CHAPTER 1

Regulation, industrial structure, and instability in U.S. banking

An historical perspective

Charles W. Calomiris

1.1 Introduction

From the mid-1930s through the 1970s the fundamental institutional and regulatory features of the U.S. banking system were taken for granted as permanent and mainly beneficial by most policymakers and economists. Various aspects of the regulatory system (particularly reserve requirements and deposit interest rate ceilings) were blamed for inefficiencies in capital market allocation by banks and often were seen as an impetus for financial innovations in and outside of banking: for example, NOW accounts, and the growth of credit unions and money market mutual funds. But much of the regulatory structure was seen as benign or beneficial. Studies of economies of scale in banking seemed to indicate that unit banking restrictions had little economic impact on bank efficiency. The stability of the commercial banking system seemed to have been ensured by the regulatory "safety net," including federal and state deposit insurance program that removed depositors' incentives to run on their banks in response to adverse economic news, and by regulations on bank operations – notably, the separation of commercial and investment banking, justified in 1933 as a means to prevent dishonest or reckless practices by banks.

In retrospect, the faith in the post-Depression regulated system's ability to deliver bank stability is understandable given the unusual calm of the period from 1934 to 1980. Systemic banking panics or waves of bank failures had become a distant memory, easily attributable to a primitive state of affairs prior to the supposed rationalization of banking brought by the Depression-era reform. This view was shattered by the agriculture and oil busts of the early-to-mid-1980s, along with the economy-wide thrift debacle and Eastern real estate collapse of the late 1980s and early 1990s. While systemic banking panics were avoided

The author wishes to thank Michael Klausner, Geoffrey Miller, Eugene White, Lawrence White, and Gavin Wright for helpful comments.

through the safeguards of federal deposit insurance, recent loan losses have produced bank and thrift failure rates and bank asset declines of Depression-era proportion. Indeed, the losses per deposit dollar due to bank and thrift failures in the last decade dwarf the losses of failed banks in the 1930s (Baer and Mote, 1991).

Understandably, the upheaval of the past decade has led to an increased willingness to examine possible flaws in the industrial organization and regulation of the banking sector. Increasing numbers of economists and policymakers seem willing to fault bank regulation for the recent spate of costly failures. Restrictions on intrastate and interstate branching, obstacles to takeovers of inefficiently managed banks, limitations on bank activities, inadequate supervisory authorities, and the perverse incentives created by the federal safety net – which ironically was designed to reduce the threat of banking system collapse – have all been faulted for the poor performance of recent years. The Treasury Department, the Federal Reserve, and Congress have proposed altering the traditional post-Depression regulatory framework to correct the purported flaws in the regulatory system.

The recent openness to regulatory reform has spawned new interest in the history of financial institutions and regulation. Financial history has an important role in the current policy debate for at least two reasons. First, the history of bank regulation and instability can help provide a variety of regulatory "experiments" from which to identify more clearly desirable regulatory reforms. In particular, in the search for new alternatives to the existing system of federal deposit insurance (which Golembe and Warburton 1958, Golembe 1960, and E. N. White 1982, 1983, argue was motivated by the desire to avoid the disruption of bank panics) policymakers will want to ensure that any new institutional arrangement designed to reduce the costs of deposit insurance does not do so by increasing the propensity for panics. Second, the history and political economy of regulatory policymaking can help us understand how undesirable policy decisions have been made in the past and, possibly, how to avoid them in the future.

This chapter provides evidence from financial history, primarily of the United States, on the links between systemic instability of banking and the regulation of banks. The second section discusses the meaning of bank instability and provides a brief review of the literature on bank panics. The third section presents empirical evidence regarding the consequences of branching restrictions on bank instability. In the fourth section, I describe and attempt to explain the history of limitations on branching in the United States. In the fifth section, I review the history of bank liability insurance prior to the establishment of the FDIC in 1933

and its potential role as a stabilizing or destabilizing influence in banking. Finally, in the light of history I assess opportunities and pitfalls for regulatory reform.

1.2 Banking instability: Definitions and systemic differences

Banking instability – by which I will alternately mean a propensity for panic and a propensity for insolvency (to be distinguished below) – has differed widely across times and places. Despite the similarities across systems in the types of business undertaken and the contractual structure of banks (that is, illiquid loans as assets, and primarily liquid short-term or demandable deposits as liabilities), some banking systems have been more vulnerable than others. International comparisons of the incidence and costs of panics and bank failures, and comparisons across regulatory regimes within the United States, clearly document differences in banking instability associated with different regulatory regimes. The central lesson of these studies is that instability is associated with some historical examples of banking that had common institutional characteristics; it is not an intrinsic problem of banking per se. With respect to bank panics, models that abstract from institutional features of banking and focus only on the liquidity and maturity transformation common to virtually all historical banking systems cannot explain the varying incidence of panics across different times and places.

I will argue that the single most important factor in banking instability has been the organization of the banking industry. Systems based on large, geographically diversified banks that engage in a variety of activities have been the least susceptible to panic, have had a lower overall incidence of bank failure, and have suffered smaller losses when banks failed. Moreover, cross-sectionally within any particular banking system, relatively large, diversified banks have been least likely to fail. Finally, while branch banking systems have not been completely immune to extreme shocks, and some have experienced panics, they recovered more quickly than did unit banking systems under comparable circumstances.

