NBER WORKING PAPER SERIES
ON
HISTORICAL FACTORS IN LONG-RUN GROWTH

LESSONS FORM THE AMERICAN EXPERIENCE WITH FREE BANKING

Hugh Rockoff

Working Paper No. 9

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
December 1989

I owe a large debt to Michael Bordo, George Benston, James Dorn, Anna J. Schwartz, and Eugene White for comments on an earlier draft. James Dorn and Anna J. Schwartz, in particular, prepared extensive comments which they delivered at the Conference on Unregulated Banking : Chaos or Order? London, City University Business School, May 19, 1989 from which I have greatly benefitted. Preliminary : please do not cite or quote without permission. This paper is part of NBER's research program in the Development of the American Economy. Any opinions expressed are those of the author not those of the National Bureau of Economic Research.

NBER Working Paper #9
December 1989

LESSONS FORM THE AMERICAN EXPERIENCE WITH FREE BANKING

ABSTRACT

There has been considerable interest in recent years in historical experiments with "free banking." This paper examines once again the American experiments in the decades before the Civil War, and the recent literature on them. The lessons of this experience for four issues are considered: (1) the appropriate mechanism for controlling the monetary base, (2) the need for a lender of last resort, (3) the costs and benefits of a bank issued currency, and (4) the potential under a regime of free banking for wildcat banking.

Hugh Rockoff
Department of Economics
Rutgers University
New Brunswick, NJ 08903

1. New interest in old institutions.

Two decades ago the early history of American banking was dismissed as an object of study for someone concerned about current monetary problems, except perhaps as an object lesson about what can go wrong if the government does not apply a stern regulatory hand to the banking system. An article that appeared in Banker's Magazine in 1971 entitled "The Early Ways and Crazy Days of Banking" (Lasdon 1971), accurately reflected contemporary thinking. Since that time, as recently noted by Milton Friedman and Anna J. Schwartz (1986) a number of factors have produced a renewal of interest in radical forms of banking regulation, and this period is now the object of intense research in academic circles.

The most important force for change has been, of course, the continuing failure of existing institutions to produce anything like price and output stability. Interest in monetary reform tends to rise and fall with the rate of inflation. But there have been a number of intellectual currents (themselves partly reflecting economic conditions) that have contributed to the new interest in 19th century American banking. One is the startling suggestion by Fredrich Hayek (1976) that the path to monetary stability was simply to open up banking, and the provision of the monetary base, to the

same competitive forces that operate effectively in other sectors of the economy. Hayek sketched a counterfactual history of how competitive monetary institutions might evolve once controls were lifted. This speculation naturally encouraged attempts to find out whether actual systems when at least partly free of regulatory constraints had evolved along the lines Hayek predicted.

A second development has been the "rational expectations revolution." It emphasized the importance of underlying monetary institutions in contrast with current monetary policy, since it is the basic institutions that ultimately determine expectations about future monetary and fiscal policies. Growing out of the rational expectations revolution has been a distinct approach, the Minnesota School, that stresses the "legal restrictions" placed on the issue of fiat money, and the way in which those restrictions influence the relationships among money, prices, and real output. Finally, there is the development of what Tyler Cowen and Randal Krozner (1987) have called the New Monetary Economics. Motivated in part by recent developments in finance, as well as the other currents noted above, this literature, like Hayek's work, speculates about how the economy would behave under radically different monetary arrangements.

All of these developments are strong motives for academics who want to test these ideas to turn to the history books to find monetary systems that contain some of the features being discussed by the theorists. In many ways there is no better period to examine than American banking in the nineteenth century and particularly in the two and one half decades that preceeded the American Civil War.

2. The Free Banking Era

America did not begin its life as an independent nation with a strong presumption toward laissez faire in banking. The Constitution did not say anything directly about banking. It provided simply that states could not issue bills of credit (paper money) and that the right to coin and regulate currency (presumably the coinage) was reserved to the federal government. Alexander Hamilton, the first secretary of the treasury proposed in 1790 that the U.S. create a state bank modelled in certain ways on the Bank of England.

The following year the Congress chartered the First Bank of the U. S.to last for a period of twenty years. When its charter came up for renewal in 1811, there was opposition from a variety of sources including the concern that the constitution did not specifically authorize a bank. The experience of federal financial difficulties in the War of 1812, and the intervening evolution of constitutional doctrines helped produce a new bank, the Second Bank of the U.S. in 1816. But this bank too ran into considerable opposition when it came up for renewal. This was the famous Bank War between the pro-bank forces led by the president of the Second bank, Nicholas Biddle, and the anti-bank forces led by president Andrew Jackson. The upshot of the war was that the government's deposits were removed and the bank's federal charter was not renewed. Although it survived for a time under a Pennsylvannia charter, the Second Bank ceased to be a major force in financial markets after 1836.

Under the Independent Treasury plan innaugurated in 1845 the divorce of the federal government from banking was taken a step further. Under this legislation the federal government was required to receive and pay out only

specie (gold and silver), and to keep surplus funds as specie in its own vaults. Although practical neccesity, and certain exceptions introduced in the law, made this divorce between the banking system and the treasury less complete than it appears in a simple description, it is nevertheless true that one would be hard pressed to find a period that matched the two decades before the Civil War in terms of the degree of freedom permitted to private banks.

The problem of regulating banking, then, was left during this period entirely in the hands of the states. Ideas on banking were numerous and vigorously pressed, and the states adopted a wide range of regulatory systems. Some followed the lead established in the Independent Treasury and tried to prohibit all banks, or all new banks, and force people to deal in specie. But increasingly the most popular form of legislation was the so-called free banking law. This legislation, first adopted by Michigan and New York in the late 1830s, and then by a large number of states in the 1850s, had two main provisions. (1) Entry into banking was open to all as long as certain minimum requirements with respect to capital and other matters were complied with. Under the older system of chartered banking (still the dominant mode in many states), each bank required a separate charter from the state legislature. (2) Bank notes intended to circulate from hand to hand as money had to be redeemable in specie and backed by government bonds (typically issued by the state where the bank was located). These bonds were deposited with a state official who was empowered to sell the bonds and redeem all the notes of a bank if one note was protested for non-payment.[2]

[2]Although all free banking laws contained these two basic features they differed in many particulars (for example, the type and amount of bonds required to back a note). Some of these differences are important for

Obviously, as one can see from this brief description, banking during this period was restricted in many ways; it was a far cry from pure laissez faire. To emphasize this point it may be worth listing some of these restrictions. (1) In states with free banking laws bank notes had to be backed by government bonds. (2) Most states had usury laws. In some states, moreover, the maximum that could be charged by banks was lower than the maximum that applied to other lenders.[3] (3) The basic monetary unit was the dollar as defined and minted by the U.S. government. Nevertheless, as our earlier discussion made clear, there were also many respects in which the banking system was unusually free of federal regulation.

How well did this system work? Should we turn the clock back to the free banking era? To give a tentative answer to these questions I will examine the experience of these years for the light they throw on four potential reforms of the monetary system that have drawn considerable interest in recent years. (1) Should the current system for providing the monetary base be replaced with a gold standard or some other commodity based standard? (2) Should the current system in which the Federal Reserve potentially acts as a lender of last resort be replaced with an alternative system in which protection against bank runs is supplied by some decentrailzed market mechanism? (3) Should banks be allowed to issue notes that circulate from hand to hand as money? (4) Should free entry be permitted into banking?

---

explaining the diversity of experience under the free banking laws.

[3]Hugh Rockoff, "Origins of the Usury Provision of the National Banking Act," unpublished working paper (1988).

3. Control of the Monetary Base.

The free banking system did not provide, it is important to emphasize, a test of Hayek's speculation that banks freed of all governmental restraints would begin to produce some new form of monetary base. Hayek (at his most radical) imagined banks issuing their own monetary units. Citibank might issue Citimoney, perhaps redeemable in some basket of commodities, but not necessarily in a basket of commodities defined by the U.S. government. On the contrary, free banking like all American systems during the nineteenth century (except for the period of the War of 1812 and the period of the Civil War) was based on an ultimate metallic monetary base; during this period a bimetallic standard of gold and silver. The free banking era can tell us something about how those systems work, but not about how free banking might produce a private unit of account.

The free banking era witnessed one of the most important disturbances of the metallic based systems of the nineteenth century: the inflation produced by the great discoveries of gold in California in 1848 and subsequently in Eastern Australia and elsewhere. The gold discoveries show that even under a commodity standard severe shocks to the monetary system can occur. In the actual circumstances that shock appears to have been cushioned in the U.S. by a rapid growth in the demand for money. This is illustrated in Table 1 which shows the monetary base, the stock of money, three measures of prices, and real GNP from 1847 to 1859.

