The Suffolk Banking System, a coalition of the Boston banks established in the spring of 1824 to drive country bank notes out of that city, developed into the first net clearing, par exchange system in the United States.[15] By the 1830s virtually all New England banks were members of the Suffolk System.

In the early years of banking in the United States, there was heated competition between country and city banks to expand their note circulation. To the dismay of city banks, country bank notes made up a large percentage of the notes circulating in their cities. In Boston, New York, and Philadelphia, city banks found themselves in competition with country banks. For example, in 1824 D.R. Whitney wrote of Boston that "the city was flooded with country money. The circulation consisted almost entirely of the notes of banks outside Boston. With more than one half the banking capital of New England, the Boston banks supplied only one twenty-fifth of the bills in use" (1878, p. 10) Mullineaux estimates that the percentage was lower than Whitney reports, but still finds that over 50 percent of the notes circulating in Boston were country bank notes (1987, p. 887).

As early as the turn of the century, Boston banks had tried to drive out this "foreign" money. In 1803 they agreed among themselves not to accept foreign

[15] Par exchange did occur in other parts of the country when arrangements existed between two banks in different cities to hold each other's redemption deposits, but these arrangements held for only a limited number of currencies. (See Fenstermaker 1965.)

notes from their customers. The result, however, was much different than the Boston banks had expected. Instead of driving the country notes out of circulation, their take-no-notes policy only allowed others to enter the note brokering business. Instead of going to a bank, anyone in Boston receiving a country note could sell the note to one of the city's brokers at a discount. The broker profited by gathering large quantities of country bank notes and transporting them back to the country bank for full redemption. Consequently, despite the city banks' boycott, country banks were still successful at getting their notes to circulate in Boston; indeed, country bank notes remained a large part of the notes circulating in Boston.

The success of the note brokering business led some Boston banks to reconsider their policy of not accepting foreign money. The New England Bank of Boston was the first. In 1814 it announced that it would purchase country bank notes at a discount somewhat lower than the 3 percent rate that the note brokers were offering. By 1818, the year the Suffolk Bank became the seventh bank to be chartered in Boston, the discount was down to 1 percent. The next year Suffolk decided to enter the note brokering business.

Suffolk based its note brokering business on obtaining non–interest bearing, permanent deposits from a large number of country banks. Suffolk would buy country bank notes from merchants, individuals, and other banks at a discount. It would then allow a country bank to purchase its notes from Suffolk, at the same discount, on two conditions. First, the country bank had to maintain a permanent non–interest bearing deposit of $5,000 with the Suffolk Bank. Second, the country bank had to maintain an additional non–interest bearing deposit as a redemption fund. Suffolk sent the notes of nonparticipating country banks, country banks that refused to make such deposits, home for redemption.

As competition increased in the note brokering business, the discount on country bank notes declined and so did the profits. Shortly after Suffolk entered the business, the discount on country bank notes declined from 1 percent to 1/2 percent. Suffolk did not have much success in attracting country banks as clients. By 1820 only a handful of country banks were holding permanent deposits with Suffolk. By the end of that year, Suffolk decided to end the purchase of notes from nonparticipating banks, as the cost of returning these notes to the bank of issue was not much less than the discount at which the notes were purchased.

The business did not improve much over the next few years. Competition in the note brokering business had made it "hardly profitable" (Redlich 1968, p. 72). So in 1824, Suffolk changed its strategy. In April of that year, Suffolk set out to

drive country bank notes out of the city. It formed a coalition with the six other Boston banks, each of which contributed between $30,000 and $60,000 for a total of $300,000 in order to purchase foreign bank notes, present them for redemption, and thereby drive foreign bank notes out of Boston. With this fund, the new Suffolk strategy was to purchase as many country bank notes as possible and return them for redemption.

A year later, however, the strategy was altered in a most innovative way. The note exportation strategy became a note-clearing strategy. Suffolks partners decided that the Suffolk System could improve profits by becoming a clearing house for country bank notes rather than being an exporter of these notes. No longer would Suffolk buy country bank notes so that they could be sent back to the issuing bank for redemption. Instead, Suffolk would accept at par all notes of country banks that were members in good standing. Each day, the notes received would be sorted, and the following day the net amount posted to the account of the appropriate bank. (The actual notes would eventually be returned to each issuing bank to be reissued or destroyed.) Within a few years the number of country banks with accounts at Suffolk grew dramatically. And by 1836 close to 300 banks, virtually all the banks of New England, were members of the Suffolk Banking System. While participation was generally voluntary, a Vermont law passed in 1842 gave a substantial tax advantage to banks that were Suffolk members. And a Massachusetts law passed in 1843, which prohibited banks from paying out other bank notes, encouraged country banks to join the Suffolk System.

