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Was There a Note Issue Conundrum in the Free Banking Era?

MORE THAN EIGHTY YEARS AGO Spurgeon Bell (1912) uncovered a paradox that has since vexed banking and monetary historians. He found that national banks failed to expand their note issues despite the apparent profitability of doing so. Subsequent writers refined Bell's original profit calculations and most have shown that, if anything, Bell's calculations understated the profits left unexploited by the banks. Explanations of the paradox abound. Bell (1912) and Goodhart (1965) argued that banks failed to increase their note issues fearing revocation of the circulation privilege. James (1976) argued that pronounced regional interest rate differentials during the postbellum era made it more profitable for banks in some regions to focus on lending low-cost deposits rather than high-cost notes. Champ (1990) and Kuehlwein (1992) stressed term-structure and holding-period risks. Cagan and Schwartz (1991) believed that banks simply acted irrationally. Champ, Wallace, and Weber (1992) accounted for costs and risks other writers overlooked and found rates of return to note issue substantially below those previously reported, but it was still profitable for national banks to issue more notes than they did. Despite this outpouring of work, the national bank note paradox remains unsolved, some might say insoluble.

Our paper offers a look at note issues of state banks during the Free Banking Era

The authors extend special thanks to Hugh Rockoff who originally suggested that they look into this issue. Comments from Charles Calomiris, Steven Horwitz, Hugh Rockoff, Eugene White, two anonymous referees, participants of the economic history seminars at Washington University, Northwestern University, Columbia University, and the Cliometrics Society session at the 1992 ASSA Annual Meetings substantially improved the quality of this effort. Valuable research assistance was provided by Laurie Burkum and Arvind Perumal. This paper was written while Bodenhorn was visiting at St. Lawrence University and financial support from that institution was much appreciated.

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Journal of Money, Credit, and Banking, Vol. 27, No. 3 (August 1995)

with the hope that the earlier experience may shed some new light on the national bank note paradox. Evidence from New York banks, which operated under a free banking regime from 1838 through 1862, suggests that free banks acted much like national banks. They issued fewer notes than law allowed although additional bond holdings and increased note issue was profitable. But this finding is not surprising inasmuch as the national banking act was modeled after New York's free banking law and created similar incentives. If national banks underissued notes, the evidence presented below demonstrates that free banks were equally reluctant to issue notes and may have irrationally neglected profit opportunities. If, on the other hand, national banks were profit maximizing in the face of some hitherto undiscovered costs or risks, free bankers apparently faced similar costs or risks.

UNCOVERING THE CONUNDRUM

Uncovering the bank note conundrum involves calculating a rate of return to the marginal note issue. Issuing additional notes meant purchasing and placing on deposit with the state comptroller specified United States or state bonds which represented a form of note insurance. If the bank failed, the comptroller was required to sell bonds held in security and distribute the proceeds pro rata among holders of the bank's notes. If the bank remained both solvent and liquid, however, it received the regular semiannual coupon payments. Expanding its note issue implied increased revenues for an ongoing bank from the coupon payments on the bonds. By purchasing and holding an additional collateral bond, the bank increased its revenue stream by $r_M p$, where r_M is the bond's yield to maturity and p its price.

Issuing additional notes, however, required that a bank alter its portfolio. It could finance bond purchases and note issues either by increasing its holdings of collateral bonds relative to other earning assets or by injecting additional owner-contributed equity. In calculating rates of return to note issue for national banks the Comptroller of the Currency assumed that additional bond holdings were financed by restructuring their asset portfolios; divesting themselves of earning assets to secure additional bonds. This implied an indirect cost to the bank equal to the product of potential interest income foregone from the best available alternative earning assets and the difference between the reduction in other earning assets and the volume of notes issued. These differences were potentially large as free banks could not necessarily issue notes up to the full value of the bonds placed in collateral. If it deposited 6 percent coupon bonds of $100 par value, the bank could issue notes in an amount equal to the minimum of either par or market value of the bonds. Since most eligible securities sold above par throughout the late antebellum era, additional note issues were generally less than the price of the bond. Additionally, the state comptroller accepted bonds paying less than 6 percent annually at rates making them equivalent to 6 percents. Five percent bonds, for example, secured additional notes equal to only five-sixths of the minimum of the bond's par or market value.[1] Legal note is-