Table 1

Money, Prices, and Related Variables, 1847-1859

Year	(1) Money[a]	(2) Monetary Base[a]	(3) Wholesale Price Index[b]	(4) Consumer Price Index[b]	(5) GNP Deflator[b]	(6) Real GNP[c]
1847	267	109	104	99	87	2.666
1848	259	118	80	95	87	2.460
1849	316	149	79	92	85	2.664
1850	360	176	93	94	89	2.872
1851	409	191	90	92	87	2.977
1852	451	217	94	93	91	2.976
1853	505	220	99	93	96	3.179
1854	509	231	114	101	102	3.281
1855	535	230	124	104	105	3.479
1856	575	241	111	102	109	3.488
1857	477	248	137	105	105	3.941
1858	547	244	102	99	104	3.550
1859	565	233	107	100	98	4.029

[a]Millions of dollars
[b]1860 = 100
[c]Billions of 1860 dollars

Sources. Column (1). Milton Friedman and Anna J. Schwartz, Monetary Statistics of the United States: Estimates, Sources, Methods (New York: Columbia University Press, 1970), Table 13, columns 5, 12, and 17, p. 222-225. Column (2). Monetary Statistics, Table 13, columns 4 and 5, pp. 222-224. Column (3). Walter Buckingham Smith and Arthur Harrison Cole, Fluctuations in American Business, 1790-1860 (Cambridge: Harvard University Press, 1935), p. 167. Column (4). Paul A. David and Peter Solar, "A Bicentenary Contribution to the History of the Cost of Living in America," Research in Economic History, ed. Paul Uselding, vol. 2 (Greenwich, Conn: JAI Press Inc., 1977), p. 16. Columns (5) and (6). Thomas Senior Berry, Production and Population Since 1879 Revised GNP Series in Constant Dollars, (Richmond VA: The Bostwick Press, 1988), pp. 21, 19.

The effect on both the monetary base and the stock of money were dramatic by antebellum standards.[4] Between 1848 and 1856 the monetary base was multiplied by a factor of 2.04 and the stock of money was multipied by a factor of 2.22.[5] Today, of course, many countries experience monetary growth of this magnitude as a matter of course. Increases of nearly this magnitude in the U.S. have come to be seen in the 1980s as a tight money policy. It is a measure of the success of the metallic standards of the nineteenth century that increases in the quantity of the monetary metal resulting from the discovery of unbelievably rich mines resulted in a growth rate of the monetary base considered rather conservative in recent years.

This increase in the stock of money produced, as the quantity theory of money predicts, an increase in nominal income and prices. Indeed, the cyclical expansion, which the NBER dates from 1848 to 1854, is the longest on record from 1834 (when the table I am following begins) until World War II. The coincidence of this long and inflationary expansion with a large increase in the stock of money cannot be attributed to channels of causation

---

[4]The money supply figures shown in the text are the sum of Friedman and Schwartz's (1970, pp. 222-225) estimates of specie held by the public, banknotes held by the public, and adjusted deposits. This is the same as estimates by George Macesich (Friedman and Schwartz, 1970, p. 231-232) in each year except 1850 when there is a modest 5 percent difference. There are also money supply estimates made by Peter Temin (Friedman and Schwartz, 1970, p. 231-232) on a slightly different basis, but for broad comparisons the differences are not important.

[5]The NBER chronology shows an economic expansion lasting five years from 1848 to 1853. (Moore, 1980, p. 152) There was a recession in 1853 to 1855, followed by an expansion from 1855 to 1856. In the text I have generally given rates of change from the trough in 1848 to the peak in 1856 for two reasons. (1) The recession appears to have been mild, and does not show up in the real income data. (2) Taking rates of growth to the second cyclical peak allows for a lagged affect of money on prices.

running from the rise in income to the stock of money since the increase in the monetary base resulted from chance discoveries of major goldfields in California and eastern Austalia. This episode is a good example of a natural experiment well structured to test the quantity theory of money.

The surprising thing is that a monetary shock of this magnitude apparently produced a mild increase in the price level. One of the available wholesale price index does increase by a factor of about 1.39 between 1848 and 1856, corresponding to an annual growth rate of 4.09 percent per year. But the GNP deflator shown in column 4 was multiplied by a factor of only 1.25, an annual growth of 2.82 percent. And a modern estimate of the consumer price index shown in column 3 of Table 1 reveals hardly any effect at all until 1854. Between 1848 and 1856 the consumer price index increased by a factor of only 1.07.[6]

International adjustments played some role in inhibiting price increases. The flow of gold into bimetallic France during this period produced an outflow of silver to India and the Far East, the so-called golden parachute. And as predicted by the Humean-Price-Specie-Flow Mechanism, the balance of international payments turned against the U. S. By one measure (Berry 1988, p. 26) the net export position of the U.S. changed from a surplus of 7 million in 1848 to a maximum deficit of 45 million in

---

[6]As my critics pointed out when I presented the first version of the paper in London, the data may be unreliable. There has been a good deal of work done on wholesale price indexes in the antebellum period, but the resulting numbers undoubtedly have a wide margin of error. Broader measures such as the consumer price index probably have a wider margin of error. A perusal of the prices of individual commodities naturally shows a wide range of changes, with a tendency for prices of internationally traded commodities to increase faster than prices of domestically traded goods. The price of wheat, for example, rose 5.02 percent per year from 1848 to 1856 and the price of bricks 1.55 percent per year. The conclusions in the text, then, must be considered tentative until more reliable data becomes available.

1853, the deficit then declined to 14 million in 1856. But international competition cannot explain why real money balances in the United States rose dramatically, and remained high despite a long period for adjustment.

If price increases had been held down in the rest of the world, by whatever mechanism, and the demand for money had been stable in the U. S., the U.S. would have run even larger balance of payments deficits, and lost even more of the new gold. Instead the U.S. made very large additions to its stock of real cash balances. Or to put it differently, international price competition can not explain why monetary velocity in the U.S. fell at the rate of 2.79 percent per year from 1848 to 1856.

Velocity in the twentieth century tended to rise in cyclical exapansions. In the nineteenth century, however, because of the long secular decline, velocity tended to fall somewhat even in expansions.[7] This phenomenon has been examined in depth by Michael Bordo and Lars Jonung (1987). They attribute the long-run decline in velocity, a phenomenon they observe in a number of countries, to the spread of the money economy and the development of commercial banking. The fall in velocity during the gold rush boom, however, appears to have been larger than can be accounted for solely by secular trends. For example, from 1833 (the beginning of Macesich's monetary series) until 1859 velocity fell -.81 percent per year. From 1820 (the beginning of Temin's money stock estimates) until 1859 velocity using this measure of money fell at -.89 percent per year. The acceleration of the decline in velocity during the gold rush boom might, however, be due to an

[7]See the graphs in Milton Friedman and Anna J. Schwartz (1969 pp. 128-129).

acceleration of the forces behind the long-run decline in velocity, a possibility I will return to below.

4. Free Banking and the Gold Rush

This paradox, a large monetry shock combined with a mild inflation, has been neglected by monetary historians. There isn't sufficient space here for a full investigation. It is appropriate, however, to ask whether the advent of free banking had anything to do with the mildness of the inflation generated by the gold discoveries. The reason for focussing on this issue is that much of the current interest in free banking stems, I believe, from the hope that free banking can contribute to macroeconomic stability. Of course, even if the only benefit from free banking was improved financial services (lower loan rates, higher interest on deposits, service with a smile, and so on) the gain would be worth pursuing. But it is the connection with monetary policy that makes competition in banking potentially more interesting than competition in other important industries.

Before examining the relationship between free banking and the expansion in detail we want to know how much can be explained by the traditional arguments in the demand for money function: interest rates and real income. Table 2 shows several interest rate series. There is some evidence of a downward trend. But it seems unlikely that declines of the magnitude shown here could account for such large accumulations of cash balances. The federal government bond rate, for example, falls about 160 basis points between 1848 and 1856, a fall of 23 percent, while real cash balances rose 54 percent, so the demand for money would have to have been unusually sensitive to interest rates to produce deccreases in velocity of

this magnitude. The commercial paper rate does show a large decrease between 1848 and 1856, but the volatility of this series makes it unlikely that this was representative of short term rates. The rates derived from bank balance sheets and earnings given in columns 4 and 5, do not show a clear trend.

Table 2

Interest rates, 1847-1859

Year	(1) Federal Gov. Bonds	(2) Commercial Paper	(3) Boston (All banks)	(4) New York City (12 Banks)	(5) Philadelphia (12 Banks)
1847	5.77	9.59	3.48	5.65	n.a.
1848	5.71	15.10	3.99	5.41	n.a.
1849	5.16	10.25	8.12	4.92	n.a.
1850	4.58	8.04	5.30	5.81	4.01
1851	4.47	9.66	4.94	5.59	7.85
1852	4.39	6.33	2.87	4.28	1.51
1853	4.02	10.25	6.20	4.05	4.97
1854	4.14	10.37	4.07	4.89	4.75
1855	4.18	8.92	2.80	4.20	4.75
1856	4.11	8.83	4.90	4.40	4.10
1857	4.30	11.56	4.73	3.99	3.24
1858	4.32	4.81	4.30	3.67	5.57
1859	4.72	6.14	4.68	4.18	3.26

Sources: columns (1) and (2). Sidney Homer, A History of Interest Rates (New Brunswick N.J.: Rutgers University Press, 1963), pp. 287, 318-9. Columns (3), (4), and (5). Hugh Rockoff, "The Short-Term Capital Market Before the Civil War: An Exploratory Inquiry," unpublished working paper (1988), pp. 12, 19, and 22. These were computed by dividing dividends plus change in surplus by total earning assets. Realized yields can be low in a period of financial stringency even though lending rates are high.