The new Suffolk System was similar in many ways to the old. Members in good standing were banks that held deposits at Suffolk. (There was an important exception to this requirement, which we will discuss below.) As before, a country bank had to maintain a non–interest bearing, permanent deposit account: for each $100,000 of capital, the bank had to hold $2,000 in deposit. And, as before, a country bank had to hold an additional non–interest bearing redemption fund sufficient to redeem all its notes that were received by the Suffolk System. City banks only had to hold a non–interest bearing, permanent deposit. This was initially set at $30,000, but was gradually reduced to $5,000.

While similar in some respects to the old system, the new Suffolk Bank System was much more appealing to the country banks for several reasons. First, a member bank could deposit at Suffolk its holdings of country bank notes, where they were accepted at par. Thus, bankers no longer had to travel to each issuing country bank to redeem notes, and much less specie had to be transported between banks. Second, the member banks' notes circulated at par throughout

the region, and note brokers no longer profited from bringing notes back for redemption. Thus, a country bank's notes tended to stay in circulation longer than otherwise. Third, the country bank could borrow from Suffolk during a period in U.S. banking history when interbank lending was not well developed. If a participating bank's redemption fund was insufficient to cover the net debit, the Suffolk offered overdraft credit at 2 percent per month. Only if the debt exceeded both the redemption and the permanent account for too long were the notes sent back to the country bank for redemption. Finally, nonmember banks were at a clear disadvantage to member banks because Suffolk would send nonmember notes, as quickly as possible, back to the issuing bank for redemption.

The city banks also benefited from this new system because they shared in the Suffolk Banking System's profits. Although the Suffolk Banking System was not jointly owned by the consortium of city banks that established the System, Suffolk devised a way to have them share in the profits. Above we noted that country banks had to hold non–interest bearing permanent and redemption accounts with Suffolk to be a member in good standing. There was, however, an exception to this policy. A country bank could achieve its member-in-good-standing status if it had a city bank serving as its redemption agent, that is, if the country bank had a city bank that would agree to redeem its notes at par in specie or in notes of other country banks that were members of Suffolk. The city bank then could require the country bank to hold non–interest bearing permanent and redemption accounts at its bank and, thus, share in the Suffolk profits.

Over the next 34 years, Suffolk's note clearing business grew rapidly until it dominated the market. In the summer of 1824, Suffolk was receiving around $300,000 a month in country bank notes; by the end of 1825, it was receiving $2 million a month; by 1841, $9 million a month; by 1851, $20 million per month; and by 1858 Suffolk was receiving close to $30 million per month (Trivoli 1979, p. 21).

Along with the increase in business came a healthy increase in profits. One measure of Suffolk's profitability was the increase in its dividend payments. Before 1826, that is, before Suffolk got into the note clearing business, its annual dividend averaged 5.5 percent. Between 1833 and 1838, its average annual dividend had grown to 8.8 percent. And in 1839 it paid out of its growing surplus a 33.3 percent dividend. Between 1840 and 1847, the average annual dividend was over 8 percent. Between 1847 and 1852, it was 10 percent. And in 1852, Suffolk had once again accumulated a large surplus, but this time the surplus was not to be divided among the stockholders because it was stolen by the bank's bookkeeper.

Consistent with this impressive string of dividends, Suffolk bank stock was the highest priced bank stock in Boston from 1825 to 1858 (Whitney 1878, pp. 6-31).

Another measure of Suffolk's success is how profitable it was compared to other banks. In Table 5, we show the average annual dividends Suffolk and other banks paid to stockholders. The average annual dividend Suffolk paid over its most profitable years, 1845 to 1855, was over 9 percent. This compares to a 7.5 percent dividend paid by all non-Boston banks (all the country banks of Massachusetts). Suffolk's profits were also high relative to all the other Boston banks. In particular, Suffolk's profits were high relative to those of city banks that were maintaining a large correspondence business. Indeed, the profits of these Boston banks look very much like the profits of the non-Boston banks. They paid an average dividend of roughly 7.5 percent over the years 1845 to 1855.

Given their lower profits, why did these Boston Banks choose not to compete with Suffolk? That the profits of these Boston banks were so low is somewhat surprising, for these banks were presumably sharing in the profits of the Suffolk System. Nevertheless, we think they chose not to compete against Suffolk because all city banks had the option of sharing the profits from Suffolk's net clearing business.

Country banks did not have this option. Indeed, country banks eventually did form a coalition of banks to start their own net clearing business. It took much longer for a competitor to enter this market, however, than one might have expected. Once a competitor did enter, it quickly drove Suffolk out of the business, suggesting that there were increasing returns in the net clearing of bank notes.

Opposition to the Suffolk System developed shortly after Suffolk started its net clearing system, but a competitor did not appear until well over 30 years had passed (Lake 1947, pp. 192-93). In 1826 a convention of country banks met in Boston to discuss a coordinated effort to oppose Suffolk, but no agreement was reached. Ten years later, a group opposed to Suffolk's control of the market tried to obtain a charter for a new bank for the sole purpose of establishing a net clearing system that would compete directly with the Suffolk Banking System. The group argued that Suffolk was essentially charging too much for the services rendered, and they wanted an alternative. They proposed that a new net clearing bank be established and that the stock of this new venture be held only by banks, so that all banks could share in the profits. But the opponents of the new bank prevailed. They argued that there did not appear to be a need for a new net clearing business, that the Suffolk was working well, and that until the country banks acted as a group to request a new net clearing business, no action would be

taken. It was not until 1855, close to 20 years later, that such a concerted request was made by the country banks and a competitor to Suffolk was created (Lake 1947, pp. 193,195).