1. Take, for example, a $100 par bond bearing 5 percent coupons with a market price of $110. A bank depositing this bond spent $110 to receive only $83.33 in notes.

sues against each collateral bond was therefore equal to $\alpha \min(p, 100)$, where $0 \leq \alpha \leq 1$ is the ratio of legal note issue to par value (that is, $\alpha = 1$ for 6 percent bonds, 5/6 for 5 percent bonds, etc.), and $\min(p, 100)$ represents the value at which the bond was accepted by the state comptroller; the minimum of par or market.[2]

Note issue, however, was not costless. It involved engraving and printing costs as well as the time cost of bank presidents and cashiers who signed each note, the wages of tellers who registered each note, and, for New York free banks, the state comptroller's regulatory and oversight expenses. From evidence uncovered about the costs of note issue in the antebellum era, we estimate the costs of note issue for New York free banks to have been 17.3 cents per $100 in notes.[3]

Adopting the symbolic conventions developed by Champ, Wallace, and Weber (1992), we can write in functional form the marginal profit to a bank by financing note issues through altering its assets. A bank's return from purchasing bonds and issuing additional notes would be

$$r_{issue} = \{r_M p - r_A [p - \alpha \min(p, 100)] - c \alpha \min(p, 100)\} / [p - \alpha \min(p, 100)] \quad (1)$$

where the first term in the numerator is the interest income earned from holding an additional collateral bond; the second term is the foregone income resulting from the necessary reduction of alternative earning assets used to finance the bond purchase (where r_A is the interest rate on alternative assets); and $c \alpha \min(p, 100)$ represents the direct costs of issuing additional notes.[4] The denominator represents the redistribution of assets in the bank's portfolio. Since notes in value of $\alpha \min(p, 100)$ could be issued against the purchase of a bond of price p, the actual redistribution of assets would only be $p - \alpha \min(p, 100)$.

Instead of financing note issue through asset restructuring, Cagan (1963, 1965) and Cagan and Schwartz (1991) argued that banks may have financed additional bond holdings through capital injections. The bankers' concern was not with the return to an alternative asset strategy, rather with the return to capital. In Cagan's formulation, banks received additional revenue from increased bond holdings in the amount $r_M p$ less the cost of the marginal note issue $c \alpha \min(p, 100)$. The capital tied up in financing the additional note issue was the difference between the price of the collateral bond and the rate at which notes could be issued against the bond. His rate of return calculation, therefore, takes the form

2. We assume the par value of a collateral bond to be $100 as that was the most common state bond denomination in the antebellum era. We otherwise adopt the symbolic conventions of Champ, Wallace, and Weber (1992) both for purposes of comparison and because their conventions allow for consistent representation of the alternative profit rates derived below.

3. An explanation and derivation is provided in an Appendix available from the authors upon request.

4. We assume the best available alternative earning asset was high-grade commercial paper. Our estimates of r_A are, therefore, reported street rates on high-grade commercial paper in New York City as reported in Bodenhorn (1992, pp. 603–08).

$$r_{Cagan} = [r_M p - c \alpha \min(p, 100)] / [p - \alpha \min(p, 100)] \quad (2)$$

since note issues financed by capital injections eliminated the need to alter a bank's existing assets.[5]

For the national banking era rates of return to note issue were generally positive and therein lies the conundrum. Using a variant of equation (2), Cagan and Schwartz (1991, table 1) found rates of return ranging from 4.3 to 427.5 percent with infinitely high returns in 1913 as the price of collateral bonds fell below par implying that no new capital injections were needed to finance the bond to note arbitrage function.

The note issue conundrum was not, however, strictly a national banking era phenomenon; it was very much alive in the free banking era as well. Table 1 reports returns to note issue calculated using both the asset restructuring and Cagan's new capital formulae for four eligible bonds held by New York free banks between 1845 and 1860. Potential rates of return ranged between 8.4 percent and 1187.1 percent if banks arbitraged bonds into notes by restructuring their assets. Potential returns to additional equity injections varied between 15.9 and 1195.6 percent.

