Discuss this article at Jt: http://journaltalk.net/articles/5491

Econ Journal Watch,
Volume 2, Number 2,
August 2005, pp 279-324.

DO ECONOMISTS REACH A CONCLUSION?

Do Economists Reach a Conclusion on Free-Banking Episodes?

IGNACIO BRIONES* AND HUGH ROCKOFF**

Abstract, Keywords, JEL Codes

WHAT DO WE MEAN BY FREE BANKING

IN THIS PAPER WE SURVEY THE LITERATURE ON HISTORICAL episodes of "free banking"—more accurately lightly regulated banking—and distinguish areas in which a consensus has been reached from areas in which more research needs to be done. It is important to recognize at the outset that the term "free banking" as we use it is an historical term. It was applied in the nineteenth century to banking systems that in fact were regulated along many dimensions, and were very far removed from true laissez-faire banking systems. To some extent, as we will show below, it was a fair term to use in the sense that the systems that were referred to as "free banking" were subject to fewer regulations than the systems they replaced. But the term "free banking" was also used at times, we suspect, because the word free, especially

* School of Business, Adolfo Ibáñez University.
** Department of Economics, Rutgers University and NBER.
The authors gratefully acknowledge Per Hortlund and Anders Ögren and two anonymous referees for providing useful comments and suggestions that improved the paper. All remaining errors are the authors' own.

in the early part of the nineteenth century, created a positive aura—the banking version of labeling a frozen island Greenland.

There are numerous dimensions on which banking freedom can be measured. Any particular historical example might be freer than comparable systems on some dimensions and less free on others. The significance of particular cases, moreover, cannot be understood, therefore, without understanding their institutional and historical background. For these reasons we will not attempt to summarize all of the cases that have been studied and perform a meta-analysis. Instead, we will focus on six cases: the three best known, Scotland, the United States, and Canada, two additional cases that allow us to look at interesting institutional differences, Sweden and Switzerland, and one country on the periphery, Chile. We will then attempt to formulate some generalizations based on those case studies, generalizations that seem to us to be consistent with the remainder of the literature.

In principle the idea of free banking or laissez-faire banking is very simple. A true laissez-faire banking system would be one in which individuals were free to make any arrangements they wanted with respect to means of payment, media of exchange, and borrowing and lending. Any limitations on voluntary arrangements imposed by government would be a departure from laissez faire.

Of course, there is much more to be said. Two discussions, one by Friedrich Hayek and one by Adam Smith, are particularly important. The Hayekian concept of free banking emphasizes the role that competition could play in controlling the supply of high-powered money and thus inflation, while the Smithian concept, which is the basis of the historical examples we discuss, refers to free banking that exists within a monetary system in which government plays an important role. Friedrich Hayek laid out his concept of free banking in *Denationalization of Money,* first published in 1976. As one might guess from the date, the dominant economic issue at the time was inflation, and as one might guess from the author, the proposed solution was private competition.

Hayek imagined a system in which governments steered completely clear of money. The government would not define the basic legal tender or even the basic unit of account. Money would be completely "denationalized." Hayek imagined private firms issuing competing monies in units of their own choosing: Mengers, Ducats, Florins, Talents, and so on (1978, 53). In principle, these issuers could (and Hayek thought would) issue pure fiat monies—paper monies unbacked by any promise to pay in gold, silver, or other commodities. What would prevent them from overissuing, that is from simply adding zeros and collecting the seignorage? The reputation of

the issuer would be enough, Hayek argued, to prevent overissue. If the government overissues a monopoly legal tender, the usual cause of inflation, there is little that the ordinary person can do. But in Hayek's world a brand of money that was depreciating in terms of commodities would be abandoned in favor of another brand that was not depreciating. Private competition, in other words, would solve the problem of inflation.

Hayek's vision has produced a heated debate. If there were several competing monies, would transaction costs be high? Would high transactions costs lead to the adoption of one currency? In other words, is the unit of account a natural monopoly? If one firm emerged with a monopoly would it be tempted to overissue just as a government monopoly issuer would? This concern has been raised by a number of writers including Milton Friedman (1959, 6-7), Eugene Fama (1983, 13), Lawrence Summers (1983), George Selgin and Lawrence H. White (1994), and Antoine Martin and Stacey L. Schreft (2003).

Is there historical evidence that could be brought to bear on Hayek's vision? Undoubtedly there is, albeit indirect evidence. Note that while Mengers are a purely imaginary unit of account, the Ducats, Florins, and Talents that Hayek mentions were the names of real coins. And, although they did not possess all the characteristics that Hayek wanted, they did circulate widely in a world of competing monetary units. Indeed, the idea that monies issued by one state should not be allowed to circulate within the borders of other states belongs to the late nineteenth and twentieth centuries, a newcomer. As late as 1857 Mexican Pesos, and a number of other foreign coins, were legal tender in the United States.

Nevertheless, while considerable historical research has been done on this type of monetary competition, most of the studies that have explicitly used the term free banking have fallen within what we call the Smithian concept of free banking, after Adam Smith, and these are the cases we will examine here.

The Smithian concept of free banking starts a long way from laissez faire.[1] It assumes a standard form of "high-powered money" that defines the monetary unit, usually a gold or silver coin, or both (bimetallism). Banks are then legally bound (whether by law or the terms of their charters) to convert their notes on demand into standard money. This was the accepted

1. When it came to banking Adam Smith's departures from laissez faire were substantial, as emphasized by Edwin G. West (1997). Nevertheless, it makes sense to refer to "Smithian free banking" because the regulations Smith favored were common to the historical episodes that have gone under the term "free banking."

monetary framework of the nineteenth and early twentieth centuries, and was generally presupposed by advocates and opponents of "free banking." As usual, Adam Smith gave the clearest statement of this version of free banking.

> If bankers are restrained from issuing any circulating bank notes, or notes payable to the bearer, for less than a certain sum; and if they are subjected to the obligation of an immediate and unconditional payment of such bank notes as soon as presented, their trade may, with safety to the publick, be rendered in all other respects perfectly free. (Smith 1979 [1776], 329)

As this quotation also makes clear, Smith favored two additional restrictions on note issue: a ban on delayed redemption (some Scottish banks had issued notes containing "option clauses," discussed below), and a second, sometimes neglected restriction, a limitation on the size of notes that could be issued. Smith favored this second restriction because he believed that allowing the issue of small denomination notes would encourage "beggarly bankers," whose failure would bear heavily on the poor. Smith also believed that it was important to keep some coin in circulation to prevent the complete breakdown of the monetary system if the home offices of the banks were forced to close because of war (a reference to the '45?). [2]

These restrictions on laissez faire, as important as they were, left plenty of room for freedom or additional regulation. An idea of the many legal restrictions that were sometimes imposed on "free banks" during the free-banking era can be obtained by looking at the checklist in table 1. We need to consider these possibilities in detail.

2. The evolution of denomination restrictions in the United States has been explored by Eugene White (1995) and Howard Bodenhorn (1993). Smith favored a minimum note of £5, a substantial sum.

Table 1. A Checklist of Banking Restrictions

I. Freedom to issue bank notes A. Were banks allowed to issue bank notes (paper money) or only deposits? B. Was it required that notes and deposits be redeemable in high-powered money? C. Was it required that redemption of notes and deposits be instantaneous, or could a bank delay redemption of one or both? D. Were there restrictions on the denomination of notes? For example, were small notes prohibited?
II. Freedom to lend A. Did notes have to be backed by government bonds? B. Were banks required to hold a minimum reserve of high-powered money? C. Could banks invest in long-term real assets such as real estate or corporate stocks? Were banks limited to short-term nominal debts secured by real assets (the real bills doctrine)? D. Was bank lending subject to usury laws? E. Were banks required to make their balance sheets public?
III. Freedom of entry A. Could potential bankers start a bank at the time or place of their choosing by following a standard procedure, or did bank charters require legislative action? B. Could banks open branches? C. Could a potential banker choose limited liability?
IV. Freedom from regulation by (or help from) a central bank A. Was there a government owned or controlled central bank that regulated the banks or acted as lender of last resort? B. If there was no government owned or controlled central bank, was there a privileged private bank that played a similar role?

Freedom to Issue Notes

For the average person, indeed for many economists, privately issued bank notes are the strangest feature of free banking. Although some private banks still issue notes—in Scotland, Northern Ireland, and Hong Kong—many people have never seen a privately issued note.[3] Unlike debates over the private provision of pensions, health care, or electricity, the debate over the private provision of paper money concerns an alternative that most people have never experienced. Americans have not had privately issued notes in their pockets since the Great Depression.

Smith wanted notes to be redeemable on demand, but this is not the only possibility. Some Scottish notes, prior to legislation in 1765, contained an "option clause" under which a bank that issued a note could delay redeeming it for a period of time provided that the bank paid interest on the note until it was redeemed.[4] Deposits also may be demand deposits (redemption is instantaneous) or time deposits (redemption may be subject to possible delays).

The convertibility of the free-banking note into specie (an old term for gold or silver coins) meant that the rate of growth of the stock of money over the long run, and hence the rate of inflation, was governed by the rate of growth of the stock of specie. There was, to put it somewhat differently, a golden or bimetallic anchor to the monetary system that limited the potential for inflation. A process of adverse clearings, the so-called "law of reflux," limited the ability of individual banks to overissue. If one bank separately attempted to place more notes into circulation than were needed in its local area, it would soon be punished by a reflux of notes coming back for redemption. In the *Wealth of Nations* Adam Smith gives a good account of the law.

> The late multiplication of banking companies in both parts of the United Kingdom, an event by which many people have been much alarmed, instead of diminishing, increases the security of the public. It obliges all of them to be more

3. Traveler's checks or bank checks are the closest analogs for Americans.
4. The option clause has been discussed as a possible mechanism for reducing the potential for bank runs. See Gherity (1995) and Selgin and White (1997). The same problem exists with respect to deposits: requiring instant redemption on demand encourages bank runs during periods of distress. It was common in the United States for certain classes of deposits to allow banks to delay redemption.

> circumspect in their conduct, and, by not extending their currency beyond its due proportion to their cash, to guard themselves against those malicious runs which the rivalship of so many competitors is always ready to bring upon them. It restrains the circulation of each particular company within a narrower circle, and reduces their circulating notes to a smaller number. By dividing the whole circulation into a greater number of parts, the failure of any one company, an accident which, in the course of things, must sometimes happen, becomes of less consequence to the public. This free competition, too, obliges all bankers to be more liberal in their dealings with their customers, lest their rivals should carry them away. In general, if any branch of trade, or any division of labour, be advantageous to the public, the freer and more general the competition, it will always be the more so. (Smith 1979 [1776], 329)

An alternative way to make the same point is to note that convertibility prevents solvent bank notes from being traded far below their par value. Notes from a bank that overissues (and thus has too few specie reserves as compared with its notes) would be priced below par and redeemed. To be sure, there is a cost to converting notes into specie. So—as in the antebellum United States—notes could sell at a small discount, one that would grow as the note migrated farther from the point of redemption. But these discounts were similar to the small fluctuations in exchange that could occur under the gold standard between the "gold points."