After several years of debate, in 1855, the Massachusetts legislature granted a charter for a Bank of Mutual Redemption (BMR). A special charter was needed because it was to be owned by banks. More specifically, its capital stock was to be subscribed by banks, and half the stock had to be owned by New England banks. Half of that stock had to be owned by Massachusetts banks (Lake 1947, p. 196). Since there was some mistrust of BMR at first, the capital was slow to materialize, and the BMR did not begin operations until 1858. In contrast to Suffolk, the BMR offered interest on its redemption account, and within a short period of time took a large portion of the clearing business away from Suffolk. By 1860 Suffolk had left the net clearing business.

3.3. Other par currency note clearing systems

Given the success of the Suffolk System, it is surprising that, with possibly one or two exceptions, Suffolk imitators did not appear in other parts of the country. Except in Rhode Island and Ohio, there were no other par exchange, note clearing systems. Moreover, Rhode Island's clearing system was not independent of Suffolk, and the Ohio system was not established until 1858. The only other possible imitator of Suffolk was a New York note clearing system, but that system never succeeded in getting country bank notes to exchange at par.

An imitator of Suffolk can be found in Providence, Rhode Island, but it looks more like a subsidiary of Suffolk than an independent system. According to Redlich (1968, pp. 260,261, footnote 34), sometime before 1836, a note collection and clearing business was established by the Merchants Bank of Providence. Consequently, the note clearing business was somewhat different in Rhode Island than it was in the rest of New England. Rhode Island country banks held their clearing deposits with the Merchants Bank instead of with the Suffolk Bank. They were required to hold non–interest bearing, permanent deposits ranging from $1,000 to $3,000. (Redlich makes no mention of a redemption deposit and no mention of the role other Providence city banks played in this arrangement.) In lieu of these deposits, the Merchants Bank received, at par, notes of all New England banks that were members of Suffolk. Like Suffolk, if at the end of the day, participating banks had net debits that exceeded their permanent deposits, Merchants offered short-term lending. The Merchants clearing system was available only to Rhode

Island banks, and Merchants acted as the corespondent for these banks. That is, Suffolk sent all Rhode Island notes it received to Merchants, and Merchants sent all New England notes, other than Rhode Island's, to Suffolk. The relationship between the two clearing banks, however, was not on an equal footing. "While the Suffolk Bank charged the Merchants Bank interest whenever the latter was the debtor, the Merchants Bank was not entitled to the corresponding charge, when it was the creditor" (Redlich 1968, p. 261).

The only other imitator of Suffolk that was reported to have a par exchange, net clearing system was in Ohio, but it was formed in the late 1850s. The banks of Ohio, according to Lake (1947, p. 189) established a voluntary system based on the Suffolk plan in 1858 in the Cincinnati trade center. However, we know very little about this system; in particular, we do not know how successful it was in achieving par exchange.

A net clearing system that we know failed to achieve par exchange developed in New York in the 1850s. Influenced by the success of Suffolk, the Metropolitan Bank of New York was chartered in 1851. It first appears to operate as a redemption office; that is, it looks more like the old Suffolk Bank redemption business. For those country banks that kept deposits at Metropolitan, it would act as its redemption agent and split the redemption discount with the country banks. Within a few years, at least one other city bank was competing with Metropolitan. And according to Redlich (1968, p. 79), by 1858 a net clearing system emerged. Nevertheless, New York was never able to achieve a par currency.

3.4. Conclusions and lessons learned from the Suffolk Banking System

1. A market in privately issued bank money may result in par exchange; that is, it may result in what is essentially a uniform currency without direct government backing.

2. A uniform currency is a possible equilibrium, but not necessarily the most likely. The ability to gather and maintain a coalition of market participants is a necessary condition to get par exchange, but doing that may be difficult.

3. A net clearing system, which may yield par exchange, has some networking economies or economies of scale and requires such a coalition among market participants. Some regulation may also be required to ensure an efficient allocation of resources.[16]

[16]In a recent paper, Calomiris and Kahn (1995) argue that the Suffolk System provided

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benefits to all participating banks and, on average, provided safer banking than in other parts of the country. They find no evidence of coercion and suggest that private clearing networks can work well without government regulation.