As expected, rates of return to asset restructuring were modestly lower than for capital injections and returns varied inversely with bond prices. Returns were lowest regardless of bonds held during the late 1840s and early 1850s when bond prices peaked. Additionally, returns for bonds paying less than 6 percent annually were considerably lower than those for 6 percent bonds as a result of the comptroller's acceptance of 5 or 5½ percent bonds at fractions of their par values. Only rarely, however, during the late antebellum era did the price of eligible bonds rise to levels making note issue relatively unattractive. Free banks, like banks of the latter era, failed to increase their issues despite the *apparent* profitability of doing so. Either the banks acted irrationally in their failure to exploit such seemingly profitable opportunities or there were some costs or risks to note issue for which standard formulations of the conundrum fail to account. We believe it was the latter.

A PRELIMINARY EXPLANATION OF THE LOW ISSUE OF FREE BANK NOTES

Champ (1990) and Kuehlwein (1992) focused on two features of bond-secured note issue of concern to bankers intermediating long-term government securities into notes. One was the variability of both note redemptions and bond prices. If a bank witnessed an unexpected increase in note redemptions, it would be forced to raise specie to meet those demands. Given that calling loans was an unattractive recourse, one alternative was to reduce its outstanding circulation, recover some

5. Most states imposed taxes on banks, but we have been unable to determine the tax, if any, that New York levied on its free banks. Taxes in other states were modest and paid-in capital was usually the basis of the tax. Since a bank could increase its note issue without increasing its paid-in capital, taxes would be an unlikely deterrent to additional note issue.

TABLE 1

RATES OF RETURN TO NOTE ISSUE ASSUMING ASSET ADJUSTMENTS (1) OR CAPITAL INJECTIONS (2) FOR SELECTED BONDS SECURING NOTE ISSUE FOR NEW YORK FREE BANKS, 1844–1860

	New York 5s of 1860		New York 5 1/2s of 1860		New York 6s of 1860/62		United States 6s of 1862	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
1844	20.9	25.5	38.7	43.4	48.4	53.1	—	—
1845	21.5	27.4	41.5	47.4	59.1	65.1	43.4	49.4
1846	24.1	30.9	55.2	62.0	100.3	106.9	138.0	145.0
1847	23.7	30.9	58.8	66.0	1187.1	1195.6	144.8	152.1
1848	20.6	30.5	61.4	71.2	185.3	175.3	157.2	167.2
1849	14.5	20.9	32.5	38.9	50.0	56.5	46.8	53.3
1850	15.7	21.4	22.4	28.0	34.8	40.5	35.3	41.0
1851	18.9	25.9	20.5	27.5	37.7	44.8	44.9	52.0
1852	12.2	17.2	21.8	26.9	44.9	50.1	24.9	30.0
1853	8.4	15.9	18.0	25.5	25.7	33.2	16.6	24.1
1854	14.4	23.8	20.7	30.1	48.9	58.3	27.8	37.2
1855	15.3	22.1	29.7	36.5	51.6	58.4	25.3	32.2
1856	21.7	29.3	58.6	66.2	579.4	587.6	26.5	34.2
1857	24.2	35.1	72.3	83.3	∞	∞	—	—
1858	25.5	30.0	48.1	52.7	217.4	222.1	—	—
1859	24.4	30.0	63.4	69.0	270.9	276.8	—	—
1860	—	—	27.5	33.5	262.9	269.2	—	—

NOTES AND SOURCES
Bonds are identified by origin (NY = New York State; US = United States), coupon rate, and maturity date.
Column numbers refer to method of computing rate of return discussed in text; see equations (1) and (2).
Rates of return calculations based on average annual bond prices, except U.S. 6s of 1860/62 which were based on average of weekly prices in September of each year.
Infinite returns in 1857 reflect zero capital tied up as bond sold below par value.
SOURCES: Bond prices underlying rate of return calculations from *Bicknell's* (1844–1857), *Banker's Magazine* (1852–1861), *New York Daily Times* (1850–1861), *New York Herald* (1850–1860), and *Shipping and Commercial List* (1844–1853).

bonds deposited with the comptroller, sell the bonds, and use the proceeds to meet any remaining redemption calls. Unexpected redemption demands coupled with bond price fluctuations meant that divesting itself of collateral bonds, particularly in the midst of a general panic or falling bond prices, held the potential for significant capital losses.