Real per capita income grew .82 percent per year from 1848 to 1856. This implies, when one works it through, that an income elasticity of 4.37 would be required to account for the decline in velocity, ignoring the contribution of interest rates and other variables. But over the whole period 1820 to 1859 an income elasticity of 1.70 could account for the decline in velocity. The results of these "back of the envelope" calculations are confirmed when demand for money functions are estimated. Examples are presented below in conjunction with tests of other explanations for the paradox.

One way increased competition might have contributed to stability was by forcing banks to provide better services for depositors and noteholders, thus increasing the demand for money. One piece of evidence for increased competition is the increase in the number of banks. In Massachusetts the number of banks increased from 112 in 1848 to 172 in 1856; in New York State the increase was from 171 to 338; in Pennsylvania the increase was from 47 to 71; in Ohio the increase was from 48 to 65.[8] All of these increases, and those in many other states, were large by historical standards, although the antebellum period in general was a period of rapid growth in the number of banks. Bordo and Jonung (1987, pp. 81-82, and passim) cite growth in the number of bank offices per capita as an institutional change leading to a decline in velocity. So a prima facie case can be made that the introduction of free banking cushioned the impact of the gold discoveries. In an earlier draft of the paper I put considerable weight on this argument. But critics

---

[8]U.S. Comptroller of the Currency, Annual Report, 1876, pp. XCVIII, CII, CIV, CXVI.

of the argument have convinced me that the case is somewhat weaker than I believed.

First of all free banking laws, per se, cannot explain the vast increase in the number of banks because only a fraction of all states adopted them and some states that did adopt them incoporated costly requirements that discouraged entry. For example, of the four states cited above, only two New York and Ohio had free banking laws, and in Ohio formation of the free banks was suspended for part of the period. This point is related to one made recently by Kenneth Ng (1988). Ng shows that in most cases (the exception was New York) the passage of a free banking law did not lead to faster growth of bank assets in the free banking state than the national or regional average.

But it may be that to look at the free banking law as the only vehicle for providing increased competition in banking is to take too mechanical a view of the process. Commercial freedom, indeed political freedom, was in the air. Some states responded by passing a free banking law. Overall, 19 free banking laws were passed in the antebellum period, 12 in the period 1848 to 1856.[9] But the legislatures in other states may have responded by simply becoming more willing to charter additional banks, thus giving more weight to the up-and-coming class of potential entrepreneurs rather than to established interests. Richard Sylla (1985) argues that bank entry in New

[9]Hugh Rockoff (1975, p. 3). This total includes two separate laws from passed in Michigan.

England was essentially free although it relied mostly on legislative charters.[10]

The potential political interactions here are complex. Greater willingness to charter banks in some cases, may have been a way of undermining pressures for a formal free banking law. In other cases, the intent of free banking could be undermined by including various restrictions in the free banking law.

George Green's (1972, pp. 130-135) discussion of the origins and structure of Louisiana's free banking law shows just how complex the political context could be. The State Constitution of 1845 and the general incoporation law of 1848 prohibited the chartering of new banks, reflecting democratic hard money sentiments. But attitudes changed quickly spurred in part, perhaps, by the high profits said to be earned by the New Orleans banks, protected as they were by an absolute prohibition on competition. A constitutional convention in 1852 permitted the legislature to charter banks one by one or enact a free banking law. In 1853, a free banking law was passed, but it contained a requirement of a one-third reserve against deposits. This requirement followed an older Louisiana tradition rather than the free banking model of the North. Given the restrictiveness of the actual legislation it is not surprising that Bank assets in Louisianna did not grow faster than in surrounding states. But the reversal of the state of opinion between 1845 and 1852 is a sign of how strong political pressures for easing bank entry requirements had become.

---

[10]An exception is the attempt by the New England country banks to obtain a charter for a bank in Boston to compete with the Suffolk (the bank that redeemed country banknotes). This effort was frustrated until a charter was finally obtained for the Bank of Mutual Redemption in 1857.

Even if we can see our way around the problem raised by Ng there are still a number of problems facing the argument that increased competition in banking explains the fall in velocity. (1) A greater number of banks would reduce the time required to get to the bank, but this "shoe-leather" cost, while it might explain the increase in balances held in the frontier areas does not seem sufficient, intutitively, to explain the equally great rise in real balances in the eastern financial centers. (2) Another possibility is that explicit payment of interest on deposit accounts may have increased. But at least in Massachusetts, one of the few states for which we have data, the ratio of interest bearing deposits to total deposits actually fell during this period, continuing a long term trend. (3) Finally, the number of banks is not significant in regressions explaining the demand for money, when other variables such as interest rates and real income are included.

How then can we explain the broad correspondence between the increase in the number of banks and the increase in real money balances? A line of causation may have run from the growth in real cash balances to the growth in the number of banks. With the demand for banking services on the rise, legislatures may have been swamped with applications for new charters. Some legislatures may have met this problem by adopting free banking laws while others simply responded to the challenge by rapidly chartering new banks. Just as a rise in the demand for wheat would produce a rise in the number of farms, the rise in the demand for real balances would produce a rise in the number of banks. This point can be confirmed econometrically. Lagged values of real money balances are more highly correlated with the current number of banks than are lagged banks with current real money balances.

Finally, it appears that there are other potential explanations for the mildness of the inflation. One possibility that I have explored in a preliminary way turns on the rapid increase in asset prices triggered by the gold rush.[11] Rising asset prices can be expected to increase the demand for money in several ways, two of which seem relevant here. (1) Rising asset prices represent an increase in wealth. (2) Rising asset prices are normally accompanied by an increased volume of transactions on financial markets. It seems beyond question that there was a substantial boom on asset markets, and that it was nationwide. In the East, particularly in New York, the speculative spirit was manifested in financial markets. In the West land prices rose; in the South, the price of slaves. Unfortuneately, there is no comprehensive index of asset prices or quantities that would permit a decisive test of this explanation. Table 3, however, presents two representative regressions based on an index of stock prices.

Another possibility is that monetization of the economy increased during this period. It has been said, for example, that in Indiana production by farmers of goods for the home (as opposed to the market) fell by one half during the 1850s. (Esarey, 1947, p. 100). This is one of the factors stressed by Bordo and Jonung (1987), and a variable to account for this factor is also included in table 3.

---

[11]See Friedman (1988) for a full analysis.

Table 3

Estimates of the Demand for Money, 1820-1858

Dependent Varaible: Logarithm of Real Per Capita Money Balances[a]

	1821 - 1858		1834-1858	
Indepen. Variables	Coeff.	Absolute t	Coeff.	Absolute t
Constant	-3.18	3.04	-2.74	1.57
Long interest rate[b]	.02	.03	--	--
Short interest rate[c]	--	--	-.13	2.14
Real per capita income[d]	.97	3.36	.63	1.49
specie-money ratio[e]	-.08	2.05	-.11	1.77
Real stock prices[f]	.17	1.84	.17	1.96
Gold rush[g]	.14	2.24	.09	1.25
Lagged money	.43	2.88	.68	3.48
Adj. R^2	.90		.83	
S.E. Regression	.10		.09	

[a]Natural logarithm of per capita money balances divided by the GNP deflator. See Table 1 for sources.

[b]Natural logarithm of the New England Municipal Bond Rate from Homer (1963, pp. 286-287).

[c]Natural logarithm of the comerccial paper rate from Homer (1963, pp. 318-319).

[d]Natural logarithm of per capita GNP in 1860 dollars. See Table 1 for sources.

[e]Natural logarithm of the ratio of currency in the form of specie to money from Temin (1969, pp. 71, 159).

[f]Natural logarithm of an index of stock prices divided by the GNP deflator. Three stock price series from Smith and Cole (1935) were linked. The June value of their index of Bank and Insurance Stock Prices from 1820 to 1833 (p. 174), the June value of their Index of Railroad Stock Prices from 1834 to 1845 (p. 183), and their index of Railroad Stock prices from 1845 to 1858 (p. 184). The average ratio of the series in the available overlapping years was used to link them.

[g]A dummy variable that takes the value 1 in the years 1850-1856.