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Table 1–Number of Banks, Closings, and Failures in Six States

State	Total Number of Banks	In Business in 1861	Went Out of Business	Redeemed Notes		No Information
				At Par	Below Par	
Maine	127	69	58	38	18	2
Massachusetts	229	181	48	19	11	18
Maryland	57	32	25	4	6	14
New York	449	289	160	122	34	4
Indiana	104	15	89	38	24	27
Wisconsin	140	61	79	42	37	0
Total, all states	1,106	647	459	263	129	64

Table 2– Longevity of Banks in Six States

	Years Banks in Existence	
State	Mean	Median
Maine	13.2	9.0
Massachusetts	20.5	14.1
Maryland	18.3	8.0
New York	7.9	8.0
Indiana	2.0	1.0
Wisconsin	4.3	4.0
Baltimore	28.7	26.0
Non-Baltimore	12.9	7.0

Table 3—Bank Note Safety and Circulation in Five States

State	Date of Condition Report	Expected Value of a Randomly Selected Dollar Bank Note ($)	Note Circulation of All Banks ($)	Number of Banks	Average Circulation per Bank ($)
Maine	1815 (Jan.)	.983	566,933	12	47,244.42
	1820 (Jan.)	.816	1,380,577	15	92,038.47
	1832 (June)	1.00	919,583	18	51,087.94
	1837 (Jan.)	.957	1,912,418	55	34,771.24
	1845 (Oct.)	1.00	2,116,380	35	60,468.00
	1850 (Oct.)	1.00	2,654,092	32	82,940.83
	1856 (Jan.)	.949	5,077,248	75	67,696.64
	1859 (Jan.)	1.00	3,886,549	68	57,155.13
Maryland	1837 (Jan.)	.971	3,310,835	21	157,658.81
	1841 (Jan.)	.963	2,529,843	21	120,468.71
	1845 (Jan.)	.981	2,607,683	20	130,384.15
	1850 (Jan.)	.954	3,091,408	21	147,209.90
	1855 (Jan.)	.987	4,118,197	29	142,006.79
	1859 (Jan.)	.998	3,977,971	32	124,311.59
New York	1843 (Nov.)	.997	3,362,737	50	67,254.74
	1845 (Nov.)	.999	5,544,311	67	83,750.91
	1850 (Dec.)	.998	13,197,995	130	101,523.04
	1855 (Sept.)	1.00	23,169,329	239	96,942.80
	1860 (Dec.)	1.00	23,900,049	279	85,663.26
Wisconsin	1853 (July)	1.00	301,748	8	37,718.50
	1855 (Jan.)	.991	740,764	23	32,207.13
	1860 (Jan.)	.896	4,429,855	107	41,400.51
	1861 (Jan.)	.882	4,283,175	108	39,659.03
Indiana	1853 (Dec.)	.922	3,167,547	30	105,584.90
	1856 (Jan.)	.997	1,448,318	32	45,259.94
	1860 (Jan.)	.990	1,108,396	17	65,199.76
	1861 (Jan.)	1.00	1,035,664	18	57,536.89

Table 4– Estimated Losses to Note holders in Six States

	Average Loss in Dollars	
	Per Dollar	Per Bank
Massachusetts	.56	40,679.95
Maine	.70	46,045.56
Maryland	.14	21,664.57
New York		
before October 1841	.26	21,724.29
in and after October 1841	.26	14,264.96
Wisconsin	.24	13,598.69
Indiana		
before 1856	.11	17,069.76
in and after 1856	.15	5,114.83

Table 5

Date	Bank	Mean	Median	Mode	Min	Max
1820 (Jan.)	Suffolk	3.50				
	Seven Boston Banks	3.50	3.50	N/A	3.00	4.00
	MA, non-Boston	3.13	3.00	3.00	1.25	5.00
1825 (June)	Suffolk	3.00				
	Seven Boston Banks	2.67	3.00	3.00	2.00	3.00
	MA, non-Boston	3.11	3.00	3.00	2.00	4.50
1830 (June)	Suffolk	3.00				
	Seven Boston Banks	2.58	2.50	N/A	2.25	3.00
	MA, non-Boston	2.91	3.00	3.00	2.00	4.00
1835 (Sept.)	Suffolk	4.00				
	Seven Boston Banks	3.00	3.00	3.00	2.50	3.50
	MA, non-Boston	3.11	3.00	3.00	1.00	4.00
1840 (Oct.)	Suffolk	4.00				
	Seven Boston Banks	3.15	3.00	3.00	2.75	3.50
	MA, non-Boston	2.93	3.00	3.00	2.00	4.00
1845 (Nov.)	Suffolk	4.00				
	Seven Boston Banks	3.20	3.00	3.00	3.00	3.50
	MA, non-Boston	3.23	3.00	3.00	1.50	5.00
1850 (Sept.)	Suffolk	5.00				
	Seven Boston Banks	4.00	4.00	4.00	3.50	4.50
	MA, non-Boston	4.01	4.00	4.00	1.61	20.00
1855 (Aug.)	Suffolk	5.00				
	Seven Boston Banks	3.93	4.00	4.00	3.50	4.00
	MA, non-Boston	3.93	4.00	4.00	0.00	5.00
1859 (Oct.)	Suffolk	4.00				
	Seven Boston Banks	3.86	3.50	3.50	3.00	5.00
	MA, non-Boston	3.74	4.00	4.00	3.00	5.00