Hand to hand currency was, of course, more important in the monetary systems of the nineteenth century than it is today, although it occasionally plays a significant role, especially in less developed countries. In the United States in 1850, for example, bank notes made up about 35 percent of the total M2 money supply (Friedman and Schwartz (1970, 322-23). Today currency makes up nearly 50 percent of the M1 money stock in the United States, but only about 7 percent of the M3 measure.[5]

---

5. The current figures are for January 2004 and are from the Federal Reserve website, www.federalreserve.gov, accessed April 5, 2005. Currency includes coins and travelers checks. A considerable amount of U.S. currency is used in black markets and outside the United States.

A demand deposit is like a bank note in that it is a liability on the bank that issued it, but a demand deposit differs from a note in two important ways. With notes there is at least the hope for the issuing bank that the note will pass from hand to hand without creating a demand for the bank's reserves. When checks are deposited and cleared the issuing bank will lose reserves. Even if the system as a whole expands, reserves will be lost to cash. The bank that increases its issue of deposits by making additional loans, in other words, must expect to engage the interbank clearing system. There is also a legal difference between notes and deposits. When a shoe seller accepts a bank note the seller's basic contract, as a practical matter, becomes a contract with the bank. If the bank issuing the note fails, the shoe buyer who paid with the bank note is off the hook. On the other hand, when someone accepts a check, the basic contract remains a contract between the seller and the writer of the check. Even if the bank in which the deposit was lodged fails, the shoe seller can go back to the shoe buyer for payment.

Freedom to Lend

One would think that a minimum condition for free banking would be the freedom of a bank to lend the funds as it saw fit. Many "free-banking" systems, however have been subject to restrictions of one sort or another. The American free banks were required to back their notes with government bonds (usually bonds issued by the state where the bank was located).

Funds derived from deposits or capital could be invested more freely. However, two other restrictions favored by Smith, real bills and usury laws, applied to these investments. The "real bills doctrine" held that the best asset for banks to hold, given their demand liabilities, would be short-term business loans secured by real assets, for example, a loan to a bakery to purchase flour (Smith 1979 [1776], 304). For the most part, real bills was regarded as a conservative norm for bankers to adopt if they were wise. This may well be the way Smith regarded the doctrine. But it could be written into law, for example, by restricting the freedom of banks to own land, a frequent restriction in bank charters and free-banking laws in the United States.

Bank lending, moreover, was frequently restricted by usury laws. Adam Smith favored usury laws, arguing that the laws channeled funds into safer investments, which he thought was good for long-run economic growth (Smith 1979 [1776], 356-57). Jeremy Bentham famously took Smith to task

for this obvious departure from laissez faire. A movement to repeal the usury laws paralleled the movement to establish free banking (Rockoff 2003).

Freedom to Enter the Business of Banking

Pure freedom would mean one could start a bank at the time and place of one's choosing. Indeed, in the American case the term "free banking" referred mainly to this right. Before free banking the right to charter new banks was the privilege, sometimes jealously guarded, of state legislatures. But the general right to enter the field could be restricted in various ways. Under some laws would-be bankers were required, for example, to provide a minimum amount of capital, or to limit in various ways their note issues or lending.

One restriction that was important in the United States, although not in other countries, was the limitation on the right to establish branches. Although free-banking laws in the United States allowed entrepreneurs to establish a bank with one office within a particular state, branching was often prohibited, and branching across state lines was ruled out because the chartering of banks was state law and states prohibited banks with charters from "foreign" states from establishing branches. As we will see below, there is a strong consensus that prohibitions on branch banking caused a great deal of trouble in the United States.

Across free-banking systems, the obtainable corporate charter varied. Perhaps the most important issue was whether the organizers of a bank could limit the liability of shareholders. A recent contribution by C.R. Hickson and J.D. Turner (2004) argues that unlimited liability was often a key characteristic of successful free-banking systems. Double liability was a compromise between limited liability and unlimited liability: if the bank failed the share holders not only lost their initial investment, but they were also liable again for an amount equal to the nominal value of their shares.

Freedom from Regulation by (or Help from) Central Banks

Some free-banking systems have been subject to more or less control by a government owned central bank or privileged private bank. At the time Adam Smith outlined his system of banking the Bank of England had important legal privileges not available to other English banks. In Scotland, only three banks (the Bank of Scotland, the Royal Bank of Scotland, and

the British Linen Company) were allowed the advantage of limited liability. The government could bestow a number of other privileges that would allow a private bank to achieve a leading position in terms of size and strength within the banking system. Perhaps the most important privileges were those of holding the government's deposits without paying competitive interest on them and managing the government's debt. Even the mere appearance of a special relationship with the government might reassure depositors and create a competitive advantage. With privileges came obligations: governments might call on the privileged bank to monetize government debt.

A privileged private bank or central bank could influence its smaller rivals in a number of ways. In normal times it could control individual banks by collecting and returning notes for redemption. In times of financial distress it could lend reserves to faltering rivals, in other words it could act as a lender of last resort. Walter Bagehot's classic, *Lombard Street* (1873), was essentially a demand that the Bank of England, then a privileged private bank, acknowledge its responsibility to act as lender of last resort.[6] Why would a private bank take on these responsibilities? One motive might be self-interest: when aggressively redeeming notes a privileged private bank might be hoping to increase its share of the bank note market; when acting as lender of last resort a privileged bank might be hoping to profit by making high interest loans to troubled rivals. The motives, however, might be more complicated. A privileged bank might assist other faltering institutions to maintain the system within which it enjoys privileges, to provide stability that it conceived would rebound to its own advantage, or from a genuine sense of responsibility to the financial community.

Some economists, for example Milton Friedman and Anna J. Schwartz (1986), Hugh Rockoff (1986a), and Charles Goodhart (1988) argue on the basis of historical evidence that a lender of last resort is necessary to assure stability in a Smithian system of banking. Smithian banking systems will be fractional reserve systems, and there will always be some possibility of a panic. Other economists, such as Vera Smith (1936) and Richard Timberlake (1993), argue that there is no need for a privileged

6. Bagehot described a system of Smithian free banking, including the absence of a privileged private bank operating as a lender of last resort, as an ideal system. However, he argued that since the English system had evolved over a long period with the Bank of England playing a central role, it was impractical to consider a change of regime. The practical course was to make the existing system work better.

bank or state run central bank to regulate the system of note issuing banks or to serve as lender of last resort.

And economic historians can point to cases, such as Canada, the Suffolk system, or the New York Clearing House Association in the United States[7] that did well with self-regulated systems instead of a formal central bank.

HOW DO YOU EVALUATE CASES OF FREE BANKING?

It is obvious, given the many dimensions along which banking freedom can range, that evaluating free banking will be difficult. One would like to arrange cases of free banking on a continuum ranging from total freedom to total regulation. Any such arrangement, however, will be somewhat arbitrary. In the American case banks were highly restricted, for example, in terms of the assets they could hold, but they were free to issue shares with limited liability, and were free of any oversight by a central bank. In the Scottish case, banks enjoyed far more freedom in terms of the assets they could hold, but their liability was unlimited (except for the older chartered banks) and they operated in an environment in which, arguably, there were heavyweight banks—the Bank of Scotland, the Royal Bank of Scotland, and the Bank of England—standing in the background. Comparing these cases inevitably requires judgments about how important various restrictions were in practice.

Nor is it easy to decide whether a banking system, however free it may have been, performed well or badly. Perhaps the greatest fear about free banking is that if banks are free to issue paper money they will be tempted to put too much in circulation. Partly, this fear is based on a thought experiment. What if a conservatively managed bank changed course and put a large amount of paper into circulation? Would not the notes, at least for a time, simply pass from hand to hand? What if all banks became reckless at one time, would not this produce an inflationary issue of paper? Free banking, to put it more dramatically, will end in an orgy of inflation and wildcat banking.[8] This

---

7. See, Timberlake (1984),.Gorton (1985), Gorton and Moullineaux (1987), Calomiris and Kahn (1996)

8. For our purposes it seems sufficient to define a wildcat bank loosely as a bank that appears to be a risky venture set up with the intention of profiting in the short-run from the wide circulation of its notes. Of course, what appears to be a risky or even foolish venture to one observer may appear to be the soul of propriety to another. In earlier work one of us

scenario is something that investigators must check for in every historical case. However, when we go beyond this relatively clear criterion we find that there is a wide variety of criteria for evaluating banking systems.

On the microeconomic side we can ask the set of questions we would ask about any financial system. How profitable was the banking system? Did it provide good service to its customers? Were bank offices conveniently located? Were loans available to worthy borrowers at low cost? More generally, we can ask whether free banking contributed to economic growth by channeling funds to sound investments. Another issue is corruption. Does free banking encourage corruption by providing an opening for shady characters to fleece the public, or does it discourage corruption by removing an incentive for people to bribe the legislators and regulators for privileges? Does free banking generally promote efficiency in the banking system, including efficient levels of assurance?

On the macroeconomic side there are also a number of questions. To be sure, under the Smithian system convertibility assured reasonable price stability in the long run. An increase in the supply of precious metals, as after the discovery of gold in California in the middle of the nineteenth century or in South Africa at the end of the century, could produce a mild inflation. Only fiat paper money regimes, however, could produce high inflations or hyperinflations (Rolnick and Weber 1997).

On the other hand, Smithian banking systems could fall prey to banking panics. They were, after all, fractional reserve systems. Free-banking systems may have been more prone to banking panics (as the fear of a wildcat banking suggests) or less prone, but we cannot rule out a priori the possibility that the public would lose confidence in the system, and that there would be a scramble for high-powered money. Whether free-banking systems are more prone to banking panics is a subject where no consensus has been reached among scholars. Consider the case of Australia, a case that, according to Kevin Dowd (1992) was a unique experience of a major banking collapse (1893) within a free-banking system[9]. Rather than being a consequence of a lightly regulated banking system, Dowd argues that this crisis was the result of a real supply shock and Government intervention. A quite different explanation is proposed in two recent papers by Hickson and Turner (2002, 2004). They argue that the crisis could have been avoided if the banks had been more

---

attempted to provide a more precise definition, and the result was to rule out some cases that contemporary observers classified as wildcat banking.

9. Dowd (1992) compares the scope of this crisis to the one occurred during the 1930s in the United States.

regulated. The lack of regulation resulted in low capital and cash and banks over-holding risky assets.