The dependent variable in each case is the natural logarithm of real percapita money balances. Each equation contains six explanatory variables (all taken in logarithms) besides a constant term. (1) An interest rate. A long term bond rate is used in the first equation, the commercial paper rate (available for only the shorter period) in the second. (2) Real per capita income. (3) The ratio of money held as specie to the total money supply. This variable, suggested by the work of Bordo and Jonung (1987), was included to account for the gradual monetization of the economy. Their argument is that as people become more sophisticated in the use of money they switch from currency to deposits, and hold larger real balances. In our context this implies a negative coefficient. (4) Real stock prices. In the second equation these are railroad stock prices divided by the GNP deflator. To get a long-term index I linked in an index of bank and insurance stocks for the pre-1834 period. This is not as farfetched as it might at first appear since in each period the index then reflects the dominant stocks in a narrow market. But a more representative index would be useful. Some of the potential problems in using this data are discussed in Schwert (1989). (5) A dummy variable (gold rush) that takes the value one in the years 1850 through 1856. The purpose of this variable is to test whether these years still appear special after other factors are taken into account. (6) The lagged value of the dependent variable. This variable, a common one in demand for money studies, allows for the gradual adjustment of desired to actual real balances.

Most of the variables were signed as predicted and were statistically significant. This was generally true in a wide range of similar regressions designed to test alternative specifications. There is some evidence of

serial correlation in the residuals, but at least the Cochrane-Orcut adjustment left the results similar, if anything a bit stronger. In particular, the specie-money ratio designed to capture the increasing monetization of the economy had the expected negative sign confirming the results obtained by Bordo and Jonung (1987) for a large sample of countries. And the stock market variable had the expected positive sign confirming a result obtained by Friedman (1988) with much more recent data. But despite taking these factors into account the gold rush variable is still significant. Real money balances, in other words, still appear unusually high in these years.

But I read these regressions as saying that variables other than the introduction of free banking may be able to account for the rise in real balances in the gold rush expansion. In particular the gold rush dummy falls in size and significance in the second equation, when a better proxy for short-term interest rates is available, although the sample is then extremely small. With better measures of the rise in asset prices, and a better way of allowing for the slow adjustment to the increase in money supplies produced by the gold rush, the residual to be explained by free banking might prove even smaller.

Finally, it should be emphasized that the free banking explanation for the mildness of the inflation depends not on the existence of competition, but rather on the <u>introduction</u> of competition offsetting the increase in the monetary base. Had deregulation of the system occurred earlier so that the effects had worked out of the system by 1848, the gold rush boom on this argument might have had more repercusions on prices or the balance of payments.

To sum up, although the introduction of free banking occurred during a period in which a major monetary shock was absorbed with apparent ease, this may have been fortuitous. The evidence suggests that at most free banking deserves only a limited share of the credit.

5. A Comparison of 1848-1856 with 1981-1989.

Whatever the role future research ultimately assigns to deregulation of banking, monetization of the economy, asset price changes, and so on in the explanation of the decline in velocity, it seems useful here to compare the gold rush boom with another period in which people have examined similar factors in an effort to explain the ability of the economy to absorb unusually large increases in the stock of money: the current prolonged expansion in the U.S. This comparison is made in Table 4.

Table 4

A Comparison of the Period 1848-1856 with 1981-1988

(Annualized Growth Rates)

Variable	1848-1856	1981-1988
Money (M_2)	9.97	7.41
,, (M1)	--	8.14
GNP Deflator	2.82	3.69
Real GNP	4.36	2.96
Velocity (M2)	-2.78	-.76
,, (M1)	--	-1.49

Consumer Prices	.89	3.73
Producer Prices (Ag.)	4.74	1.36
Producer Prices (Ind.)	4.99	1.26

Sources. 1848-1856: Table 1, and for producer prices, Smith and Cole, 1935, p. 168. 1981-88: U.S. Economic Report of the President, 1989, pp. 385, 312, 310, 308, 373, and 382. 1988 figures were the June observation when monthly data was given or the average of the second and third quarters.

The growth of nominal GNP was rapid in both expansions, but it was divided slightly differently between real and nominal changes. Inflation was about nine tenths of one percent higher and real GNP growth about one and four tenths percent lower in the modern period. The increase in the stock of money was faster in the earlier episode (more so if we compare the antebellum money stock with modern M2). And partly on that account the decline in velocity was greater. If we move from the GNP deflator to less comprehensive indexes we see an interesting reversal. In the earlier period consumer prices appear to have risen less than producer prices; in the modern period consumer prices rose faster than producer prices. The explanation in both periods may lie in the rate of inflation in international markets since producer prices tend to follow this trend more closely than more comprehensive indexes.

Perhaps the main lesson of this comparison is that over periods as short as one-half business cycle, the relationships among money, prices and real income are subject to considerable variation. The gold rush did produce an increase in prices and real output. But it did not produce as much inflation, or as severe a balance of payments deficit, as might have been expected. But this appears to have been a somewhat fortuitous due (perhaps) to the acceleration of the long term process of monetization or to the revaluation of assets triggered by the economic expansion. Free banking, per se, probably deserves only a small part of the credit for the relatively favorable outcome of a potentially inflationary monetary shock.[12]

---

[12]To the extent that the Crisis of 1857 can be linked to the expansion (I am not convinced that it can be) the favorable impression created by looking primarily at the period 1848 to 1856 is misleading.

In a similar way, the current expansion does not appear to have produced as much inflation as might have been anticipated, particularly by an analyst inclined to focus on M1. These deviations from trend should be regarded as spurs to further research rather than reasons for abandoning monetary analysis.

6. A Bimetallic Standard

The monetary standard during the free banking era was not a monometallic gold standard, but rather a bimetallic standard. The mint stood ready to coin silver into legal tender dollars. But due first to the mint ratios set in 1834 that were favorable to gold, and second to the vast increase in the production of gold, there was very little silver money actually in circulation in the 1840s and 1850s. Many midwestern bankers, it was said, had never seen silver coins, except for those brought in by German immigrants. Nevertheless, the potential availability of a second monetary metal was an important safeguard of price level stability. It is the existence of this safeguard that makes it appropriate to refer to the antebellum system as a bimetallic system.

To illustrate this point suppose (1) that the U.S. had been on a monometallic gold standard in the 1850s instead of a bimetallic standard, and (2) that gold had not been found in California and Australia. Could the existing supply of gold have maintained a stable price level, or would the economy have been forced to undergo the sort of deflation, with all of its disruptive political and social consequences, that occurred in the U.S. from 1873 to 1896 (when insufficient supplies of gold were forthcoming)?

If real income and velocity had changed from 1848 to 1856 at the rates they actually changed (4.36 percent and -2.79 percent) then an increase in the stock of money of 7.15 percent per year would have been necessary to maintain price level stability. While money growth exceeded exceeded this rate in the expansion that followed the depression of the early 1830s, over the longer run it did not. Macesich's money series begins in 1833. From 1833 to 1848 the stock of money rose only 3.55 percent per year. To see what a continuation of this rate would have meant, apply it to the growth in the demand for money of 7.15 percent per year that actually prevailed over the period 1848 to 1856. The difference implies a deflation of 3.60 percent per year. In other words, had the economy truly been on a gold only standard and had no new sources of gold been discovered, the resulting deflation would have been fairly severe. By way of contrast, from 1879 when the U.S. returned to the gold standard and 1896 when opposition to the gold standard peaked in the U.S. with the nomination of free silver candidate Wiliam Jennings Bryan for president by the Democrats, the decline in the GNP deflator was about 1.5 percent per year and the decline in the consumer price index was about 1.1 percent per year.

Obviously, these calculations do not allow for the myriad of factors that would have impinged on the relationship between money and prices under the twin hypothetical assumptions of a monometallic gold standard and no new gold discoveries. To the extent, for example, that the fall in velocity during the period 1848 to 1856 was caused by the revaluation of assets produced by the monetary expansion, the example overstates the decline in prices that would have occurred under the twin assumptions of a monometallic

gold standard and no gold rush. But the calculations do illustrate that there was a potential for a disturbing deflation.

Now replace assumption (1) with the actual antebellum arrangement. Under the bimetallic system deflationary pressures generated by stagnant gold supplies would have encouraged producers of silver and owners of existing stocks of silver to bring their silver to the mint (since there was unlimited demand for silver at the mint price) and increased supplies of silver base money would have mitigated the fall in prices.

Against this undeniable benefit of a bimetallic system it is often argued that the alternating replacements of one metal by another are a major cost of a bimetallic system. The point is sometimes made by saying that a "true" bimetallic standard (according to this definition one in which both metals circulate side by side) is unlikely to exist for very long and that the most likely outcome is an alteration of gold and silver standards. But this argument places too much weight, I believe, on the day to day functioning of the system and too little on the macroeconomic properties of the system. True, gold coins may be somewhat lighter, and to some people more attractive, so that a rapid replacement of gold by silver would cause some transactional and psychological costs. (The replacement of silver by gold is usually welcomed). But it is hard to see how costs derived from these preferences could be the source of major economic costs from society's point of view. During World War II in the U.S. (to take an extreme case) copper cents were replaced by steel cents in one year, and for several years the nickel was removed from the "nickel" (the American 5 cent piece). These were matters of interest primarily to numistmatists.