Figure 1 - Longevity of Maine Banks

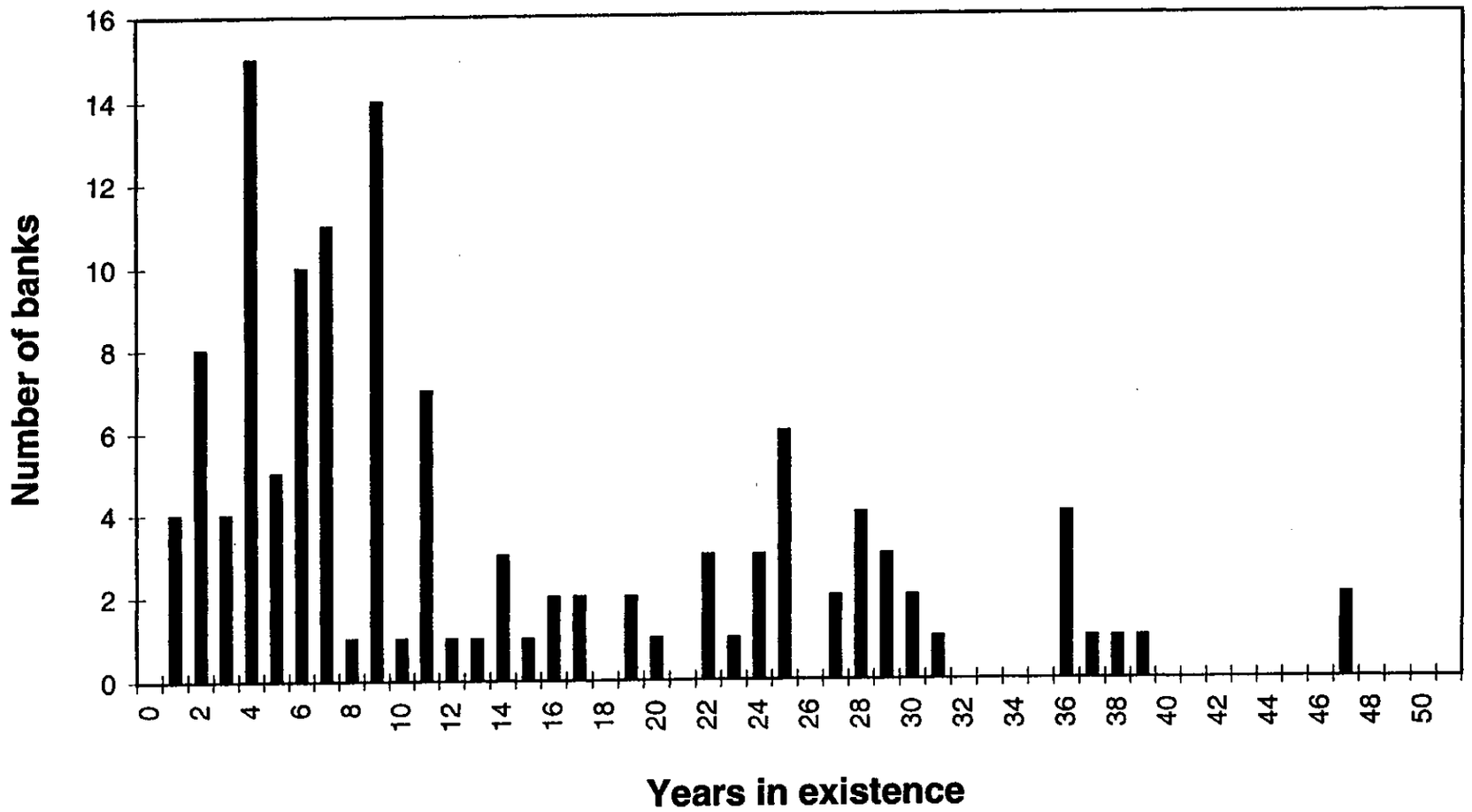

Figure 2 - Longevity of Massachusetts Banks