THE HISTORICAL EXPERIENCE

Given the plethora of systems that have been referred to as "free banking," and the plethora of criteria that can be used to judge the performance of a banking system, it is not easy to come to a summary judgment about the lessons of history. Nevertheless, we believe that we can identify some issues on which economists have reached a consensus, along with, of course, many issues on which they have not. This means that we will be following the crowd: focusing on the restrictions that economic historians have stressed, and adopting their implicit weighting of various criteria for success.

We do not attempt an exhaustive survey. Such a survey would require at least one substantial volume, perhaps several. Many of the less well-known cases, moreover, have attracted relatively few scholars, so conclusions have not been tested. Besides, conclusions reached in recently documented relevant experiences like the case of Australia are still highly controversial and probably require further research. While scholars agree that this was a true case of free banking, they differ in evaluating how well the system worked, especially regarding its stability. Historical cases of free banking, moreover, tend to attract students with strong ideological priors. It is probably true that free banking has attracted more scholars predisposed to free markets than to regulation. In part, this may reflect the interest of Hayek and other leading free market scholars in free banking. The attraction of this issue may also reflect the relative success of a number of free-banking systems. Advocates of free markets, like advocates of regulation, are drawn to cases that appear to confirm their priors.

These considerations, in other words, suggest to us that a meta-analysis that attempted to find a consensus by treating all of the existing studies within a common framework would not be convincing. Here we discuss six cases in detail: Scotland, the United States, Canada, Sweden, Switzerland, and Chile.[10]

10. Among the episodes that we omit four of the most intriguing and deserving of further research were in Australia, China, Colombia, and France. Kurt Schuler (1992a) in the overview essay for Kevin Dowd (1992) surveys 60 historical cases. This volume includes

These are all examples of systems that included the basic Smithian restrictions: private notes and deposits were convertible on demand into high-powered money coined or at least defined by the government. They are all drawn from the nineteenth century. This is, of course, not an historical accident: the prestige of the gold standard and laissez faire were at their peak. Although limited, we believe that our survey covers the main cases in the sense of the ones that have drawn the most attention from economic historians and that span the full range of institutional structures that have gone under the name free banking

Free Banking in Scotland

The story of banking in Scotland begins in 1695 with the Scottish Parliament's authorization of the Bank of Scotland. A second bank, the Royal Bank of Scotland, was chartered in 1727 (by the British Parliament), and a third, the British Linen Bank, originally intended to finance the linen trade, in 1746. All three were limited liability banks located in Edinburgh. The demand for banking operations in other cities, Glasgow in particular, led to the establishment of note-issuing banks organized as partnerships or, after 1810, as joint stock companies, with unlimited liability. This sector of the banking industry, as well as the older limited liability sector, expanded rapidly, and by the beginning of the nineteenth century Scotland was served by a dense, vigorously competitive network of banks and bank branches.

The limited liability banks were bigger than the other banks and remained, as shown in Table 2, a major force in the banking industry during the industrialization of Scotland.

The liability rules were altered several times. But the key legislation, passed in 1879, permitted banks with unlimited liability to choose limited liability, a step that most of them took in 1882.

In 1802 the three limited liability banks issued 56.2 percent of all notes and 41.5 percent of all deposits. Legislation in 1845 froze the note issue of all banks except for increases backed 100 percent by specie, thus locking in a major role for the limited liability banks. In 1850 the limited liability banks were issuing 31.8 percent of all notes and 32.5 percent of all deposits. Notes

essays on the four episodes mentioned above -- Lawrence White on Australia, George Selgin on Foochow, Adolfo Meisel on Colombia, and Philippe Nataf on France -- as well as several others. Some of these episodes, of course, have been studied by other scholars. Eugene White (1994), for example, has explored free banking in France during the Revolution.

by that time, however, had become a relatively small part of the total Scottish money supply, as shown in the last column of Table 2.

Table 2 The Scottish Banks

	Banks with Limited Liability	Banks with Unlimited Liability	Notes of Banks with Limited Liability as a share of Total Notes	Deposits of Banks with Limited Liability as a share of Total Deposits	Notes as a share of the sum of Notes and Deposits
	number	number	percent	percent	Percent
1772	3	28	16.1	28.8	42.9
1802	3	28	56.2	41.5	33.7
1825	3	33	33.0	39.9	18.3
1850	3	14	31.8	32.5	8.4

Source: Checkland 1975, 237, 240, 424, 426.

The Scottish banking system has had many admirers. Adam Smith advocated several restrictions on banking based on the Scottish experience, but he concluded:

> That the trade and industry of Scotland … have increased very considerably during this period [the decades preceding the *Wealth of Nations*], and that the banks have contributed a good deal to this increase, cannot be doubted. (Smith 1979 [1776], 297)

Rondo Cameron (1967) deserves much of the credit for the high reputation that the Scottish system enjoys among the current generation economic historians. Cameron noted that Scottish economic growth compared favorably with growth in England and France, two countries with far better endowments of natural resources. Cameron then argued that Scotland's banking and educational systems were the only plausible explanations for Scotland's comparative success. Cameron concluded his

survey of Scottish banking by quoting A. W. Kerr (1884), an early historian of Scottish banking:

> In Scotland, banking was permitted to develop as the country advanced in wealth and in intelligence. Nay, it was even enabled to lead the nation on the path of prosperity, and to evolve, from practical experience, a natural and healthy system of banking, which would have been impossible under close state control similar to that followed in other countries. (Kerr quoted in Cameron 1967, 99)

The major controversy over the Scottish system is not over the quality of banking services provided by Scotland's banks, or even their contribution to the economic development of Scotland, as most students of Scottish banking are positive on both issues, but rather over how free the system was. In addition to the limitations on small notes and option clauses mentioned above, two further limitations, restrictions on the availability of unlimited liability, and "central banking" by the large Scottish banks or the Bank of England, have been discussed at length.

During the phase of free banking in Scotland, bankers were free to organize banks, but their partners or shareholders bore unlimited liability for the debts of the banks. Jack Carr and Frank Mathewson (1988) and Carr, Sherry Glied, and Mathewson (1989) argued that unlimited liability acted as a barrier to entry and was a significant restraint on the growth of banking. Moreover, it is possible that by increasing confidence in notes and deposits unlimited liability increased confidence in the security of bank liabilities, much like bond collateral requirements or deposit insurance did in the United States. We know from S. G. Checkland's magisterial history of Scottish banking (1968, 149-150, and 1975, 275, 288-292, 440-442), that the Public banks (as the three limited-liability banks were known) were opposed to the extension of the privilege of limited liability to the remaining banks, indicating that the Public banks benefited from their special status. Lawrence H. White (1990), however, has argued forcefully, and in detail, that this constraint was not binding. Nevertheless, the jury is still out on whether this constraint might have created positive externalities for the system.

In addition, there is the possibility that the two largest Scottish banks, the Bank of Scotland and the Royal Bank of Scotland, acted as "central banks" for the Scottish system, or that the Bank of England did so at one remove. This contention is hard to evaluate in part because the idea of central banking was evolving toward its modern form in the course of the

nineteenth century. Bagehot's *Lombard Street*, which demanded that the Bank of England acknowledge its duty to be the lender of last resort, one of the defining functions of a central bank, appeared in 1873.

Certainly the Public banks were given privileges often associated with central banks. The Public banks managed the government's funds. Moreover, only their notes were received by the Customs and Tax Office (Checkland 1975, 186, 204; Munn 1981, 12; and Cowen and Kroszner 1989, 226). And the pattern of reserves pointed to a central role for the Public banks. Checkland (1975, 186) notes that "it became the custom of other banks . . . to hold part of their reserves in the notes of the public banks, rather than hold cumbersome gold," a point on which Frank W. Fetter (1965, 34) concurred.

One can find stories in Checkland (1975) that sound like a central bank looking after its flock. For example, Checkland (1975, 175) tells us that the Bank of Scotland acted as a "note issue policeman" by collecting and presenting for redemption the notes of banks that it thought were issuing excessive amounts. In 1762 the Bank of Scotland and the Royal Bank restricted credit during a balance of payments crisis (Checkland 1975, 108-111; Hamilton 1953).

The notion that the Bank of England at one remove provided liquidity also has strong supporters. One can begin with Adam Smith (1979 [1776], 304) who when describing the situation in the 1760s noted that "Whatever coin therefore was wanted to support this excessive circulation both of Scotch and English paper money, whatever vacuities this excessive circulation occasioned in the necessary coin of the kingdom, the Bank of England was obliged to supply them." And Checkland concluded that by 1810 "the automatic principle of dispersed banks, each with an immediate liquid reserve in its coffers, was now highly unrealistic. The principal and ultimate source of liquidity lay in London, and, in particular, in the Bank of England" (1975, 432).

One can also find stories, as pointed out by Tyler Cowen and Randall Kroszner (1989, 228) and Dow (1996, 704-705), that sound like lender-of-last-resort operations by the Bank of England—occasions when the large Scottish banks received credits from the Bank of England during times of stress. Whether these stories add up to "central banking," as argued by Cowen and Kroszner and by Dow or merely to actions taken by bankers for ordinary business motives, as argued by Lawrence H. White (1990, 532-534), is not easy to decide. Reading the minds of nineteenth century bankers is no easy task.

It appears, to sum up, that there is considerable agreement that lightly regulated banking was a success in Scotland. Disagreement remains, however,

over whether some residual constraints—the classical Smithian restrictions, unlimited liability, or the presence of large privileged banks acting as quasi-central banks—contributed in some measure to that success.

Free Banking in the United States

The free-banking era in the United States, the two and one half decades preceding the Civil War, followed the demise of the Second Bank of the United States. During all of this time; indeed up to 1913 there was no formal central bank or privileged private bank to regulate commercial banks or to serve as their lender of last resort.[11] The states regulated banking, and they tried a wide variety of systems ranging from state owned banks to absolute bans on banking. The best known of these experiments was the so-called "free banking law." Under this law an individual could enter the business of banking, including the issue of notes, provided that those notes were backed by government bonds (usually in-state bonds, but sometimes Federal, municipal, or other-state bonds).

Freedom of entry was what gave the system its name. It was a sharp contrast with the older system in which banks were chartered one by one by the state legislature. Freedom of entry may have been especially important in an economy that was expanding rapidly into new areas that required new banking facilities. Entry, however, was not completely free. Typically the bank was restricted to a single office—branching was prohibited. And banks from other states were not allowed to set up branches.

American free banks were also free in the sense that they were limited liability corporations. Indeed, Richard Sylla (1985) argues that the American free-banking laws were the first example of laws that established explicit rules by which private firms could obtain charters to function as limited liability firms.