There is no guarantee, of course, that a bimetallic standard will produce a smoother increase in the monetary base than a gold only or silver only standard. But the logic of not putting all one's eggs in one basket, and the American experience from 1873 to 1896, suggest that a bimetallic standard is to be preferred to a monometallic standard if a choice must be made between the two.

7. The Need for a Lender of Last Resort

There was no lender of last resort during the free banking era. Indeed, the U.S. had no clear lender of last resort during the period from the fall of the Second Bank of the U.S. until the Federal Reserve was established in 1913. One could make the case, however, that the response of the system to the crisis of 1857 (the major crisis in the period) is particularly informative. By the latter part of the postbellum period, the large New York banks had attained such a major position within the financial system that one could argue that at times, particularly under the leadership of J.P. Morgan, they sometimes acted as lenders of last resort. During the free banking era, moreover, banking legislation varied so much from state to state (since there was no national banking system) that this epsiode can shed considerable light on the type of system most likely to survive a banking panic in the absence of a lender of last resort.

It was in many respects a classic crisis. Although there had been difficulties in 1854, the crisis of 1857 seems to have come as almost a complete shock to the market. The spark was the failure of the Ohio Life Insurance and Trust Company. Based in Ohio this bank had a reputation for soundness, but its New York agent had speculated heavily in railroad bonds.

Here is how Hugh McCulloch president of the Bank of the State of Indiana remembered the crisis.

> It came without premonition; it was a financial sirocco which at once dried up the springs of confidence and faith. Those who had money held it with the grip of misers. Trust ceased; confidence between men, confidence in everything but money, and hard money at that, disappeared. Men who were worth millions could not raise the few thousands that were needed to save them from discredit. Distrust, as general as it was causeless, pervaded the country. (McCulloch, 1889, p. 133).

Given the violence of the crisis, it is not surprising that a suspension of specie payments took hold in New York and quickly spread through the rest of the country. A few banks and banking systems, however, managed to hold out against the general suspension. In New York the Chemical Bank, alone, continued to redeem its notes. Among banking systems, only the Bank of the State of Indiana, the State Bank of Ohio, the banks of Kentucky, New Orleans, and Charleston (as far as I have been able to learn) continued to redeem in specie.

The systems of free banking in New York, or chartered banking in New England, were not able to survive the crisis unscathed. The interesting thing here is that three of the western systems escaped suspension, despite the origin of the panic in the failure of the Ohio Life Insurance and Trust Company, and the general reputation of the west for free and easy banking. What these three groups of banks had in common was that they were, to an extent, branch banking systems. They were not branches in the modern sense, but rather more like federations of banks. Each branch was in many ways an independent bank, but there was a board to oversee the overall operation of the banks, and each branch was in some degree reponsible for the liabilities of the other branches.

Bray Hammond (1957, p. 712) argues that it was the small number of banks in these states that allowed them to "act in concert" and avoid the crisis. But he does not define exactly what actions they took in concert that banks in the east could not. It is unclear, for example, whether there was any actual transfer of specie among branches in the three western systems during the crisis. Hugh McCulloch's (1889, pp. 134 - 35) description of his monitoring of the demands on the banches of the Bank of the State of Indiana in the crisis suggests that no actual transfers were made, although he had this eventuality in mind. More likely, it was the potential reinforcements from other branches (both in the short and long runs) that reassured noteholders and so modified the demands on the bank. The participation of the state government in the Ohio and Kentucky systems may also have reassured depositors and noteholders.

It should be noted, however, that there were some special circumstances at work here. The Bank of the State of Indiana had just commenced operations in January of 1857; when the crisis hit in August.[13] So the Bank may not have been fully loaned up.[14] It was also true that the Bank of the State of Indiana was legally bound to give up its charter if it suspended payments. Under ordinary circumstances it might have expected legislative relief from this provision in the event of a nationwide financial crisis. But the

---

[13]The Bank of the State of Indiana was an entirely private successor to the State Bank of Indiana, a similar, but partially state owned institution then in the process of being wound up. The State Bank of Indiana had in 1840 surmounted a general suspension affecting the South and West. Specie payments were not made uniformly, but most demands were arranged in some fashion. (Harding, 1895, p. 18).

[14]The Bank of the State of Indiana took over the business of the State Bank of Indiana. But the managers of the State Bank had not foreseen that there would be a successor and had begun to wind up its affairs.

political circumstances in Indiana were such that the Bank of the State could not count on this possibility. In other words, in other states suspending redemption was a way of preserving the long run value of a bank charter, but not in Indiana.

In addition, McCulloch denigrates the performance of the Kentucky banks on the grounds that many of the notes were issued by branches that were not easily accessible, and of the State Bank of Ohio on the grounds that the Ohio note brokers considered the branches of the State Bank to be so weakened by the failure of the Ohio Life and Insurance Company that the brokers did not bother to make a run on them. (McCulloch, 1889, pp. 133-134.) Although, McCulloch's desire to cast the performance of his own bank in the most favorable light is obvious, it is nevertheless true that he was well informed and generally reliable. Clearly, it would be useful to know more about how and why the western systems escaped the general panic.

There was an example of cooperation in New Orleans when one of the chartered banks (as distinct from the free banks) was bailed out by the other chartered banks at the governor's request. But Green (1972, p. 162) concludes that the major factor may be simply that the crisis hit at a moment when the banks were unusually strong. The high (one-third) legal reserve ratio against deposits for the free banks and the one third ratio against notes and deposits for the chartered banks may also have played a role. Overall, according to Hammond (1957, p. 716), New Orleans led the nation with a 52.46 percent reserve ratio against notes and deposits.

The experience of the western branch systems in 1857, despite the reservations, help to strengthen a point made by Friedman and Schwartz (1963, pp. 352, 457-8) following work by George Morrison, and recently

expanded upon by Eugene White (1984, pp. 131-2) based on a comparison of the U.S. and Canada during the Great Depression. Canada, with a small number of banks but many branches, suffered no failures during the Depression; but the U.S. with many small independent banks, suffered thousands. It would seem to follow that permitting branch banking may be an effective way of reducing the chance of a financial panic.[15]

These experiences do not say, however, that branching systems will be better in all circumstances. For example, one could imagine in our current political climate that a large financial center bank could be forced by political pressures to keep uneconomic branches in the hinterlands open, thus weakening the bank as a whole, and increasing the probability of a major failure.

Moreover, while it is true that the experience during the crisis of 1857 suggests that there were banking structures likely to be resistant to panic, it is hard to make the case that a widespread branching could reduce the probability of a panic to zero. There still appears to be some irreducible minimum of risk inherent in a fractional reserve banking system. A central bank acting as lender of last resort may be the only politically feasible institutional arrangement for elminating this risk.[16] It is useful, however, to turn the question around and ask whether we should build into the banking system additional mechanisms such as branch banking for minimizing the risk of and damage from financial crises. The answer is

---

[15]Friedman and Schwartz (1963, p. 353), however, argue that as paradoxical as it may seem high rates of bank failure (given the decline in the stock of money) may actually have been better for the U.S. because it encouraged people to spend money rather than hoard it.

[16]See Goodhart (1988) for a development of this point using a wide range of historical evidence.

clearly yes. A central bank may fail to act as lender of last resort (as the Federal Reserve system did in the nineteen thirties) for a variety of reasons. Under a specie standard, for example, a central bank might be paralyzed by a lack of specie, or by the fear that a reduction of its specie reserves would add to the panic.

8. A Bank Issued Currency

In the free banking era private banks rather than the government issued the hand to hand currency. There were, it must be admitted, numerous complaints that the lack of a uniform currency was an inconvenience for the public. Instead of accepting a dollar in almost perfect certainty that it is legal tender as we do, people in those days had to accept a risk that the money they took might turn out bad. In practice, things were not as disorganized as a reading of some descriptions of the period suggests. Normally, merchants and their customers dealt with notes issued by local banks they knew well. When dealing with unfamiliar notes a merchant might have to use a banknote reporter, a publication that listed the value of notes, or a counterfeit detector. But the process for him was not that different than a modern merchant checking a credit card number, or worrying about the value of a check being offered.

But were there advantages to a bank issued currency to offset the lack of uniformity? One advantage when notes were issued on general bank assets (as in New England) is that the seignorage from note issue would be invested by private bankers, perhaps more wisely, than when it is spent by the government. The free banking law, however, by requiring banks to back notes

with government bonds returned part of the seignorage to the government in the form of higher bond prices.

A more technical advantage of a bank issued currency is that banks can then accomodate changes in the public's desired ratio of currency to deposits without there having to be a change in the stock of money. Under the present system an increase in the desired ratio of currency to deposits will lead to a withdrawal of currency from the banking system, and a decrease in the stock of money, since currency is high-powered money.