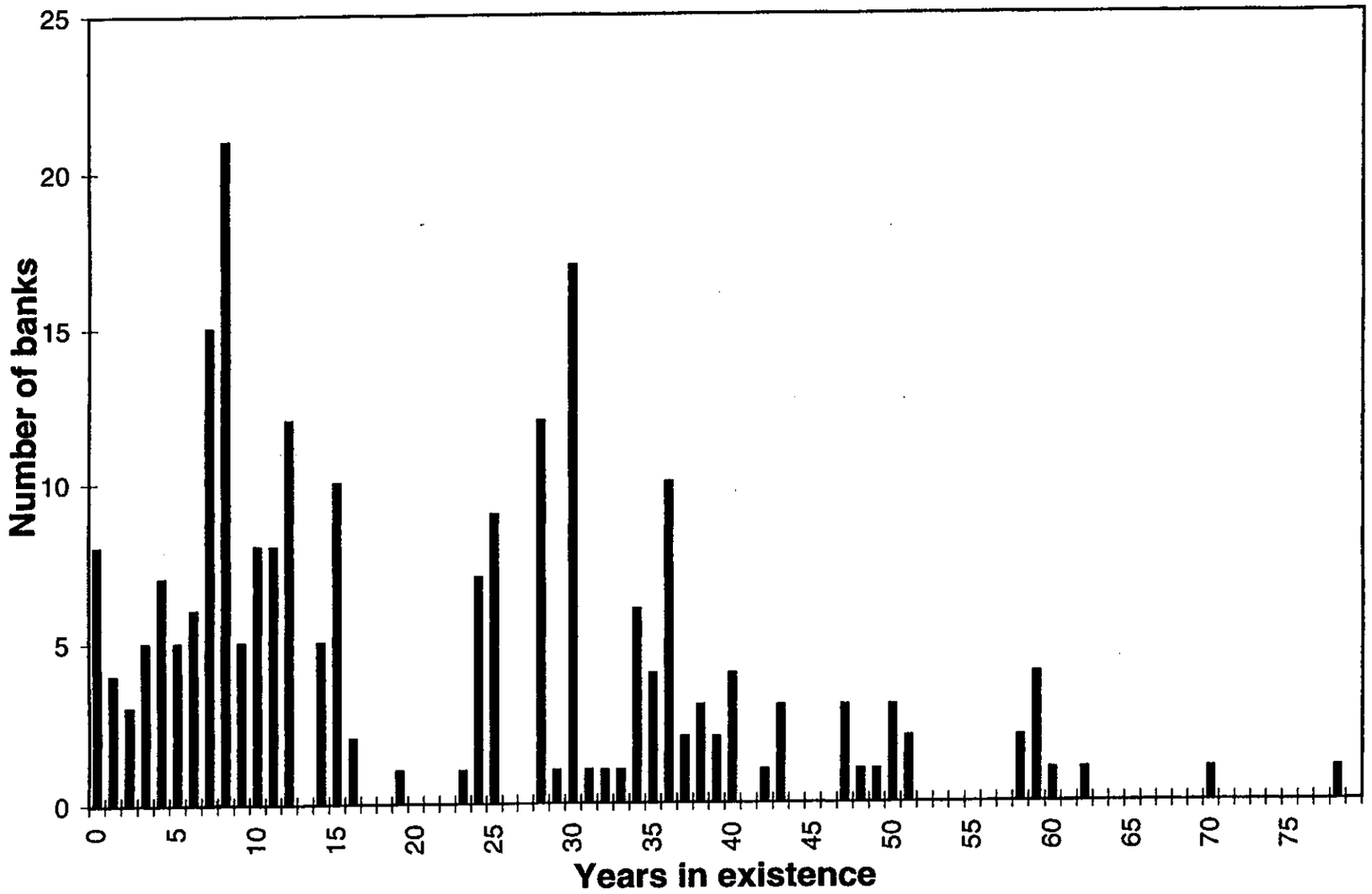

Figure 3 - Longevity of Maryland Banks

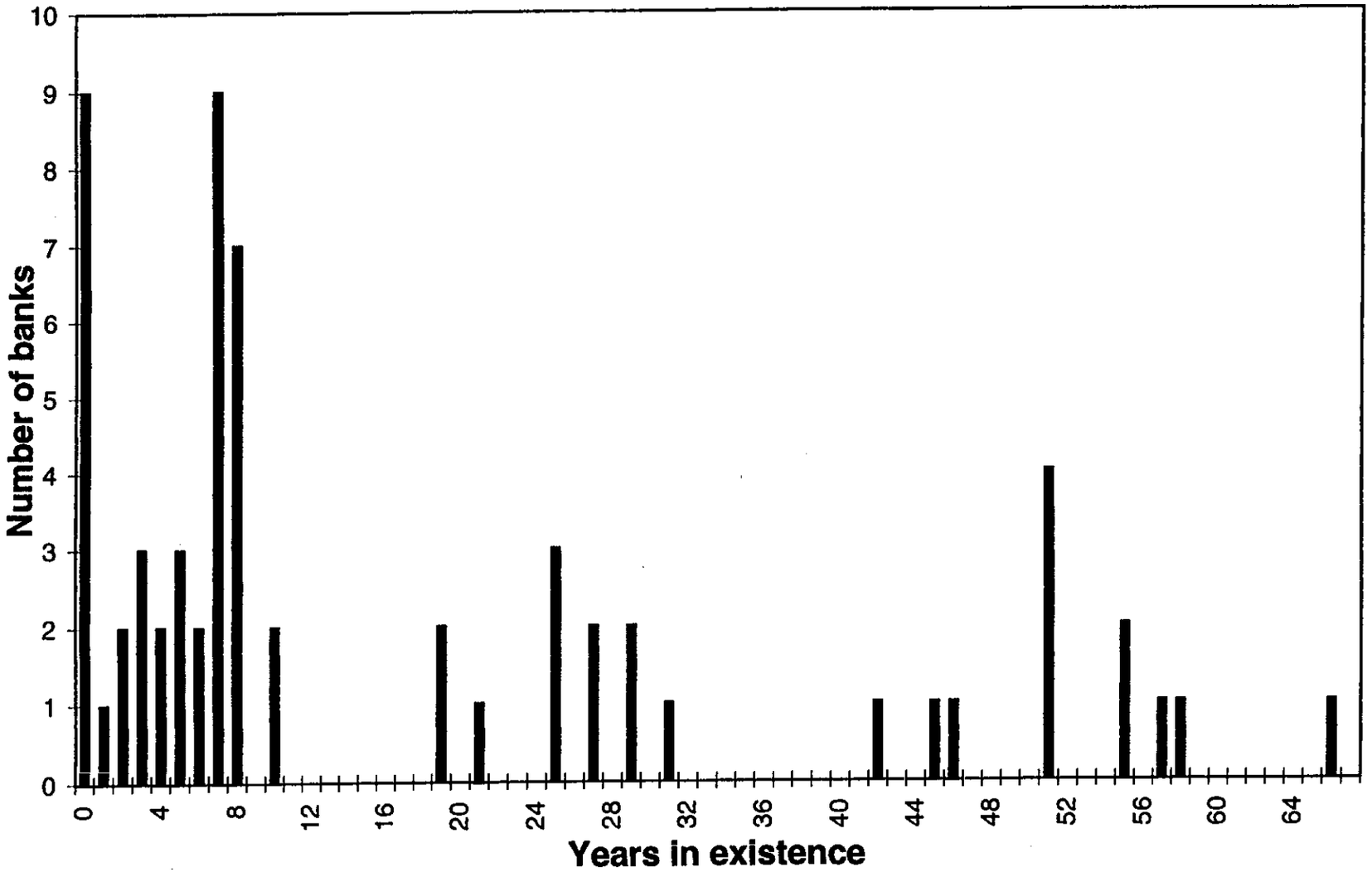