Banks deposited the bonds with a state banking authority. If the bank failed to redeem even one of its notes in legal-tender coins the note holder could take the note to the banking authority who would then sell the bonds and redeem all the notes issued by the bank. The law seemed to be a desirable

11. A possible exception was in New England. Here the Suffolk Bank of Boston, with the support of the other Boston banks, maintained the value of country bank notes at par. The Suffolk has been described as a quasi-central bank.

compromise: freedom of entry provided that the note holder was protected. The American experience has been a major hunting ground for scholars seeking lessons about free banking and has contributed in some measure to the interest in the field. Partly this is because of the colorful stories about the prevalence of "wildcat banking" on the American frontier. An earlier generation of economic histories of the United States delighted in recounting these stories. Broadus Mitchell and Louise Pearson Mitchell, for example, included a section on "wildcat banking" in their textbook on American economic history. Here they informed students that

> The weakness, ignorant management, or dishonesty of large numbers of the state banks earned for their notes such opprobrious names as "shinplasters," "wild cats," "red dogs," and "stump tails." The banks issuing these were called "rag mills" and "fly by nights." (Mitchell and Mitchell 1947, 390)

It is not always clear whether these stories were about free banks or banks created under some other law. However, Mitchell and Mitchell go on to report the complaint of the governor of Indiana about the behavior of some of the bankers operating under Indiana's free-banking law.

> The speculator comes to Indianapolis with a bundle of bank-notes in one hand and the stock [government bonds for backing the notes] in the other; in twenty-four hours he is on his way to some distant point of the Union to circulate what he denominates a legal currency, authorized by the legislature of Indiana. He has nominally located his bank in some remote part of the State, difficult of access where he knows no banking facilities are required, and intends that his notes shall go into the hands of persons who will have no means of demanding redemption. (Mitchell and Mitchell 1947, 392)

Many of the wildcat stories concerned free banking in Michigan.[12] Here one of the regulations was that banks hold a reserve of specie. Wildcatters tried to fool the Bank inspectors by displaying a reserve and then whisking it

---

12. See Rockoff (1986b) for a more detailed discussion of the Michigan experiment.

to another bank before the inspectors arrived. In describing their attempt to examine the banks, the inspectors rose to poetic heights.

> The singular spectacle was presented of the officers of the state seeking for banks in situations the most inaccessible and remote from trade, and finding, at every step, an increase of labor by the discovery of new and unknown organizations. . . . Gold and silver flew about the country with the celerity of magic; its sound was heard in the depths of the forest: yet like the wind one knew not whence it came or whither it was going. (Quoted in Hammond 1948, 6)

The implicit conclusion of the earlier textbooks was that lightly regulated banking was a disaster. To be sure, better-informed writers distinguished between the failure of the free-banking law in the West and the success of the free-banking law in New York. Perhaps, they thought, the free-banking law could work in a more sophisticated financial environment. Nevertheless, the overall impression left by these stories was that the free-banking law, and by extension all forms of lightly regulated banking, was a disaster waiting to happen.

A long line of research beginning (one of us likes to think!) with Rockoff (1974, 1975) has reversed this impression. Rockoff investigated the cases of wildcat banking suggested in the earlier literature and concluded that they were quantitatively unimportant. Moreover, the bond-security provision, Rockoff concluded, caused most of the problems. Each free-banking law had to specifiy the amount of government bonds backing notes. Should it be one dollar in bonds for one dollar in notes? Or $1.10? Or $.90? And how were the value of the bonds to be measured? Should they be valued at market price? Or at face value? Too much security made it uneconomic to start banks under the law; too little security encouraged risky or unscrupulous banking practices by creating highly profitable opportunities for bankers while misleading the public about the security of the notes they were accepting. Rockoff followed a strategy of constructing an upper bound on the amount of bad banking that had occurred under the free-banking laws. Most subsequent writers have lowered that bound even further.

Arthur J. Rolnick and Warren E. Weber (1983) investigated free-banking laws in four states: New York, Wisconsin, Indiana, and Minnesota—in detail. They found some evidence of problems. For example, nine of the 16 banks set up under Minnesota's law of 1858 failed by 1862. Nevertheless, they concluded that losses on bank notes were relatively low under "free banking,"

and that generally Rockoff had, if anything, been unduly pessimistic. In a subsequent paper (1984) they addressed the question of why free banks in some of their states failed in large numbers. They concluded that falling bond prices produced many of these failures, and that wildcat banking was seldom the problem. Rockoff (1991) expressed some doubt that the two hypotheses were as distinct as Rolnick and Weber suggested. After all, opening and closing banks that were required to hold bonds influenced bond prices. Nevertheless, Rolnick and Weber's stress on other factors that could produce bank failures helped to further lower the upper bound on the amount of fraudulent or foolish banking that had been produced by the free-banking laws.

Andrew J. Economopoulos (1988) took up the case of Illinois, another apparently bad experience marked by the rapid creation of many banks followed by many failures and heavy losses. Economopoulos found some suspicious evidence. While Chicago, the commercial center with a population of about 100,000, had only nine banks, 10 free banks were set up in towns with populations under 200 (where in fact it was illegal to setup a bank). Altogether, 43 were set up in towns with populations under 1000 (Economopoulos 1988, 260-261). Nevertheless, Economopoulos concluded that true wildcat banking was a rare phenomenon, and that the evidence is consistent with the idea that most of the banks were sound business propositions caught by unfortunate movements in the prices of the bonds backing the notes.

Iftekhar Hasan and Gerald P. Dwyer (1994) investigated episodes in New York, Indiana, and Wisconsin in which large number of free banks closed. For the most part, they ruled out wildcat banking (a la Rockoff) and falling bond prices (a la Rolnick and Weber), and concluded that to some extent the problems may have been the result of forces beyond their control. In Indiana, for example, the cascade of banks closings began, according to Hasan and Dwyer, when Ohio authorities decided to force notes from certain banks out of circulation.

Thus the upper bound on bad banking under the American version of free banking set by earlier writers has been progressively lowered. Indeed, it seems possible to us that the attempt to lower the upper bound on the amount of unscrupulous and foolish banking may have gone too far. The critics have succeeded in showing that Rockoff's simplest and most extreme scenario of wildcat banking was rare. That doesn't mean, however, that every remaining bank was a model of propriety. Even when bond prices exceeded the amount of notes that could be issued on their basis (so that bankers had to put some capital into their enterprises) high profits may have encouraged reckless banking. Indiana is an example. It is always

possible that the game could have gone on indefinitely with Ohio using notes redeemable in small towns in Indiana—a long ride away in horse-and-buggy days. However, most people will view this as a distortion from what they would regard as a desirable system for supplying bank notes in Ohio. They will sympathize with the distaste expressed by the governor of Indiana, quoted above, for the speculator who "comes to Indianapolis with a bundle of bank-notes in one hand and the stock in the other" and who in 24 hours "is on his way to some distant point of the Union to circulate what he denominates a legal currency."

James A Kahn (1985) and Kenneth Ng (1988) put the enthusiasm for the American version of free banking in perspective. Kahn showed that on the whole free-banking states suffered from more failures and more costly failures than non-free-banking states, and Ng (1988) showed that the amount of banking services and the number of banks remained the same, or declined after the introduction of free banking. Both results, however, might be traced to the peculiarities of the bond-security system, rather than free entry.

Most students of American free banking, moreover, going back at least to Bray Hammond (1936), have pronounced New York a successful case of "free banking." Bank failures were rare, losses on bank notes rarer still, and New York emerged as the nation's financial center, as pointed out, for example, by Robert King (1983). Kahn (1985) and Ng (1988), who were not enthusiastic about American free banking in general, also acknowledged the success of the New York System.

Even the adoption of a relatively successful form of free banking in New York, however, could not prevent a financial panic: the panic of 1857 hit New York hard. Charles Calomiris and Larry Schweikart (1991) investigated the response of different banking systems in the United States to the panic and found that some—those that allowed branch banking or interbank cooperation—survived the crisis in better shape. Nevertheless, the crisis suggests the potential for panic that probably exists in any system that combines fractional reserve banking with bank notes and deposits that are legally redeemable on demand.

Does the abandonment of the antebellum version of free banking in favor of the National Banking system, moreover, prove that contemporaries viewed free banking, whatever its modern apologists might claim, as a failure? One issue that may have loomed large to a contemporary that has not been dealt with in detail by modern students is the complexity of the system. Merchants had to consult "Bank Note Detectors" when presented with an unfamiliar note, or send customers to dealers in out-of-town notes. The detector showed the discounts that applied to notes that had wandered far

from home and described potential counterfeits. Granted, merchants today have similar worries; checks, for example, can bounce. And we have all paid a fee to get cash from an ATM machine, a fee that resembles the discount paid by a note holder who wanted to convert a "foreign note" into "current money." Gary Gorton (1996) and Michael Haupert (1996), moreover, showed that the discounts on out-of-state bank notes reflected the reputations of the banks that issued the notes. Still, using a single note acceptable everywhere was more convenient.

However, the view that the antebellum version of free banking was abandoned because it was perceived to be a failure is simplistic. The National Banking Act, adopted during the Civil War (1863, 1864), was in fact a free banking law. It permitted entrepreneurs to establish banks as long as explicit conditions were satisfied and provided for the issue of convertible bank notes backed by government bonds. [13] Salmon Chase, the secretary of the Treasury who proposed the National Banking system was himself the former governor of a free-banking state, Ohio, and probably had Ohio's relatively successful system in mind as he proposed the national system. The National Banking Act was a compromise between those who favored a continuation of the pre-Civil War state-based system and those who favored the complete abandonment of private banking in favor of the greenback, a irredeemable currency issued during the war. The greenback was popular, and provided a uniform currency, but legislators feared that a permanent fiat currency might be overissued. The National Banking Act also solved the problem of providing a currency for western states that had seen notes backed by southern bonds disappear from circulation. And perhaps most importantly for its passage, the act strengthened the market for government debt during the war.

The history of the National Banking system, then, can provide further evidence on how well the American version of free banking worked in practice. On the one hand, advocates of free banking have pointed to the rapid economic growth in the United Stated. It was during this era that the United States became the world's leading industrial power. On the other hand, critics of free banking can stress that the system fell prey from time to time to panic: there were major banking panics in 1873, 1893, 1907, and of course, 1930-33. Defenders of free banking attribute those panics to the restrictions on National Bank note-issues and to the restrictions on branch banking, not to laissez-faire, noting that there were no panics in the

13. Howard Bodenhorn and Michael Haupert (1995, 1996) compared note issue under the National Banking system and the free banking systems.

Canadian banking system, which was not limited in these ways. A full summary of the vast literature on this period, however, is beyond the scope of this paper.[14]

The states continued to charter banks during the National Banking era. These banks were effectively barred from issuing notes, but regulations on the deposit side were up to the states. John James (1976) shows that the convergence of regional interest rates at the turn of the nineteenth century, a sign of the integration of regional capital markets, was produced by increased competition among state banks that in turn was produced by the adoption of "free-banking" laws. Illinois adopted "free banking" in 1887, many newly formed western states adopted "free banking" in their state constitutions, and many southern states adopted general banking laws near the turn of the century (James 1976, 896).