This point can be put more formally as follows.[17]

Let

S_p = specie (gold and silver coins) held by the public

S_b = specie held by banks

N_p = notes held by the public

N_b = notes held by the banks

D = deposits held by the public

M = the stock of money

B = the monetary base

s = the ratio of specie to money desired by the public

n = the ratio of notes to money desired by the public

r_n = the reserve ratio of the banks against notes

r_d = the reserve ratio of the banks against deposits

The stock of money can then be defined as

(1) $M = S_p + N_p + D$

---

[17]Friedman and Schwartz (1963, Appendix B, pp. 776-798) present a general disscussion of this approach. The same point has been made in somewhat different terms by White (1984, pp. 9-14), and Selgin (1987, p. 114), who concentrate on a note supply, rather than money supply model.

and the monetary base as

(2) $B = S_p + S_b$

Equation (2) has been specialized for the free banking era. Notes are assumed to be issued by banks, only specie is treated as part of the monetary base.

With a little bit of manipulation we can set up the following identity.

(3) $M = B*\{1/(n*(r_n - r_d) + r_d*(1-s) + s)\}$

This equation can be viewed as a money supply function showing how the money supply varies depending on the monetary base (which varies with the output of the mines and the balance of payments), the preferences of the public for notes and specie, and the preferences of the banks for reserves. The key point here is the term $n*(r_n - r_d)$. Variations in the proportion of their total money balances the public wishes to hold in the form of notes (holding constant the proportion they desire to hold as specie) affect the stock of money only to the extent there is a difference between the reserve ratios against notes and deposits. If the two reserve ratios are equal, changes in the desired proportion of notes have no effect on the stock of money.

It is important to remember, however, that this is not protection against runs on banks during a financial crisis. In that case what people would want is not notes, but hard money. If the ratio s rises in equation (3) then the stock of mould fall.[18]

---

[18]There are some reasons why the public might want to convert from deposits to notes in a crisis. For example, noteholders were preferred creditors in some cases, so depositors might want to convert in order to get a higher place in the bankruptcy line. In the free banking states the bond backing for notes, and the fact that the bonds were held by state authorities made notes more attractive in a panic. These factors may explain the increase in note holding during the crisis of 1857.

We can contrast this system with one in which notes are highpowered money issued by the government. Redefine the monetary base as

(2') $B = S_p + S_b + N_b + N_p$

If we also redefine the reserve ratios of the banks to include notes we have the following equation for the stock of money.

(3') $M = B*(1/(n*(1 - r_d) + r_d*(1-s) +s))$

The only difference in the two money supply equations is in the $n*(1 - r_d)$ term. Now, since notes are base money, increases in the note-to-money have a depressing affect on the stock of money.

But how large were these effects in practice? If we take the time derivative of equation (3') allowing money and the note issue to vary while holding other variables constant, omit the subscript on r, and rearrange terms we get

(4) $M' = -n'(n(1-r)/[n(1-r) + r(1-s) + s])$

where the apostrophe after a variable refers to the time rate of change (growth rate) of the variable. Equation (4) is an upper bound estimate of the fluctuations in the money stock avoided because notes were issued by banks.

Over the years 1847 to 1859 the standard deviation of year to year percentage changes in the note to money ratio was 7.54 percent. The standard deviation of year to year percentage change in the term full term $-n'(n(1-r)/[n(1-r) + r(1-s) + s])$ was 2.43 percent. Perhaps not a major gain, but not negligible either. This figure might be contrasted with the standard deviation of the year to year percentage change in the stock of money of 9.64 percent. So, on this crude calculation, fluctuations in the stock of money were reduced by perhaps 20 percent from what they would have been. As

equation (4) makes clear this advantage of free banking shrinks as n, the proportion of notes in the money stock, shrinks. Today, with this ratio less than 7 percent this effect is not of great moment.

Perhaps the most compelling reason for allowing banks to issue currency is that it would encourage innovation in the supply of currency. One reason for the acceptance of a government monopoly of the note issue is the implicit assumption that innovation is not possible. The government, obviously, can print pieces of paper as easily as banks can. Given the printing technology available at a point in time it would seem that any differences in the cost of production or technical quality between a bank issued currency and a government issued currency would be small. But given the fast pace of innovation in communications in general, the assumption that innovation in the issue of currency is unlikely may no longer be correct. Bank debit cards are but one example of the type of innovation that would be more likely in a private regime.

9. Wildcat Banking

Wildcat banking was the most romantic aspect of the American experience with free banking, and also the least understood. What was a wildcat bank? Perhaps the best way of explaining is by quoting an account of an encounter with a wildcat bank.

> The story is told of the hunt by an Adams Co. [an express company] agent for the Bank of Morocco. With a thousand dollars in Morocco bills, the man traveled through half of Indiana without discovering anyone who had heard of the bank. Late one afternoon he came upon two isolated log cabins on a backwoods road. One was a

> blacksmith's shop; the other was the smith's house. The smith admitted that he was the proprietor of the Bank of Morocco, that the Bank itself was his potato barrel. He paid off the notes with gold concealed in the barrel, but begged the agent to keep the location of the bank a company secret. If the whereabouts of the Bank of Morocco became known, he pleaded, a general presentation of its outstanding notes would ruin him. (Schultz and Craine, 1937, p. 248).

There are two aspects of this story worth noting. (1) This was something that happened under Indiana's free banking law. Bad banking, of course, could happen under chartered banking as well. But it was likely to be of a different form, cronyism would play a role, and the banker who got a charter would more likely be an established businessman and politician rather than the local blacksmith. (2) It was a frontier phenomenon. The chance of this happening in a more developed region with better means of communication, and more sophisticated bankers and noteholders was small.

But given the bond security function how could this happen at all? The crucial variable was the number of notes a potential banker could issue for a given dollar in bonds deposited. There are two cases to consider. (1) <u>The nominal value of notes that could be issued exceeds the value of the bonds deposited</u>. In this very simple case there is an obvious incentive to set up a wildcat bank. All one has to do is deposit some bonds, issue the notes and pocket the difference. There is no reason the process has to stop after one round. Suppose a banker could issue $100 on the basis of $90 in notes. Then the wildcatter could deposit $90 worth of bonds, issue a $100 worth of notes, use those notes to purchase $90 worth of bonds and $10 worth of gold, deposit an additional $90 worth of bonds, issue a hundred dollars more in

notes and so on and on. Hopefully, he would be out of town when someone finally came to redeem their notes.[19]

Now of course there are a number of problems with this game. First of all, banking regulations normally made the value of bonds to be deposited far exceed the value of notes issued. In a few cases, however, it appears that state authorities did accept securities less in value than the notes issued, for a variety of reasons generally having to do with the insistence by the state that its bonds be valued at par. A second problem was getting someone to take the notes at par or at least at a sufficiently small discount to make the game worthwhile. This was no mean feat. People were naturally suspicious of unfamiliar private notes. Reportedly some of the Indiana wildcats employed river boat gamblers on the Mississippi to "launder" their notes. But even with techniques such as this it seems likely that much of the wildcat money never entered circulation or did so only at very high discounts.

Although this model has been thought of as the only possible way that wildcat banking could work in fact there is a second case. (2) The value of the bonds deposited exceeds the value of notes issued, but by a very small margin. Here the trick is to use the notes to leverage the purchase of a large mass of bonds, and to profit from the interest.

10. The Extent of Wildcat Banking

[19]The wildcat banker could not simply sell his bonds when the volume of note redemptions exceeded his specie reserve. Remember that the bonds were in the hands of the state banking authority. They would be returned only when the notes were returned, and the notes could be gathered up only by repurchasing them from the public. On particular occasions, of course, the bank might see a favorable chance for arbitrage, purchasing its own notes at a discount and using them to redeem its bonds.

All recent studies of wildcat banking including my own (1971, 1974) have emphasized that it was a rare phenomenon. However, a number of recent studies, by Arthur Rolnick and Warren Weber (1983, 1984, 1988) and one by Andrew J. Economopoulos (1988) have, I believe, gone overboard in their attempt to show that wildcat banking was not a problem.

Rolnick and Weber (1984) attempted to show that even in states that suffered from very high rates of bank failure this could not have been due to wildcat banking. They contrasted a theory that most failures were caused by wildcat banking (a theory they attributed to me) with a theory that the failures were caused by a decline in the value of assets held by banks produced by shocks independent of the banking system. And they offered evidence which they claimed showed that it was the decline in asset values that produced high rates of bank failures rather than wildcat banking.

Although I appreciate being credited with a theory worthy of being tested in an article in the Journal of Monetary Economics, I did not, in fact, actually attempt to explain the overall failure rate under free banking by reference to wildcat banking. I did try to analyze the phenomenon of wildcat banking in the limited circumstances in which it occurred. But it is clear that many free banks failed for the usual reasons: bad management, bad times and financial crises, and so on. A physician can spend a great deal of time studying cirrhosis of the liver without believing that this disease is important in explaining a major part of the death rate.