Figure 4 - Longevity of New York Free Banks

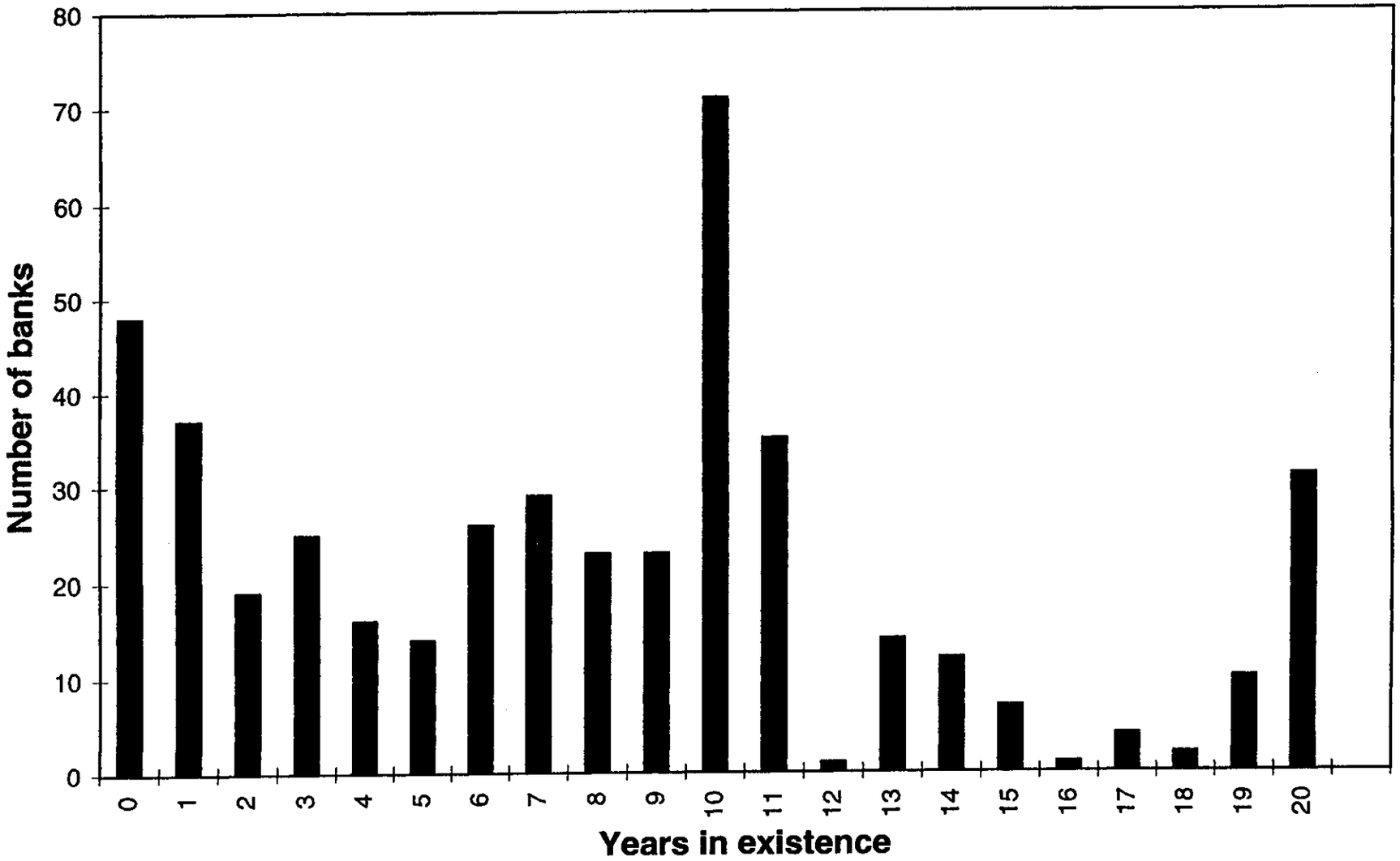