All in all, several conclusions about the American experience seem fairly secure. First, the stories about wildcat banking that dominated early accounts, although not baseless, were exaggerated by an earlier generation of economic historians. Second, the difficulties that did emerge appear to have been the result of restrictions imposed on the American free banks—restrictions on branch banking and the peculiar bond security system—rather than the result of freedom of entry. Third, the American system provided several cases—including New York, the most important state system—where the American version of "free banking" worked well. Finally, free banking American style does not seem to have conferred immunity to financial panic.

Free Banking in Canada

Banking began in Canada with the founding of the Bank of Montreal in 1817. Modeled loosely on the Bank of the United States it received a government charter in 1824. Charters for new banks soon followed in other provinces. "By the middle of the 1830s," according to Kurt Schuler (1992b, 80), "an unwritten rule had emerged in the provinces with banks that almost all parties able to raise a certain minimum of capital would be granted a charter." In other words, Canada soon had de facto free banking. It is part of the conventional wisdom shared by banking and monetary historians that from the mid-1830s until the post world war II period, the Canadian system of

14. The literature on the performance of the banking system under the National Banking Act is summarized in Richard Timberlake's (1993) classic *Monetary Policy in the United States*. The contrast between the U.S. and Canada is the focus of Bordo, Redish, and Rockoff (1996).

free banking was stable and efficient, especially when contrasted with ongoing difficulties in the United States.

An important dimension of freedom in Canadian banking was the right of banks to issue notes based on the general assets of the banks. In 1850 legislation created the possibility of starting "free banks" that could issue notes collateralized by government bonds, similar to the popular American system. Only five such banks were set up, however, and by 1860 all had failed or converted into chartered banks. The 1850 law was repealed in 1866.

The notes of the Canadian banks had to be convertible into gold or "dominion notes." The latter were gold convertible notes issued by the government, both in large denominations to serve as reserves and in small denominations to serve as "change-making notes."[15] In this respect the Canadian system reflected Smith's idea that bank notes should not be issued in low denominations.

The flexibility of a system in which notes were issued based on general assets provided measurable benefits. Interest rates in Canada did not follow the distinct seasonal pattern, rising in the fall and winter and falling in the spring and summer, which prevailed in the United States. The reason, as Selgin and White (1994a) show, is that in Canada the banks could adapt to the heavy demand for notes during the crop-moving season by issuing more notes relative to deposits. In the United States this kind of adjustment was hampered by the bond collateral system, and the seasonal pattern of interest rates prevailed, a constant irritant to farmers who found that interest rates were highest when they ran short of funds. This pattern lasted until the establishment of the Federal Reserve System.

Another difference between Canada and the United States was the freedom of Canadian banks to establish branches, a freedom that was restricted in the United States. In the U.S. banks could not branch across states lines, and in some states, so called "unit-banking" states, banks were not allowed to establish branches even within the state that chartered the bank. As a result Canadian banks were larger than their American counterparts were, and the Canadian banks were better able to diversify the risks related to particular regions. The resulting difference in the stability of the two systems was dramatic. The sharpest contrast appears during the Great Depression. Both countries suffered similar declines in GDP. For Canada this was inevitable because the Canadian economy was thoroughly entangled with the

15. The phrase is from Walker (1894, 248). Walker and Holladay (1934) provide useful snapshots of the system.

economy of its much larger neighbor. However, while hundreds of banks failed in the United States, and while a series of state bank holidays in the United States led to a nationwide bank holiday, no banks failed in Canada. Bank branches were closed, but the banking system continued to function effectively. The contrast between the stability of the Canadian system and the instability of the U.S. system, however, was present long before the Great Depression. By 1900 American reformers were drawing attention to the difference in stability and calling for reforms of the American system to make it more like the Canadian system.

Canada's private system did so well that a central bank was not established until 1935. The reason for establishing the bank at the time was not a concern about the stability of the banking system, but the hope that by producing inflation the Bank could alleviate the depression (Bordo and Redish 1987). The Canadian system, like the Scottish system and parts of the American system, was clearly a successful case of lightly regulated banking. However, as in the Scottish case it can be argued that Canada did have large private banks that may have served as proto-central banks. Bordo and Redish (1987, 408) note that the Bank of Montreal "emerged very early as the government's bank performing many central bank functions." They suggest that it may have been the rivalry of the Bank of Montreal with other large banks, such as the Royal Bank, that prevented the Bank of Montreal from becoming a full-fledged central bank. Its rivals had enough political muscle to limit the privileges extended to the Bank of Montreal.

Free Banking in Sweden

First established during the 1830s, the Swedish private banks, the Enskilda banks, had the right to issue notes until the Banking Act of 1897 conferred a note issuance monopoly on the Bank of Sweden (Riksbank). The transition to a complete monopoly took place between 1901 and 1904.

This experience has received increasing attention from economists and economic historians. Lars Sandberg (1978), one of the first scholars in recent years to look at the relationship between finance and economic growth in Sweden, argued that Sweden was an "impoverished sophisticate," a country with a financial and educational system far in advance of its level of per capita income. Was this due to the private sector and the Enskilda banks? Charles Kindleberger (1982), going back to the famous Swedish economist Eli Hecksher, argued that before 1895 the history of the Swedish banking was largely limited to that of the Riksbank. But a number of

authors (Selgin 1988, Selgin and White 1987, Dowd 1996) have viewed the Swedish case as an example of a successful lightly regulated banking system. Lars Jonung (1989), in an influential paper, pointed out that the Enskilda notes competed effectively against the notes of the Riksbank, demonstrating the superiority of the private system. In a recent work, Anders Ögren (2003), although questioning the extent to which Sweden's system fits the free-banking model, has highlighted the importance of the Enskilda in the development of the credit market and the provision of the means of payment.

As in Canada, entry in Sweden was regulated: banks were chartered by the Swedish Parliament. In 1824 the monetary monopoly of the Riksbank was abolished, and the first private charter was granted in 1831. Until the 1860s the number of banks remained limited; there were only six chartered banks during the 1840s and eight during the 1850s. The Banking Act of 1864 simplified the procedure for obtaining a charter, and an automatic renewal of charters was allowed. As a result, the number of private note-issuing banks grew rapidly, approaching thirty by the end of that decade. The number then remained stable.

Perhaps the main restriction on the Enskilda banks was unlimited liability. On the other hand, there was no required minimum specie reserve until 1874. At that time, when Sweden switched from a silver standard to the gold standard, banks were required to hold 10 percent of their paid in capital in gold. However, the law stated that the bank note issue should be fully backed by the sum of securities held by the bank as part of its equity capital, specie and legal tender money, and the claims of the bank up to an amount not to exceed 50 percent of the bank's equity capital. During the first half of the nineteenth century lending rates were limited to six percent. This constraint was removed by the Banking Act of 1864. The Act also established an option clause, allowing banks to delay the conversion of its notes for 6 months subject to the payment of an annual interest rate of 6 percent *per annum*. And the law established the payment of a tax upon issuance ranging between 0.2 percent and 1 percent of total notes issued.

One of the most distinctive aspects of the Swedish experience is that note supply was provided not only by the Enskilda banks, but also by the Riksbank. Riksbank notes were legal tender and redeemable in specie. The Riksbank could issue notes up to its reserves (specie and foreign exchange) plus a fixed amount that varied between 35 and 45 million Crowns. (In practice, this amount was larger than the Riksbank reserves.) Until 1859 Riksbank notes represented more than half of total note supply; a number

that fell to 45 percent afterwards. After 1880 the Riksbank had a monopoly in the issue of five-crown notes.

With the move to the gold standard, a law passed in 1874 obliged the Enskilda banks to redeem their notes afterwards into specie only. But in practice, according to empirical evidence reported by Ögren (2003), Enskilda notes continued to be mainly redeemed into Riksbank notes. Indeed, about two-thirds of the Enskilda reserves were held in the form of Riksbank notes. Since Riksbank notes were receivable for paying taxes, they had a legal tender status. The latter meant that there was no difference if Enskilda banks held specie or Riksbank notes. It would appear, therefore, that the supply of Enskilda notes issuance was at least partially dependent on the supply of Riksbank notes, giving the Riksbank some control of the total money supply. The link between the State and the banking system was reinforced in 1869 when the Riksbank began to accept Enskilda banknotes at par.

By law the Riksbank was not supposed to give help to any private bank in case of financial difficulties. So a controversial point among Swedish scholars is related to the role as lender of last resort that the Riksbank supposedly played in practice. Empirical research provided by Ögren (2003) makes the case for this view. He shows that the Riksbank provided liquidity to the banking sector during at least two episodes of financial distress: 1857-1858 when it helped the Skåne Enskilda bank (which was the biggest Enskilda bank) and 1878-1879 when it supplied liquidity to the Stockholm Enskilda bank.

The Enskilda developed one of the essential elements that should emerge in any free-banking regime, namely an inter-bank clearing system. The practice of mutual acceptance of notes can be dated at least to the 1840s. During the 1850s, the Stockholm Enskilda bank formally took over this clearing function, but during the 1860s, the bank began to face increasing competition from a non-issuing bank (the Skandinaviska Kreditaktiebolaget). These two clearing institutions continued until 1897. The inter-bank clearing procedure was reinforced by the spontaneous development of an ingenious mechanism for the redemption of notes located in distant locations: the so-called "postal bank bill". A postal bill was purchased at the nearest bank and sent by ordinary mail. It was payable on demand at par, allowing its recipient to cash the bill at any conveniently located bank.

Although one could debate the relative contributions of the Riksbank and the Enskilda banks, it is clear that the combination of the two maintained convertibility and provided an efficient means of payment for

the Swedish economy. The Enskilda, moreover, benefited from their relative freedom in commercial activities, particularly after 1864 when usury laws were abolished and when bank entry restrictions were relaxed. Indeed, the Swedish credit market expanded strongly after the 1860s and private note issuance became secondary to deposits creation. According to Ögren (2003), one of the major achievements of private banks during this period was the development of liquid financial markets. The latter suggests that liberalism in the Swedish banking regulation has contributed to the expansion of local credit markets and, by this means, to economic development. Indeed, as argued by Lars Sandberg (1978), Swedish economic success before World War I, can be explained by the early development of a sophisticated banking system.

In 1897, as noted above, a law was passed that provided for the monopolization of the note issue by the Riksbank. This law also gave the Enskilda the right to discount at the Riksbank, and phased out private lending by the Riksbank, bringing the Riksbank into line with then current ideas about central banking. The transition period, during which the Enskilda notes were transferred to the Riksbank, occurred between 1901 and 1904.

In a series of papers Per Hortlund (2005a, 2005b, and 2005c) compared the system before monopolization with the system afterwards. Hortlund found that the money cycle decreased after the monopolization, while the credit cycle increased. He also argued that the Enskilda system had done a good job of meeting seasonal variations in the demand for notes, but found little difference between the free-banking system and the monopoly system. The violent disturbances to the world monetary system that occurred after 1904, however, make it hard to compare those two periods.