Faced with this possibility, banks may not have viewed the bond's yield to maturity as an important parameter in their decision to expand note issues as they were not assured of holding a bond to maturity. Expected holding-period returns may instead have been the appropriate decision variable.[6] A more appropriate rate of return measure, therefore, may be one that replaces the yield to maturity with the expected holding period return. Cagan's rate of return formulation then becomes:

$$r_{holding} = [E[r_H]\, p - c\, \alpha \min(p, 100)] \,/\, [p - \alpha \min(p, 100)] \qquad (3)$$

where $E[r_H]$ is the expected holding-period return over the appropriate time horizon with all other variables defined as above.

If bankers based their expectations of future holding-period returns on returns observed in the past, we can substitute past returns into equation (3) and solve for expected rates of return to note issue. Table 2 reports rates of return to note issue for

6. We thank an anonymous referee for suggesting this possibility.

TABLE 2

EXPECTED RATES OF RETURN TO NOTE ISSUE FOR NEW YORK FREE BANKS BASED ON SIX-MONTH HOLDING-PERIOD RETURNS FOR U.S. 6S OF 1860/62, 1844–1856

	Rate of Return Based on Observed Six-Month Holding-Period Returns over:			
	Present Quarter	Past Two Quarters	Past Four Quarters	Past Six Quarters
1844	−3.6	8.1	—	—
1845	−1.4	8.9	6.8	—
1846	−43.7	−12.9	−13.2	−1.6
1847	128.9	98.4	56.9	33.4
1848	128.0	140.4	91.5	96.9
1849	53.0	65.4	71.8	65.0
1850	41.6	52.4	35.4	41.5
1851	21.5	30.3	20.6	35.0
1852	41.4	38.5	31.5	27.9
1853	32.8	25.1	24.0	27.5
1854	−10.5	12.4	19.3	24.3
1855	40.7	40.8	17.0	15.3
1856	38.7	40.8	22.5	29.9

NOTE: Rates of return based on quarterly holding-period returns observed as of end of third quarter (September) of each year.
SOURCE: Bond prices underlying calculations from *Bicknell's* (1844–1857).

the third quarter of each year between 1844 and 1856 using holding-period returns on U.S. 6s of 1860/62. The first column reports rates of return to note issue if bankers had relatively short memories and based their expectations on the six-month holding-period return observed in the present quarter. Column 2 uses six-month holding-period returns averaged over the previous two quarters. Similarly column 3 uses six-month holding-period returns averaged over the previous four quarters; and column 4 holding-period returns averaged over the previous six quarters. Returns to note issue are generally lower using holding-period returns in place of yields to maturity. In the mid-1840s, in fact, note issue was unattractive as rates of return were generally less than 9.0 percent and were often negative. Between 1847 and 1856, however, rates of return to note issue based on holding-period returns increased and exceeded returns on most reasonable alternatives. Bankers had to be extremely risk averse for the low or negative returns to note issue observed in the mid-1840s to make the potential returns present from the late 1840s through the mid-1850s unattractive. It is, of course, possible that bankers feared bond price and holding-period return fluctuations, but those fears must have been great to offset potential returns varying between about 15.0 and 140.4 percent throughout most of the late antebellum period. A resolution of the conundrum based on the avoidance of interest rate risk seems untenable for the free banking period as well.

Bell (1912) and Goodhart (1965), on the other hand, argued that the answer lay in a different sort of risk avoidance: the fear among bankers that the note issue privileges could, at any time, have been unilaterally modified or revoked. What the legislature gave, it could take away, and during the 1910s bankers apparently questioned Congress's commitment to the status quo (Bell 1912, p. 51). Although Cagan and Schwartz (1991, pp. 305–06) dismiss the bankers' fears as irrational because their issue privilege was not abrogated until 1935, it seems unwarranted to judge their fears as unfounded simply because the course of history proved them so.

Fears over modifications in or revocation of the note issue privilege provides a ready explanation of the free bank note issue conundrum. In *Briscoe v. The Bank of Kentucky* the United States Supreme Court ruled that note-issuing banks chartered by states did not violate the constitutional prohibition on bills of credit even if the state was the bank's sole shareholder (11 Peters 326 (1837)). The decision was, however, "about as weak and timid as any the Court ever pronounced . . ." (Hammond 1957, p. 107). Justice M'Lean, writing for the majority of a divided court, argued that the right to charter banks had not been specifically delegated to the federal government nor denied to the states so that, under a loose interpretation, the right was retained by the states. This decision was arrived at largely because state banks were busy issuing notes when the Constitution was ratified and convention delegates had ignored it (11 Peters 317). But M'Lean and the majority demurred on the question of whether the states actually possessed the right to charter banks. Justice M'Lean wrote:

> A uniform course of action, involving the right to the exercise of an important power by the State governments for half a century, and this almost without question, is so unsatisfactory evidence that the power is rightfully exercised. But this inquiry, though embraced in the printed argument, does not belong to the case, and is abandoned at the bar. (11 Peters 318)

M'Lean's "timid" opinion left the door open for a future court to find on the (un)constitutionality of state-chartered banking.[7] In dissent, Justice Story said that bank note issues were "subject always to the controls of Congress, whose powers extend to the entire regulation of the currency of the country" (11 Peters 348). Congress exercised those powers in 1865 and 1866 when it placed prohibitive taxes on state bank notes, laws the Supreme Court deemed constitutional in *Veazie Bank v. Fenno* when it found that Congress could, in the execution of its monetary power, authorize the circulation of some bank notes and prohibit the circulation of others (8 Wallace 549).

State-chartered free banks not only had the federal Congress and courts to fear, but state legislatures and courts as well. The legality of free banking laws even within the bounds of state constitutions was regularly challenged, and the New York experience is instructive. Under New York's constitution, as it stood in 1838, the legislature was prohibited from incorporating an indefinite number of firms. Each incorporation required separate and explicit authorization. Although constitutionally proper to incorporate more than one firm per act, each proposed corporation had to be separately identified. The free banking law avoided this provision by devising a rather fine technicality: it designated free banks "associations" rather than "corporations." The act's intent, however, was to create corporations as free banks were granted most of the same rights and privileges as chartered banks. At issue was the state courts' willingness to legitimize the technicality. It was possible that free banking associations could be found de facto corporations and therefore unconstitutional.

When the New York law was barely a year old, it was questioned in state court

7. Justice Story believed that if such a case was brought, state-chartered banking would be found unconstitutional because of the express prohibition on state coinage or bills of credit (11 Peters 348).

when a bank sued a delinquent debtor (*Thomas v. Dakin*, 22 Wendell 2). The defendant claimed the debt null and void since it had been contracted with an unconstitutional corporation holding no right to engage in the business of banking. The court decided the bank *was* in fact a corporation, but it demurred on the question of the bank's constitutional standing. The court supposed the Free Banking Act had been passed in accordance with the requirements of the state's constitution (it had not), and since that was not the issue at suit, it stopped short of determining the bank's constitutional standing. Like the M'Lean decision at the federal level two years earlier, the New York court's decision was weak and timid and left open a door for future challenges. Justice Cowen, in fact, stated that, "We must clearly [accept the law as constitutional] until the fact is denied by plea" (22 Wendell 112). Justice Bronson also demurred on the question of constitutionality, but he doubted its prospects (22 Wendell 112). The justices seemingly invited a challenge, and an editorial appearing in New York's *Shipping and Commercial List* (November 9, 1839) claimed the court had failed to resolve the vital issue.

The justices' invitation was soon answered as a similar case arose within a few months.[8] Pled on appeal before the Court of Errors (then New York's highest court), the justices were asked to determine the law's constitutional standing. The court again refused the challenge. It decided that the law may or may not have been constitutional *in fact*, but it was constitutional *in intent*: the intent being to open the business of banking to all, not just those with sufficient political power to secure a charter. The appellate court affirmed the lower court's decision that all debts owed the bank were recoverable, but repudiated the lower court's decision that the bank was in fact a corporation.

Upon learning that it was not a corporation, a free bank in Watertown, New York, refused to pay its corporate taxes. In *People v. The Assessors of Watertown* (1 Hill 616) a lower court again declared the bank to be a corporation, regardless of the Court of Errors findings, making it liable for corporate taxes. Three years later a bank in Niagara County also refused to pay its taxes, since it too was not a corporation. The lower court again declared the bank a corporation. On appeal, the Court of Errors came to the curious decision that the bank was not a corporation "within the meaning of the constitution," but it was "within the meaning of the tax law" (*People v. Supervisors of Niagara*, 7 Hill 504).[9] Similar cases arose throughout free banking's tenure in New York leaving the banks in legal limbo. Even as late as 1857, the state banking superintendent considered free banks "anomalous, objectionable, and of doubtful legality" (Hammond 1957, p. 587).