Figure 5 - Longevity of Wisconsin Free Banks

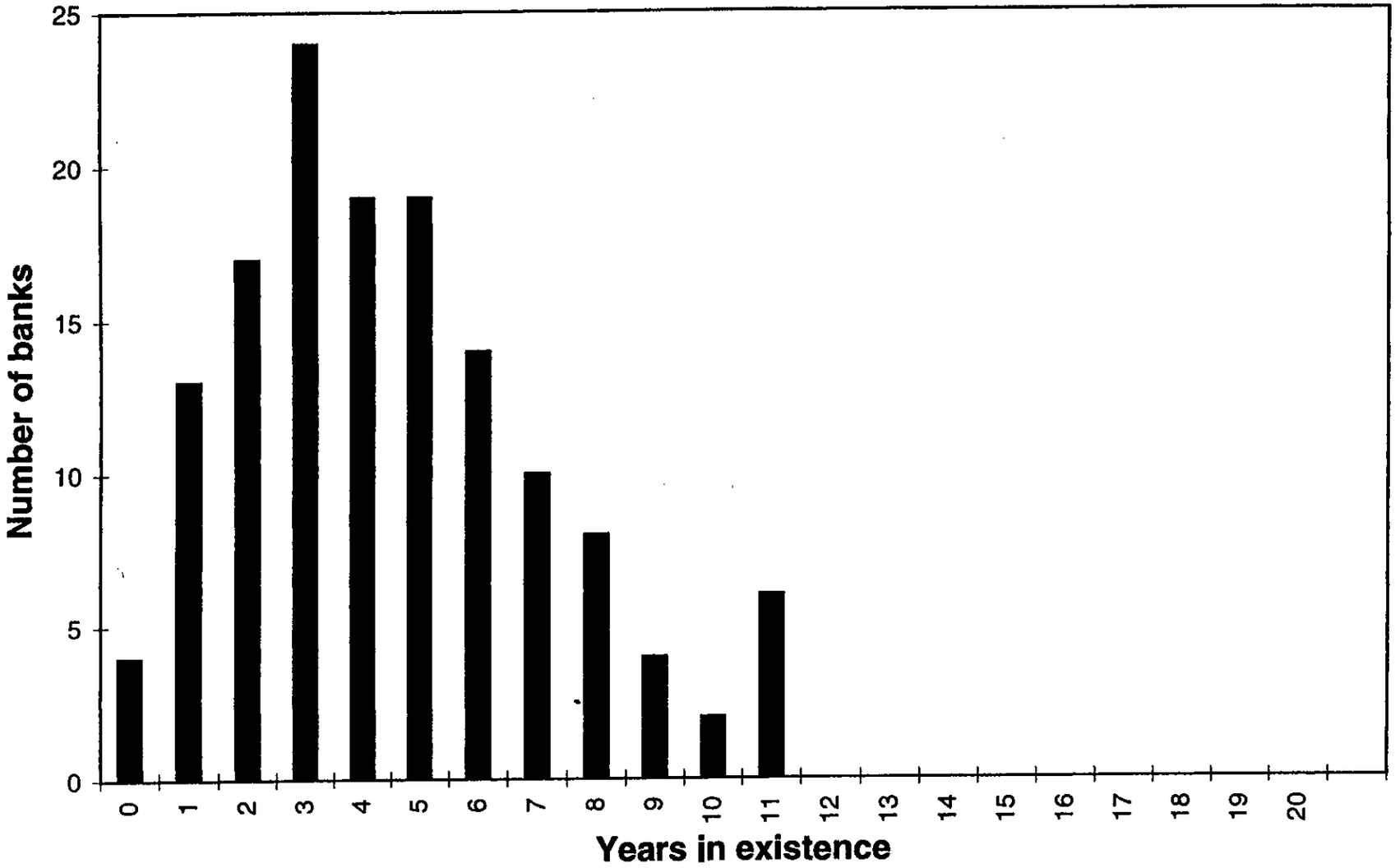

Figure 6 - Longevity of Indiana Free Banks