Free Banking in Switzerland

Swiss banking, of course, enjoys a worldwide reputation for quality and stability, not to~~o~~ mention discretion. It is therefore of some importance to our story that between 1826 and 1907, the Swiss free-banking era, the Swiss money supply was provided by private and cantonal banks. Although contemporaneous with the classical cases, the Swiss experience differs from them in several important dimensions. First, until 1848, Switzerland lacked a national currency and an official unit of account. Second, because of its political organization, the Swiss system was organized around both private

banks and cantonal banks depending on the local government. Finally, at least after 1881, the system was more restricted than others.

The beginning of the Swiss free-banking experience is linked to the liberal revolutions in the first half of the nineteenth century that removed the prevailing cantonal aristocratic governments. The liberal revolutions allowed several Swiss cantons to begin deregulating their banking systems by chartering new banks and, more importantly, allowing them to issue notes. After winning the civil war of 1848, the liberal forces were able to transform Switzerland from an association of independent States into a federal republic. The new government reformed the Swiss currency system, replacing the large number of cantonal monetary units with a single national currency, the Swiss Franc.

There were three types of note-issuing banks: private commercial banks, cantonal banks ruled by the cantonal governments, and local saving banks that had private and municipal ownership. Before the creation of the national currency, banks were free to choose both the unit of account of their notes and the outside money in which these notes could be redeemed. As a result, banknotes were denominated in the more accepted foreign currencies in Switzerland at this time; the French Franc, the Reichsgulden, and the Brabanterthaler. Thus, prior to the liberal revolution, Swiss banking was closer in some respects to Hayek's approach of free banking than to Smith's.

If foreign notes were accepted in Switzerland, what was the comparative advantage (or transaction costs reduction) of local banknotes labeled in the same currency unit they were supposed to replace? The truth is that until the establishment of the Swiss Franc, banknotes played a marginal role, thus suggesting that foreign notes were largely preferred to local banknotes.[16] Indeed, according to Lars Jöhr (1915), only two private banks (Zurich and Saint Gallen), one cantonal bank (Bern), and a single deposit bank (Bern) were issuing notes during the 1840s; the total amount issued being below 2 million Swiss Francs. After the establishment of the Swiss Franc as the single unit of account, this began to change. By 1860 there were seven private banks, five cantonal banks, and five deposit banks circulating notes, amounting to nearly 15 million Swiss Francs. In 1880, the notes of the seven private banks, fourteen cantonal banks and fifteen saving banks amounted to nearly 100 million Swiss Francs.

16. See Weber (1992, 188-90, Table 10.1).

One important feature of the Swiss system was that cantonal banknotes were usually granted a series of privileges denied the notes of private banks. The cantonal governments guaranteed them, exempted them from taxes and fees that private banks were forced to pay, and accepted them at par for tax payments and other transactions with the cantonal government, although they were not a legal tender. Because of these advantages the cantonal banks were the main Swiss note suppliers, with a total market share ranging from 50 to 65 percent.

In 1881, a Federal banking law imposed several new restrictions. Note issuance was limited to cantonal and incorporated banks; the issue of notes by individual private bankers was forbidden. The banks were forced to back their notes by a mixture that was 40 percent specie and 60 percent authorized domestic and foreign government bonds. In addition, the paid-in capital had to account for at least one third of banknotes in circulation. Note issuance was charged with federal and cantonal taxes and fees. The federal government, moreover, was in charge of providing all banks with standardized notes ranging in face value from 50 to 1000 Francs. The notes differed only regarding the name and signatures of the issuer. In light of these restrictions, Weber (1992, 196) is probably right in arguing that "the free issue of paper money had ended in Switzerland by 1881."

An important remaining provision of the Law was that banks were obliged to accept other banknotes at par. From a theoretical point of view, this restriction was important. To some extent, it implied fixing the exchange rate among the different banknotes. The latter means that note differentiation was no longer very important for banks when competing for gaining the public's favor. The Swiss banking historian Jöhr (1915) noted that "the ordinary man, in the course of the years, ceased to differentiate between the notes of the various banks. If the notes carried the name and signatures of this or that bank, it was no longer taken into consideration."[17]

Free-banking theory holds that note-brand discrimination is a crucial aspect of any competitive note issuance system (Selgin 1988). In fact, the *reflux* mechanism, which prevents the overissuance of notes, cannot operate properly if the public cannot distinguish among the notes of different banks. Thus, one might guess that overissuance could have existed after the Law of 1881. And in a recent paper Neldner (2003) presents evidence, based on foreign exchange data and the upper gold and silver points of the

17. Quoted in Neldner (1998, 291).

Swiss bimetallic monetary regime, that strongly supports the case for an overissuance of notes after the mid-1880s.

During the 1890s there arose clear signals pointing to a future nationalization of the Swiss note issue. Indeed, in 1891 a referendum authorized the federal government to establish a central bank. As a result, several important commercial banks began to abandon voluntarily the note-issuing business while maintaining their other banking activities. When the Swiss National Bank was established in 1907, the federal government became the sole issuer of Swiss bank notes. The creation of the Swiss central bank was supported unanimously by a commission of experts appointed by the Financial Department. As pointed out by Neldner (2003), it is interesting to note that the majority of the commission members were representatives of the issuing banks. In this case it is interesting to note that the final switch from a private to a centralized system of note issue does not appear to have resulted from an attempt by the government, or private interests allied with it, to appropriate the seignorage from issuing notes.

Because of the many particularities, the Swiss experience with private note issuing banks offers many interesting lessons. First, this experience suggests that the development of a flourishing system of note-issuing banks requires the existence of a single (national) unit of account. As we have seen, both the number of banks and money creation only expanded after the establishment of the Swiss Franc as national currency. Second, at least after the federal banking law of 1881, the Swiss experience seems to have been less free than other experiences in many important dimensions such as the existence of privileged cantonal banks and restrictive collateral requirements for private banks. Finally, this experience suggests that overissue can arise when the capacity of the public for differentiating notes is weakened by the law. The same kind of problem arose in the Chilean case, to which we now turn.

Free Banking in Chile

The classic examples of Free Banking, the United States, Scotland, and Canada, were all wealthy English-speaking countries. Sweden and Switzerland broaden the picture somewhat, but still leave us within the European orbit. Chile allows us to look at a less developed country.

In 1860, under the influence of French economist Courcelle-Seneuil,[18] Chile approved a law allowing private banks to issue notes almost freely. What has been called the *Chilean free-banking era* ended in 1898 when the State monopolized the issue of notes. Besides formal freedom to issue notes, the Chilean case is a good example of how a private money regime can fulfill some dimensions of a free-banking system while not fulfilling others.

Among the historical experiences, there is probably no other country that adopted such a liberal banking law (even if the reality, as we will see, the system did not always function as intended)[19]. Besides a minimal capital provision, private banks were almost free to issue notes and to perform all remaining banking activities. The following excerpt from the message of President Montt when presenting the new banking law to the Congress in 1860 illustrates the intentions of the framers of the banking law:

> [In the US free-banking system] the main part of banking provisions imposes some heavy restrictions on banks. They forbid bank branching, they limit the type of bank operations, they restrict the kind of documents that can be discounted by banks, they decide whether banks can or cannot pay interest on their deposits and they force banks to guarantee their notes by means of State bonds. The law I am submitting does not include any of these restrictions and therefore leaves us with a wide range for freedom. (Montt quoted in Ross 1886, 43; author's translation.)

The main features of the free-banking law of 1860 can be summarized as follows:

1. Notes had to be convertible into gold or silver on sight and on demand.
2. Anyone could establish a note-issuing bank.

18. He was hired in 1855 by the Chilean Government as Finance Minister Adviser and Professor of Political Economy at the Universidad de Chile.
19. Former deputy and banker Nicomedes Ossa asserted in 1886: "… it is an honor to have passed twenty five years ago one of the more free banking laws of the world" (Nicomedes 1886, 377; author's translation).

3. Banks were not required to hold any minimum percentage of specie as a backing.[20] Instead notes could not exceed 150 percent of the paid in capital.
4. Banks were required to present monthly balance sheets. This information was revised by the Ministry of Finance and was published every month in the newspapers. Loans to the banking administration had to be presented in a special account on the balance sheet.

Regarding notes, however, the Chilean system was not as free from state intervention as one might have thought. Despite free entry, the State favored certain banks. By financing State budget deficits, a small group of banks obtained the right for their notes to be received by the State at par. This guarantee gave the privileged banks an important competitive advantage over any new entrant. In fact, over 50 percent of all circulating notes were issued by the most privileged bank, the Bank of Chile. This bank was granted the monopoly of receiving all fiscal deposits as well as managing the State's international financial operations. In practice it practically was a State bank.

When the law of 1860 was launched it was hoped that a private system of note issue would remove the temptation for the government to monetize fiscal deficits. The links between banks and the State, however, undermined this advantage. In 1878, a big loan to the government was arranged and the amount of bank notes that could be received by the State at par implied a doubling of the circulation. This loan, of course, created strong incentives for the private banks to increase their issues and undermined convertibility. A deep financial crisis occurred in 1878, after which the government decreed the inconvertibility of bank notes and thus the depreciation of the local currency (Briones 2004).

Starting in 1879, the State began to issue its own inconvertible notes. These notes were legal tender and represented between 60 percent and 85 percent of total circulating notes. In principle, the convertibility of bank notes into gold was resumed in 1880. But when pressed the banks simply converted their notes into the government's depreciated legal tender paper. Consequently, returning to gold convertibility was impossible until the retirement of the State's notes.

---

20. For example, for the U.S. free banking experience, in Indiana and New York banks were required to hold 12.5 percent in specie reserves (Rolnick and Weber 1984, 269, table 1).

In 1895 Chile returned to the gold standard when the State began to convert its notes into gold at a rate of 18 pennyweights of gold per Chilean peso. The banking system was allowed to postpone conversion of its notes until 1897. The delay was not sufficient to avoid a heavy monetary contraction which pushed annual real interest rates up to 35 percent. Liquidity problems became unsustainable and, in 1898, a bank run occurred. As a result the State decreed a return to a paper money regime, and forbade private issuance of notes.

Evidently, the Chilean system, despite its trumpeted start deviated from some important principles of what we have called the "Smithian" version of free banking. As we have seen, before 1878, private banks provided the notes, but unavoidable political links and favoritism resulted in a strong group of privileged banks. After 1878, the note supply was not determined by banks but mainly by the State and the convertibility principle was abandoned during most of the time.

Is this evidence enough to reject the case of Chile as an example of a free-banking system? As soon as one takes into account freedom in the remaining banking intermediation activities, the answer is no. Free entry was granted, branching was not restricted, and no minimum capital was required when performing common banking activities. Furthermore, there were no restrictions on the sort of assets a bank could hold, no maximum interest rates were imposed, and no restrictions were placed on the volume and composition of loans and deposits.