But there is a more fundamental issue here. Trying to compare a theory that bank failures are caused by falling asset prices with a theory that they were caused by wildcat banking is unsatifactory because it compares different levels of analysis. Although the notion that falling asset prices

cause bank failures is not strictly a tautology, it is hard to imagine a case of massive bank failures in which falling asset prices did not play a role. The interesting questions, typically, center on why asset prices fell when they did, and what role administrative practices, legal restrictions, regulatory agency behavior, and so on played in the process.

A reference to the Great Depression in the U.S., a more familiar case to most economic historians, may clarify the point I am trying to make. We could, of course, develop a theory that bank failures in the early 1930s were caused by falling asset prices of banks. And this theory could be tested by correlating the value of assets held by banks with the number of failures. Although I haven't performed the calculation, my assumption is that such a theory would successfully "explain" the high rate of bank faliure observed in the early 1930s. We could also develop a theory that bank failures were caused by the unwillingness of the Federal Reserve to act as lender of last resort or of legislation that prohibited branch banking. Obviously it wouldn't make sense to try to contrast the latter theories with the falling asset theory. The latter two theories are attempts to go behind the immediate failure and falling asset mix to get at the underlying causes. All of these "theories" have a role to play in explaining the banking situation of the early 1930s.

Similarly, without denying that falling asset prices are going to be a part of any process of massive free bank failures, we can certainly agree on a number of ways in which wildcat banking laid the groundwork for the mix of falling asset prices and bank failures examined by Rolnick and Weber. (1) Wildcat banking in certain cases explains why there were banks there to fail in the first place. In Indiana in 1853 numerous banks failed. Even if we

accept Rolnick and Weber's point that the failures were caused by some calamity affecting the value of assets held by the banks, we must still see that the high failure rate depended on the large number of banks having been set up in previous years. If the the smith in Indiana, referred to above, had not planted the Bank of Morroco in his potato barrel, it would not have failed when some independent shock hit the market for government bonds.

(2) The restriction of free banks to a limited set of bonds for backing notes, and the tendency of wildcat bankers to do nothing but issue notes, meant that the resulting banking system would have a limited portfolio and would be extremely vulnerable to any factor affecting the price of the particular asset held by the wildcat banks. Other sorts of banks, banks that issued deposits as well as notes and that invested in local loans and discounts, might have been able to weather a shock that was confined to the class of securities backing the notes.

(3) Banks do not have to go out of business simply because their assets (if sold off) are temporarily worth less than their liabilities. If a bank has sufficient liquid assets to meet withdrawals it may stay in business for years with the market value of assets less than the liabilites. All that is required is that depositors, noteholders, and shareholders are confident that the bank has an adequate cash flow to meet temporary withdrawals and that it has some prospect of regaining profitability in the long run. If the shock affecting its assets is expected to be temporary there is no reason to go out of business. There may have been times in the past decade when some of the largest banks in New York had insolvent balance sheets because of heavy loans to Latin America. But that does not mean that it was accounting

tricks that kept them in business. Depositors and shareholders assumed that in the long run these instituions would return to prosperity.

Another way of putting this point is to say that banks normally have some assets which are not (typically) shown on the books and which disappear when the bank is liquidated: its "reputation," long-term relationships with cutomers, the working relationships built up over the years among its top managers, or other institution-specific forms of capital. If these assets were properly valued it would be seen that total assets exceed total liabilities and that there is a good reason for the market to pay a positive price for the shares of the bank even though shareholders would receive nothing if the bank was liquidated. It is these umeasured assets that made the shares of large New York City banks valuable investments even when their balance sheets were crowded with questionable loans to third world countries. The wildcat banks, on the other hand, were merely shell corporations created for the purpose of holding bonds and issuing notes. They had no institution specific capital, so there was no reason for creditors to permit them to stay in business when the market value of their assets was less than their liabilities. The explanation proposed by Rolnick and Weber, then, is not a truism that applies to all banks at all times. It applies to wildcat banks precisely because they were dubious operations to begin with.

The nature of the free banking law and wildcat banking can help explain why the shock to asset prices caused so many banks to throw in the towel in periods when bond prices were low and note redemptions were high. Part of the problem was that, as we noted above, if a single note was protested then the state banking authority was required to redeem all the notes of the

bank. But to this must be added the problem that simply issuing notes was raison detre of the wildcat banks. Since, to go back to our example, the bank of Morroco had no other purpose than circlulating notes (it was not, for example, collecting deposits or making local loans) there was no reason for it to stay in business once the notes began to come back. (4) So far, I have been following Rolnick and Weber in assuming that the fall in asset prices is completely independent of anything going on in the banking system, a completely independent shock. This, of course, will not normally be the case. As banks are closed and their assets are sold, asset prices will fall. This in turn will weaken the balance sheets of the remaining banks. Rather than there being a simple line of causation running from asset prices to bank failures, there is very likely to be an interactive process at work. Indeed, one could even imagine cases where a collapse of the banking system was anticipated, and reflected in asset prices before failures began in earnest.

My point here is not to oppose Rolnick and Weber's story (exogenous shock - falling asset prices - bank failures) with the exact opposite (wildcat banking - bank failures - falling bank asset prices). Although I do think that their failure to identify the nature of the shocks that affected asset prices weakens their argument, it seems most likely that the relationship between the collapse of some of the bond based free banking systems and the value of the assets they held was a two way street. Falling asset prices weakened the banks, and the dumping of bonds by failing banks weakened the market for bonds.

In a more recent paper Rolnick and Weber (1988) examine the case of Minnesota. This is one that I identified, following traditional accounts, as

a case of wildcat banking. On the basis of newspaper accounts (which show that there were plenty of warnings that the banks might be forced to suspend specie payments) Rolnick and Weber reach the conclusion that what existed in Minnesota was not wildcat banking, but rather a well-functioning market for small denomination mutual fund securities. The idea is that once the bank failed, the notes were worth whatever their bond backing was worth. People saw through the whole process and bought the notes at a sufficient initial discount to earn a competitive return when the notes were paid off. But while there is considerable evidence that people were wary of the notes and discounted them, it is a long leap from that evidence to the notion that these were small denomination mutual fund securities.

To some extent it is a matter of semantics. Rolnick and Weber find banks that were located away from Minneapolis to forestall redemption. They find banks that only held bonds and did no local lending. They find banks that were referred to as "bantlings" in the local press. I would call them wildcat banks; Rolnick and Weber want to call them mutual funds issuing small denomination securities. But Rolnick and Weber's terminology leads one to think that there was a general market for these securities in the antebellum period. Never, as far as I know, did anyone ever try to issue a note which said "This is not a bank note and it is not redeemable in gold. This is a claim to state government bonds and its value will vary depending on the market value of the securities held at the time of redemption." To my knowledge there was no law preventing the issue of such securities - laws could be changed in any case - so it seems likely that there was no demand.

Rolnick and Weber have one example in the paper of how these notes actually circulated.

> M.E. Ames, a St. Paul attorney, reported his experience on April 11 and 16, 1859. He said he had received $200 of Owatonna notes from a 'respectable Banker of this City'. (Ames did not say, however, what he paid for these notes, so that it cannot be assumed that he purchased them at par.) Trying, then, to purchase $125 of exchange on New York (New York bank notes), he said he could not find a bank that would make such a trade 'at any price.' Since New York exchange was roughly selling at par, the implication is that Owatonna money was selling for less than 63 cents on the dollar. [Ames eventually took his notes to Pease who, as Ames knew, was the Owatonna broker. With some difficulty, Ames persuaded Pease to buy the notes for St. Paul city scrip, but could get neither New York exchange or gold out of Pease.][20]

This could be described as the behavior of the happy purchaser of small denomination mutual fund securities, but it sounds more like the disgruntled buyer of a used car who finds out that Honest Al has set back the odometer even more than the buyer thought.

The paper by Economopoulos (1988) examines the case of Illinois. Economopoulos, following Rolnick and Weber, tries to use Illinois to test whether free bank failures were caused by wildcat banking or falling asset prices.

Economopulos manages to reduce the number of wildcat banks in his sample by using an extremely rigid and narrow definition of wildcat banking. First, consider his definition of the expected lifespan of a typical wildcat bank. Economoupulos takes one year as the maximum potential life of a wildcat and concludes that any bank that survives longer lacks a major defining characteristic. He gets his figure of one year from Rockoff (1975, p. 8) (an unfortuneate circumstance that somewhat reduces my ability

---

[20]Rolnick and Weber (1988), p. 69. The material in brackets is on p. 69 in footnote 10.

to criticize his choice). But there I was asking a question, how could a banker expect to make a profit if the bank could expect to last, say, one year. I was not estimating the actual lifespan of such banks. The weasel word "say" was inserted, moreover, precisely to avoid having to commit myself to a precise numerical figure. Studies such as Economopoulos's can help to give a more precise numerical content to the idea of the expected lifespan of a wildcat bank. Clearly many of his banks lasted longer than a year, and might have lasted much longer had the Civil War not undermined the value of their southern bond security. How long they might have survived is an open question.