New York free banks, therefore, faced the very real possibility that their privileges could be modified or revoked if the legislature or the courts became disenchanted with the system. Free banking, in fact, had been instituted when the legislature's expectations for the Safety Fund system went unfulfilled which, in

8. *Warner v. Beers*, 23 Wendell 103 (1840).

9. The precedent for this finding was set in *People v. Assessors of Watertown* (1 Hill 618) when Justice Bronson stated that the decision "does not affirm that the free banks are not corporations, but only that they are not such '*within the spirit and meaning of the constitution*'" (emphasis in original).

turn, had been instituted when the legislature had become disenchanted with the traditional chartering system. Redlich (1951) and Golembe (1960) both discussed New York's banking history in terms of its willingness to experiment. If bankers viewed free banking simply as the most recent and potentially short-lived experiment, it is not particularly surprising that those bankers chose not to invest all their capitals in collateral bonds. Modification or revocation of bond-secured note issue may have meant wholesale liquidation of bonds whose values were, in part at least, determined by the issue privilege attached to them.

Changes in the political climate also affected choices made by free bankers in other states as well. William Campbell, president of the Bank of Middle Tennessee, wrote that

> his greatest concern was new legislation, although he never made it clear whether he thought the state or federal laws posed the greater threat . . . [he] predicted that banks would "probably be so legislated as to cripple all the banks & Free Banks in particular." . . . William further anticipated being "compelled to wind up our bank in some short period of time" and therefore the bank was "most actively engaged in taking up our own paper & taking up bonds with it." (Schweikart 1987, p. 280)

Campbell further explained that the survival of free banking depended critically upon keeping a Democratic majority out of the state legislature. In the South and West, in particular, the Jacksonian ideal of a world without banks lasted well beyond his presidency and bankers carefully monitored the goings-on in the state house as their survival often depended on the current direction of the political wind (Schweikart 1987, pp. 280–81).

In Wisconsin the legislature repealed the banking privileges of the George Smith Wisconsin Marine and Fire Insurance Company after eight years of stellar service. Smith fought the legislature, publicly announcing his belief that the repeal was illegal and continued to circulate and redeem the firm's notes despite the legislative repeal. Farmers and merchants continued to use the company's notes despite the edict, but the point remains that the state could at any time wreak potential financial havoc on banks.

CONCLUDING REMARKS

The historiography of free and national banking has traditionally focused on the differences between the eras. Friedman and Schwartz (1963, pp. 22–23), for example, argued that after passage of the National Banking Act:

> There was no recurrence of the pre-Civil War phenomena of notes of different banks circulating at discounts or premiums with respect to one another, and at different discounts or premiums depending on the distance from the issuing bank, or of bank-note detectors to enable merchants and others to determine the value of particular notes. In this respect the Civil War and immediately post–Civil War legislation succeeded in one of its primary objectives—the provision of a uniform national currency.

Whatever its effects—beneficial or otherwise—concerning a uniform currency, the incentives facing the banks in the two periods seem to have gone unchanged. Free

banks, like their successors, issued far fewer notes than permitted. By doing so, they also apparently passed up a rational, profit-maximizing strategy. Bankers in both the free and national banking eras, however, argued that there was no profit to be had in circulating notes, calculations to the contrary notwithstanding. Gibbons (1858, p. 18) said antebellum New York banks found note issue unprofitable and a Connecticut national banker testified that the bank's $50,000 circulation was "not worth one stiver to us" (Friedman and Schwartz 1963, p. 24ff). If true their statements reveal that standard formulations of the profits to note issue have overlooked some cost or risk that appeared large to them (ibid., p. 24ff).

Subsequent interpretations of the puzzle have focused on identifying those costs or risks. One explanation is that bankers feared termination or modifications of their circulation privilege. As Cagan and Schwartz (1991) and Kuehlwein (1992) point out, revocation fears in the national banking era are less than convincing even though Bell (1912) and Goodhart (1965) found evidence that such fears were real. Similar fears do explain, at least in part, decisions by antebellum bankers to forego profitable note issue. Given the uncertainty about their constitutional standing at both the federal and state level and the possibility that free banking could be abolished or its rules altered nearly as quickly as it was instituted, it is not surprising that state-regulated free banks chose not to invest everything in a single risky venture.

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