The number of banks and branches increased consistently over time while the market share of deposits in privileged banks was declining. From 11 banks and 19 branches in the mid-1870s, the numbers increased to 25 and 45 in 1895. At the end of the 1880s, British and German banks began to enter into the local markets as well. Banking deposits rose by more than 300 percent between 1878 and 1898 (in real terms), representing nearly 15 percent of GDP. Besides, banking capitalization increased in real terms by more than 200 percent during the same period of time. The ratio of specie to deposits exhibited an average value of 15 percent during the gold standard period showing that, despite freedom, banks were in a relatively strong financial position.[21]

As in the US case, it was commonly believed that minimally regulated banking had produced many bank failures in Chile. The data, however, reveal that between 1880 and 1898, cumulated losses for depositors

21. This figure is high when compared to an average value of near 10 percent in the United States, Canada, United Kingdom, and France.

represented just 2.5 percent of total deposits. This figure is below the one registered in the well documented New York case, generally regarded as a successful "free-banking" experience (see King 1983).

Freedom also allowed private banks to perform an important role in developing a long-term credit market such as the mortgage market. Although at the end of the 1870s mortgage operations were performed mainly by a State institution, by the mid 1890s private banks had a market share of 60 percent. During the same period the market value of mortgage obligations in real terms rose by more than 350 percent and represented nearly 20 percent of GDP in 1898.

It is beyond the scope of this section to establish a definitive link between Chilean financial development and economic growth during the period. Nevertheless, one can reasonably imagine that the rapid financial and banking development should have had a positive impact. Indeed, the expansion of banking and financial intermediation activities coincided with a period of rapid economic growth.

The Chilean experience highlights the importance of political variables on the performance of a banking system. With a small ruling elite and concentrated economic power, Chile had great difficulty creating note-issuing banks that were completely independent of the government. This is the main reason why, regarding note supply, the Chilean banking industry did not achieve the degree of freedom promised by the 1860 law. We need additional research to determine whether Smithian free banking is more likely to be viable in a decentralized political system. The Chilean experience also suggests that even in an unfavorable political environment a free-banking law can create freedom in common banking activities and be successful in developing the financial and banking industry.

WHAT DO WE KNOW, AND WHAT DO WE NEED TO KNOW?

The term "free banking" has been applied to a wide variety of banking systems. This makes classification and evaluation of the historical experience difficult. The term "free banking," moreover, tends to provoke strong ideological responses. Nevertheless, we believe that we can discern some areas of agreement among students of the six cases we have examined in detail here, a set of conclusions that we believe is generally supported by the weight of the other cases discussed in the literature.

(1) "Free banking," as the term was used in the nineteenth century, referred to banking systems that were far removed from laissez faire. In all of the historical cases examined here banks were subject to numerous regulations. Most importantly, it was required that notes issued by banks had to be redeemable on demand in high-powered money. At times we have used the term "Smithian free banking" to describe the common features of these systems because Adam Smith advocated freedom for banking provided that this basic restriction, as well as some secondary restrictions such as a limitation on low denomination bank notes, were in place. A number of so-called free-banking systems were subject, moreover, to additional restrictions. Clearly, the term "lightly regulated banking" is more accurate than "free banking" if not faithful to the historical language.

(2) It appears that wildcat banking, if it existed at all, was at most a very rare phenomenon. Some of the few cases of overissue and wildcat banking that have been reported resulted from legislation that undermined the ability of the public to distinguish among the notes issued by individual banks. There were, of course, bank failures under free banking, especially in the United States where restrictions on branch banking weakened the system. Corruption and foolishness occurred in lightly regulated banking systems, and as in any private industry, failure was an important way of disciplining the system.

(3) A lot of very good banking was done in lightly regulated banking systems. Examples include Scotland, New York under the system that prevailed in the United States before the Civil War, Canada, Sweden, Switzerland, and Chile in the nineteenth century, and many less well studied cases. Evidently, there were a variety of lightly regulated banking systems that could serve as models for sound banking systems.

(4) Some students of these episodes attribute the success of these systems to the residual restrictions. An advocate of lightly regulated banking who wished to include additional forms of protection for note-holders or depositors, such as extended liability or collateral requirements, could find support within the literature.

(5) Perhaps the question on which scholars disagree the most is whether a lightly regulated banking system can dispense with a lender of last resort. While some students of lightly regulated banking argue that a central bank is unnecessary; others maintain that the potential for a banking panic exists in any fractional reserve system, so that some institutional arrangement is needed to deal with the problem. The Smithian system, which outlaws option clauses for notes may well increase the need for a central bank. Even such staunch advocates of freedom as Milton Friedman and Anna J. Schwartz (Friedman and Schwartz 1986, Schwartz 1993) have expressed doubts about dispensing altogether with a lender of last resort. The jury is still out.

(6) Lightly regulated banking was possible in a world characterized by considerable confidence in laissez faire and limited and decentralized government. The chance of a return to free banking with respect to the issue of notes appears to be low. After all, most people in the world today have never seen a privately issued bank note. Knowledge that the private issue of notes worked well in the nineteenth century is confined to a small group of monetary and financial historians. Governments, moreover, would be forced to sacrifice some seignorage in the process of returning to privately issued notes. On the other hand, further relaxation of restrictions on deposit banking, by far the more important component of the money supply, may well be in the offing. In recent decades the consequences of liberalizing branch banking in the United States, for example, are in line with what students of nineteenth century banking concluded long ago. The story of free banking, moreover, provides a cautionary tale about judging the regulation of banking on the basis of anecdotes rather than evidence.

REFERENCES

Bagehot, Walter. 1962 [1873]. *Lombard Street: A Description of the Money Market*. Homewood Illinois: Richard D. Irwin.

Bodenhorn, Howard. 1990. Entry, Rivalry and Free Banking in Antebellum America (in Notes). *The Review of Economics and Statistics* 72 (4): 682-686.

_____. 1992. Free Banking in Ireland. In *The Experience of Free Banking*, ed. Kevin Dowd. London: Routledge, 137-56.

_____. 1993. Small-Denomination Banknotes in Antebellum America. *Journal of Money, Credit & Banking* 25(4): 812-27.

_____. 2003. *State Banking in Early America: A New Economic History*. Oxford: Oxford University Press.

Bodenhorn, Howard and Michael Haupert. 1995. Was There a Note Issue Conundrum in the Free Banking Era? *Journal of Money, Credit and Banking* 27(3): 702-712.

_____. 1996. The Note Issue Paradox in the Free Banking Era. *The Journal of Economic History* 56(3): 687-93.

Bordo, Michael D. and Angela Redish. 1987. Why Did the Bank of Canada Emerge in 1935? *The Journal of Economic History* 47(2): 405-417.

Bordo, Michael, Angela Redish, and Hugh Rockoff. 1996. A Comparison of the Stability and Efficiency of the Canadian and American Banking Systems, 1870-1925. *Financial History Review* 3: 29-48.

Briones, Ignacio. 2004. Free-Banking: The Idea and the Reality. The Chilean Experience 1860-1898. Ph.D. Dissertation, IEP de Paris.

Calomiris, Charles W. and Charles Khan. 1996. The Efficiency of Self-Regulated Payments Systems: Learning From the Suffolk System. *Journal of Money Credit and Banking* 28(4): 767-797.

Calomiris, Charles W. and Larry Schweikart. 1991. The Panic of 1857: Origins, Transmission, and Containment. *The Journal of Economic History* 51(4): 807-834.

Cameron, Rondo. 1967. Scotland, 1750-1845. In *Banking in the Early Stages of Industrialization: A Comparative Study*, ed. by Rondo Cameron. New York: Oxford University Press, 60-99.

Carr, Jack L. and G. Frank Mathewson. 1988. Unlimited Liability as a Barrier to Entry. *The Journal of Political Economy* 96(3): 766-784.

Carr, Jack, Sherry Glied, and Frank Mathewson. 1989. Unlimited Liability and Free Banking in Scotland: A Note (in Notes and Discussion). *The Journal of Economic History* 49(4): 974-978.

Checkland, S. G. 1968. Banking History and Economic Development: Seven Systems. *Scottish Journal of Political Economy* (15): 144-166.

_____. 1975. *Scottish Banking: A History, 1695-1973*. Glasgow: Collins.

Chu, Kam Hon. 1999. Free Banking and Information Asymmetry. *Journal of Money, Credit and Banking* 31(4): 748-762.

Cowen, Tyler and Randall Kroszner. 1989. Scottish Banking before 1845: A Model for Laissez-Faire? *Journal of Money, Credit and Banking* 21 (May): 221-231.

Dow, Sheila C. 1996. Why the Banking System Should be Regulated. (in Controversy: Should We Regulate the Financial System?) *The Economic Journal* 106(436): 698-707.

Dow, Sheila C, and John Smithin. 1992. Free Banking in Scotland, 1695-1845. *Scottish Journal of Political Economy* 39(4): 374-90.

Dowd, Kevin, 1992. Australian Free Banking. In *The Experience of Free Banking*, ed. Kevin Dowd. London: Routledge.

_____. 1993. *Laissez-faire Banking*. London: Routledge.

_____. 1996. The Case for Financial Laissez-Faire. *The Economic Journal* 106: 679-87.

_____. 2001. The Invisible Hand and the Evolution of the Monetary System. In *Money and the Market: Essays on Free Banking* ed. Dowd, Keven. London: Routledge, 57-74.

Economopoulos, Andrew J. 1988. Illinois Free Banking Experience. *Journal of Money, Credit and Banking* 20(2): 249-264.

Fama, Eugene. 1983. Financial Intermediation and Price Level Control. *Journal of Monetary Economics* 12(July): 7-32.

Fetter, Frank Whitson. 1965. *Development of British Monetary Orthodoxy, 1797-1875*. Cambridge: Harvard University Press.

Friedman, Milton 1959. *A Program for Monetary Stability*. New York: Fordham University Press.

Friedman, Milton, and Anna J. Schwartz. 1970. *Monetary Statistics of the United States: Estimates, Sources, Methods.* New York: National Bureau of Economic Research.

_____. 1986. Has Government Any Role in Money? *Journal of Monetary Economics* 17(1): 37-62.

Gherity, James A. 1995. The Option Clause in Scottish Banking, 1730-65: A Reappraisal. *Journal of Money, Credit and Banking* 27(3): 713-726.

Glasner, David. 1989. Free Banking and Monetary Reform. Cambridge; New York and Melbourne: Cambridge University Press.

Goodhart, Charles. 1988. *The Evolution of Central Banks.* Cambridge, MA: MIT Press.

Gorton, Gary. 1985. Clearinghouses and the Origin of Central Banking in the United States. *Journal of Economic History* 15(2): 277-83.