Economopoulos reaches the conclusion that the Illinois banks were not set up in inaccessible areas because only 10 banks in his sample violated an express requirement of the law that they be located in towns of more than 200 inhabitants. He concludes that a majority were set up in highly populated locations. But it seems more than passing strange that out of 93 banks set up in Illinois in this period, not one was set up in Chicago, the commercial and transportation center of the midwest and, it is said, the fastest growing city in the world. On the other hand, the town of New Haven Illinois, a metropolis of 200 souls, merited 3 banks.

But even if wildcat banking was more frequent than some of these recent papers suggest, it was still clearly a rare phenomenon, and was preventable, by requiring a substantial backing for notes in bonds measured at market prices.

11. Should We Turn the Clock Back to the Free Banking Era?

The answer, of course, is that we could not do so even if we wanted to. But more than that, it is clear that the free banking era does not represent some ideal monetary system. There were problems: a major disturbance to the stock of highpowered money, a financial crisis of major proportions, and wildcat banking on the frontier. Nevertheless, the system was sufficiently successful to make a careful consideration of its major charateristics worthwhile.

First, the control of the monetary base was left to a semi-automatic mechanism: the bimetallic standard. This did not assure stability in the growth of the monetary base. But the experience of the 1850s shows that even at its worse, the shocks to the monetary base under such a system are likely to be rather mild. As we have seen above, even the gold rush boom of the 1850s produced little more monetary growth than we have observed in the supposedly stable 1980s.

Second, the free banking system tried to get by without a lender of last resort. The record here is not altogether encouraging for those economists who argue that a lender of last resort is not needed. There was a major crisis in 1857 that left a sharp recession and many business failures in its wake. But some of the systems escaped the general suspension of specie payments. Of particular interest are the branch systems of Indiana and Ohio that were able to maintain general payments. This adds a bit of support to the idea that banking panics in the nineteenth century could have been ameliorated had branch banking been permitted.

Third, banks were permitted to issue hand to hand currency. This led, I would argue, to a more satisfactory allocation of the seignorage, and to a

damping down of the affect of changes in the note-to-money ratio on the stock of money.

Fourth, protection was provided for unsophisticated users of the banking system (noteholders) through the bond security system. It is hard to imagine a system today that did not incorporate some protection for the unsophisticated. Collateralizing that part of the money stock likely to be used by the poor and undereducated was a straightforward way of tackling the problem. A similar arrangement today, one providing a high level of protection for small depositors, while allowing most others to bear the risks and earn the returns of unregulated deposits is well worth considering.

Fifth, there was free entry into banking. It would be hard to make the case that free entry was crucial to the emergence of New York as the nations's primary financial center, or to Chicago and New Orleans as regional centers. Undoubtely their dominant positions in the interregional movements of agricultural commodities and other products were the key. Nevertheless, at the margin the ease with which new banks could be started must have helped.

The U.S. in the 1840s and 1850s was a politically troubled society; a great Civil War lay close at hand. But it posssessed a rapidly growing economy. The frontier was being settled rapidly and immigrants were flooding into the country. By 1860 the U.S. was the second leading industrial power in the world. All this was carried out with a banking system designed to minimize the role of government, maximize equality of economic opportunity, and protect the legitimate interests of unsophisticated users of the banking

system. We can still learn something from an appreciation of such a banking system.

Bibliography

Bordo, Michael and Lars Jonung. The Long-run Behavior of the Velocity of Circulation: The International Evidence. Cambridge (U.K.) and New York: Cambridge University Press, 1987.

Berry, Thomas Senior. Revised Annual Estimates of American Gross National Product, Preliminary Annual Estimates of Four Major Components of Demand, 1789-1889. Richmond VA: The Bostwick Press, 1978.

Cowen, Tyler and Randall Kroszner. "The Development of the New Monetary Economics." Journal of Political Economy 95 (June 1987): 567-590.

Economopoulos, Andrew J. "Illinois Free banking Experience." Journal of Money, Credit and Banking 20 (May 1988): 249-264.

Esarey, Logan. The Indiana Home. Crawfordsville, Indiana: R. E. Banta, 1947.

Friedman, Milton.A Program for Monetary Stability New York: Fordham University Press, 1960.

_____. "Monetary Policy for the 1980s." In To Promote Prosperity: U.S. Domsetic Policy in the Mid-1980s, ed. J. H. Moore, 40-54. Stanford, CA: Hoover Institution Press, 1984.

_____. "The Case for Overhauling the Federal Reserve." Challenge 28 (July-August 1985): 4 - 12.

_____. "Money and the Stock Market." Journal of Political Economy 96 (April 1988): 221-245.

Friedman, Milton and Anna J. Schwartz.A Monetary History of the United States, 1867-1960. Princeton: Princeton University Press, 1963.

_____."The Demand for Money: Some Theoretical and Empirical Results." In The Optimum Quantity of Money and Other Essays, Milton Friedman, 111-155. Chicago: Aldine Publishing Company, 1969.

_____. Monetary Statistics of the United States: Estimates, Sources, Methods. New York: Columbia University Press, 1970.

_____. "Has Government Any Role in Money?" Journal of Monetary Economics (January 1986): 37-62.

Goodhart, C.A.E. The Evolution of Central Banks. Cambridge Mass: M.I.T. Press, 1988.

Green, George D. Finance and Economic Development in the Old South: Louisiana Banking, 1804-1861. Stanford: Stanford University Press, 1972.

Hammond, Bray. Banks and Politics in America: from the Revolution to the Civil War. Princeton: Princeton University Press, 1957.

Harding, William F. "The State Bank of Indiana." Journal of Political Economy 3 (December 1895): 1-36.

Hayek, Fredrich. A. Denationalization of Money. London: Institute of Economic Affairs, 1976.

Homer, Sidney. A History of Interest Rates. New Brunswick NJ: Rutgers University Press, 1963.

Kahn, James A. "Another Look at Free Banking in the United States". American Economic Review 75 (September 1985): 881-5.

King, Robert G. "On the Economics of Private Money." Journal of Monetary Economics 12 (July 1983): 127-58.

Lasdon, Oscar. "The Early Ways and Crazy Days of Banking." Banker's Magazine CLIV (Spring, 1971): 49-58.

McCulloch, Hugh. Men and Measures of Half a Century. New York: Charles Scribner's Sons, 1889.

Moore, Geoffrey H. "Business Cycles, Panics and Depressions." In Glenn Porter, ed. Encyclopedia of American Economic History: Studies of the Principal Movements and Ideas. New York: Charles Scribner's Sons, 1980.

Ng, Kenneth. "Free Banking Laws and Barriers to Entry in Banking, 1838-1860." Journal of Economic History 48 (December 1988): 877-889.

Rockoff, Hugh. "The Free Banking Era: A Re-examination." The Journal of Money, Credit, and Banking. 6 (May 1974): 141-67.

_____. The Free Banking Era: A Re-Examination. New York: Arno Press, 1975.

_____. "Varieties of Banking and Regional Economic Development in the United States." Journal of Economic History 35 (March 1975): 160-81.

_____. "Institutional Requirements for Stable Free Banking." Cato Journal 6 (Fall 1986): 617-634.

Rolnick, Arthur J. and Weber, Warren E. "New Evidence on the Free Banking Era." American Economic Review 73 (December 1983): 1080-91.

_____. "The Causes of Free Bank Failures: A Detailed Examination of the Evidence." Journal of Monetary Economics 14 (October 1984): 267-91.

_____. "Banking Instability and Regulation in the U.S. Free Banking Era." Federal Reserve Bank of Minneapolis, Quarterly Review 9 (Summer 1985): 2-9.

_____. "Explaining the Demand for Free Bank Notes." Journal of Monetary Economics 21 (January 1988): 47-71.

Schultz, William J. and M.R. Craine. Financial Development of the United States. New York: Prentice Hall, 1937.

Schwert, G. William. "Indexes of United States Stock Prices from 1802 to 1987." Cambridge MA: National Bureau of Economic Research. Working Paper, July 1989.

Selgin, George A. The Theory of Free Banking: Money Supply Under Competitive Note Issue. Totowa, N.J.: Rowman & Littlefield, 1987.

Smith, Walter Buckingham and Arthur Harrison Cole. Fluctuations in American Business, 1790-1860. Cambridge: Harvard University Press, 1935.

Sylla, Richard. 1985. "Early American Banking: the Significance of the Corporate Form." Business and Economic History 14 (March): 105 - 123.

Temin, Peter. The Jacksonian Economy. New York: W.W. Norton & Company, Inc., 1969.

White, Eugene. "A Reinterpretation of the Banking Crisis of 1930." Journal of Economic History 44 (March 1984): 119-138.

White, Lawrence. Free Banking in Britain: Theory, Experience, and Debate, 1800-1845. Cambridge and New York: Cambridge University Press, 1984.