_____. 1996. Reputation Formation in Early Bank Note Markets. *Journal of Political Economy* 104(2): 346-97.

Gorton, Gary and Donald Mullineaux, 1987. The Joint Production of Confidence: Endogenous Regulation and Nineteenth Century Commercial-Bank Clearinghouses. *Journal of Money, Credit and Banking.* 19(4): 457-468.

Hamilton, H. 1953. Scotland's Balance of Payments Problem in 1762. *The Economic History Review*, New Series 5(3): 344-357.

Hammond, Bray. 1936. Free Banks and Corporations: The New York Free Banking Act of 1838. *The Journal of Political Economy* 44(2): 184-209.

_____. 1948. Banking in the Early West: Monopoly, Prohibition, and Laissez Faire. *The Journal of Economic History* 8(1): 1-25.

Hasan, Iftekhar and Gerald P. Dwyer, Jr. 1994. Bank Runs in the Free Banking Period. *Journal of Money, Credit and Banking* 26(2): 271-288.

Haupert, Michael J. 1994. "New York Free Banks and the Role of Reputations." *American Economist* 38: 66-77.

Hayek, Friedrich A. von. 1978. *Denationalization of Money: The Argument Refined: an Analysis of the Theory and Practice of Concurrent Currencies*. Second edition. London: Institute of Economic Affairs.

Hickson, Charles and Jhon Turner. 2002. Free Banking Gone Awry: The Australian Banking Crisis of 1893. *Financial History Review* 9(2): 147-167.

_____. 2004. Free Banking and the Stability of Early Joint-Stock Banking. *Cambridge Journal of Economics* 9(6): 903-919.

Holladay, James. 1934. The Currency of Canada. *American Economic Review* 24(2): 266-278.

Hortlund, Per. 2005a. The Provision of Liquidity in the Swedish Note Banking System. In *Studies on Swedish Banking 1870-2001*. Forthcoming dissertation, Stockholm School of Economics.

_____. 2005b. Is the Law of Reflux Valid? Sweden 1880-1913. *Financial History Review*. Forthcoming.

_____. 2005c. Clearing vs. Leakage: Does Note Monopoly Increase Money and Credit Cycles? In *Studies on Swedish Banking 1870-2001*. Forthcoming dissertation, Stockholm School of Economics.

James, John A. 1976. The Development of the National Money Market, 1893-1911. *The Journal of Economic History* 36(4): 878-897.

Jonung, Lars. 1989. The Economics of Private Money. Private Bank Notes in Sweden 1831-1902. *Research Report*. Stockholm School of Economics.

Jöhr, Adolf. 1915. *Die Schweizerischen Notenbanken 1826-1913*. Zürich: Institut Orell Füssli.

Kahn, James A. 1985. Another Look at Free Banking in the United States. *The American Economic Review* 75(4): 881-885.

Kerr, Andrew William. 1884. *History of Banking in Scotland*. Glasgow.

Kindleberger, Charles P. 1982. Sweden in 1850 as an 'Impoverished Sophisticate:' Comment. *Journal of Economic History* 42(4): 918-20.

King, Robert G. 1983. On the Economics of Private Money. *Journal of Monetary Economics*. 12(1): 127-58.

Knodell, Jane. 1998. The Demise of Central Banking and the Domestic Exchanges: Evidence from Antebellum Ohio. *The Journal of Economic History* 58(3): 714-730.

Martin, Antoine, and Stacey L. Schreft. 2003. Currency Competition: A Partial Vindication of Hayek. Federal Reserve Bank of Kansas City, Research Working Paper: RWP 03-04.

Mitchell, Broadus, and Louise Pearson Mitchell. 1947. *American Economic History*. Boston: Houghton Mifflin Company.

Munn, Charles W. 1981. *The Scottish Provincial Banking Companies, 1747-1864*. Edinburgh: John Donald Publishers.

Neldner, Manfred. 1998. Lessons from the Free Banking Era in Switzerland: The Law of Adverse Clearings and the Role of the Non-issuing Credit Banks. *European Review of Economic History* 2: 289-308.

_____. Competition Necessarily Tends to Produce Excess: The Experience of Free Banking in Switzerland. *German Economic Review* 4: 389-408.

Ng, Kenneth. 1988. Free Banking Laws and Barriers to Entry in Banking, 1838-1860. *The Journal of Economic History* 48(4): 877-889.

Ögren, Anders. 2003. *Empirical Studies in Money, Credit and Banking: The Swedish Credit Market in Transition under the Silver and Gold Standards, 1834-1913*. EHF-Stockholm School of Economics, *Studies in Economic History* No. 2.

Ossa, Nicomedes. 1886. Ligeros Apuntes Sobre el Establecimiento y Desarrollo de los Bancos de Emisión en Chile. *Revista Económica n° 7*, Valparaíso, Chile.

Perlinge, A. 2004. The Foundation for Economic History Research within Banking and Enterprise and the records of Stockholms Enskilda Bank, 1856-1971, *Financial History Review* 11**:** 105-20.

Rockoff, Hugh. 1974. The Free Banking Era: A Re-Examination. *Journal of Money, Credit and Banking* 6(2): 141-173.

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

_____. 1986a. Institutional Requirements for a Stable Free Banking Regime. *Cato Journal* (Fall): 617-634.

_____. 1986b. New Evidence on Free Banking in the United States. *American Economic Review* 76(September): 886-889.

_____. 1991. Lessons from the American Experience with Free Banking. In *Unregulated Banking: Chaos or Order*? Ed, Forrest Capie and Geoffrey Wood. London: Macmillan Academic and Professional Ltd.

_____. 2003. Prodigals and Projectors: An Economic History of Usury Laws in the United States from Colonial Times to 1900. NBER Working Paper No. 9742.

Rolnick, Arthur J., and Warren E. Weber. 1983. New Evidence on the Free Banking Era. *The American Economic Review* 73(5): 1080-1091.

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

_____. 1997. Money, Inflation, and Output under Fiat and Commodity Standards. *Journal of Political Economy* 105(6): 1308-1321.

Ross, Agustin. 1886. *Los Bancos de Chile y la Lei que los Rige*. Valparaíso, Chile: Imprenta Excelsior.

Sandberg, Lars G. 1978. Banking and Economic Growth in Sweden Before World War I. *Journal of Economic History* 38(2): 650-80.

Schuler, Kurt. 1992a. The World History of Free Banking: An Overview. In *The Experience of Free Banking*, ed. Kevin Dowd. London: Routledge, 4-47.

_____. 1992b. Free Banking in Canada. In *The Experience of Free Banking*, ed. Kevin Dowd. London: Routledge, 79-92.

Schwartz, Anna J. 1993. Are Central Banks Necessary? *Critical Review*. 7(2-3): 355-70.

Selgin, George A. 1988. *The Theory of Free Banking: Money Supply under Competitive Note Issue.* Totowa, N.J.: Rowman & Littlefield.

_____. 1996. *Bank Deregulation and Monetary Order*. London: Routledge.

Selgin, George. 1994. Free Banking and Monetary Control (in Policy Forum: The Banking System and Monetary Control). *The Economic Journal* 104(427): 1449-1459.

Selgin, George A. and Lawrence H. White. 1987. The Evolution of a Free Banking System. *Economic Inquiry* 25(3): 1449-59.

_____. 1994a. Monetary Reform and the Redemption of National Bank Notes, 1863-1913. *Business History Review* 68(Summer): 205-243.

_____. 1994b. How Would the Invisible Hand Handle Money? *Journal of Economic Literature* 32(4): 1718-1749.

_____. 1997. The Option Clause in Scottish Banking (in Notes, Comments, Replies). *Journal of Money, Credit and Banking* 29(2): 270-273.

Smith, Adam. 1979 [1776]. *An Inquiry into the Nature and Causes of the Wealth of Nations*. The Glasgow Edition of the Works and Correspondence of Adam Smith. Oxford University Press. Reprinted by the Liberty Fund, 1981.

Smith, Vera C. 1936. *The Rationale of Central Banking*. London: P. S. King.

Summers, Lawrence. 1983. Comments on the Economics of Private Money by Robert G. King. *Journal of Monetary Economics* 12(July): 159-162.

Sylla, Richard. 1985. Early American Banking: The Significance of the Corporate Form. In *Business and Economic History*, second series, ed. Jeremy Atack. Champaign: University of Illinois, 105-23.

Timberlake, Richard. 1984. The Central Banking Role of Clearinghouse Associations. *Journal of Money, Credit and Banking* 16(1): 1-15.

Timberlake, Richard H. 1993. *Monetary Policy in the United States: An Intellectual and Institutional History*. Chicago: University of Chicago Press.

Walker, B.E. 1894. Banking in Canada. *The Economic Journal* 4(14): 227-248.

Weber, Ernst.J. 1988**.** Currency Competition in Switzerland, 1826-1850. *Kyklos* 41(3): 459-78.

_____. 1992. Free-banking in Switzerland after the Liberal Revolutions in the Nineteenth Century. In *The Experience of Free Banking*, ed. Kevin Dowd. London: Routledge, 107-25.

West, Edwin G. 1997. Adam Smith's Support for Money and Banking Regulation: A Case of Inconsistency. *Journal of Money, Credit and Banking* 29(1): 127-134.

White, Eugene. 1994. Experiments with free banking in France, 1789-1814. In *Naissance des Libertes Economiques* ed. Alain Plessis. Paris : Institut d'Histoire de l'Industrie.

_____. 1995. Free Banking, Denominational Restrictions, and Liability Insurance. In *Money and Banking: The American Experience*. Virginia: George Mason University Press.

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

_____. 1984. Competitive Payments Systems and the Unit of Account. *American Economic Review* 74(4): 699-712.

_____. 1986. Competitive Payments Systems: Reply. *American Economic Review* 76(4): 850-853.

_____. 1989. *Competition and Currency: Essays on Free Banking and Money*. New York: New York University Press.

_____. 1990. Scottish Banking and the Legal Restrictions Theory: A Closer Look: Comment. *Journal of Money, Credit and Banking* 22(Nov.): 526-536.

ABOUT THE AUTHORS

Ignacio Briones, was born in Chile in 1972. From August 2004, he is associate professor of economics and researcher at the Business School of Universidad Adolfo Ibáñez (Chile). He holds a B.A. in business, a M.A. in Financial Economics and a M.A. in Political Science from Universidad Católica de Chile. He received his Ph.D. in economics in 2004 from Sciences-Po, Paris. His research is focused on economic and financial history with a special emphasis on banking systems.

Hugh Rockoff is a professor of economics at Rutgers University in New Brunswick New Jersey and a research associate of the National Bureau of Economic Research. His research and writing focuses on banking and monetary history and wartime economic controls.

Discuss this article at Jt: http://journaltalk.net/articles/5491