Before reviewing the specific evidence along these lines it is useful to distinguish the propensity for panic from the propensity for failure. While bank liquidations or receiverships typically increased substantially during panic episodes, this was not always the case; and, conversely, there were episodes in which many banks became insolvent without causing a bank panic. Panics involved contractions of bank deposits and lending by all banks and often culminated in the general suspension of convertibility of bank liabilities. Nationwide panics in U.S. history include 1819,

1837, 1839, 1857, 1861, 1873, 1884, 1890, 1893, 1896, 1907, and the three successive waves of contraction from late 1931 to early 1933.

Calomiris and Gorton (1991) review and evaluate the recent theoretical literature on bank panics in light of new evidence from the National Banking Era (i.e., 1863–1913). Calomiris and Schweikart (1991) and Moen and Tallman (1992) provide complementary analysis of the Panics of 1857 and 1907, respectively. The salient facts about panics during this period are the following: Few banks actually failed during panics, while sometimes practically all banks in the country (with some notable exceptions) were forced to suspend convertibility for some period of time (one to three months), during which their claims (notes or cashier checks) circulated at discounts (typically between 0.5 and 4 percent for New York City cashier checks during the National Banking Era). Prior to the Great Depression, panics unrelated to wars occurred at both business cycle and seasonal peaks, during which times bank leverage was high and the variance of "news" about the state of the economy was greatest. Observable adverse shocks of sufficient magnitude prompted panics. During the National Banking Era, if and only if commercial failures (seasonally adjusted) increased by more than 50 percent and stock prices fell by more than 7.9 percent, during any three-month period, then a banking panic immediately followed.

The banking collapse of the 1930s differed sharply from these earlier episodes. The runs on banks did not occur at a cyclical peak. They were the result of deflationary policies that sharply reduced the net worth of banks (Fisher, 1933; Friedman and Schwartz, 1963; Bernanke, 1983; Bernanke and Hamilton, 1987; and James, 1991). In the 1930s banks did not suspend convertibility to halt disintermediation, possibly because self-regulation was pre-empted by the control of the Federal Reserve System. The Federal Reserve banks did not provide an adequate lender of last resort (Gendreau, 1990) or a coordinated response to the deflationary shocks. As a result, an unprecedented number of banks failed.

The banking collapse of the 1930s is explicable as a grand blunder of monetary and bank regulatory policy by the Federal Reserve. But the search for explanations of bank panics prior to the 1930s is more challenging. Theoretical models of these bank panics must explain why observable aggregate shocks with small eventual consequences for the banking system should cause widespread disintermediation and suspension of convertibility. Theory must also explain the optimality of the dependence on demandable debt to finance bank loan portfolios, since maturity-matched debt or equity would eliminate the first-come first-served rule for depositors that makes a panic possible.

Recent models have provided such explanations for the occurrence of panics and for the existence of demandable-debt banking. Beginning with Campbell and Kracaw (1980), Diamond (1984), and Boyd and Prescott (1986), economists have developed models of banks as repositories of scarce information capital about borrowers and their investment opportunities. Banks specialize in screening and monitoring borrowers and thus have better information about the value of their own loan portfolios than do outsiders.

Recent empirical evidence has lent strong support to this view of the function of banks. James (1987) and James and Wier (1989) find that the response of firm valuation in stock markets to announcements of bank loans is positive. This result is in sharp contrast to findings that stock or bond issue announcements reduce the value of a firm (Myers and Majluf, 1984; Asquith and Mullins, 1986; Korajczyk, Lucas, and McDonald, 1990). The positive news of a bank loan has been interpreted as evidence that banks provide information about firms to outsiders through their willingness to grant loans and that the same is not true of equity or debt placed outside the banking system. Another interpretation is that forming relationships with banks adds value to firms. Informed bank lenders may be better at disciplining management and may also be able to provide assistance more effectively to distressed firms, because of their superior information and control over borrowers. The special announcement effects of bank loans have been confirmed in numerous studies. James and Wier (1990) also find less underpricing of IPOs for firms with established borrowing relationships with banks. Other papers document the proposition that the costs of financial distress (renegotiation of debt) are reduced by close ties to banks (Sheard, 1989; Hoshi, Kashyap, and Scharfstein, 1990b; Gilson, John, and Lang, 1990; and Brown, James, and Mooradian, 1993). Finally, firms with close bank ties show less sensitivity of investment to current cash flow, an indicator of lower costs of external finance (Hoshi, Kashyap, and Scharfstein, 1990a, 1991).

This asymmetry of information inherent in bank lending makes bank loans illiquid, and it can lead to confusion about the incidence of shocks among banks, which can precipitate a bank panic. Gorton (1989) argues that because bank loans are not marked to market, depositors are unable to discover which banks are most likely to be observable by an observable adverse shock. Under these circumstances, even if depositors know that only a small subset of banks are likely to fail in response to an observable shock, they may find it advantageous to withdraw their funds temporarily until the uncertainty over the incidence of the shock is resolved. Event studies of the effects of one bank's difficulties on the

returns of other banks indicate that the possibility for confusion regarding the incidence of shocks among banks may still be important in contemporary data (Aharony and Swary, 1983; Lamy and Thompson, 1986; Scary, 1986; Grammatikos and Saunders, 1990; Musumeci and Sinkey, 1988; R. Schweitzer, 1989; and Pozdena, 1991), although Wall and Petersen (1990) provide contrary evidence.

Given the possibility of confusion, why did not banks avoid costly panics by matching the maturity of their loans and liabilities? If bank liabilities matured at the same rate as loans, there would be no potential for confusion about shocks to cause runs on banks. Calomiris and Kahn (1991) and Calomiris, Kahn, and Krasa (1991) argue that despite the costs associated with demandable debt (that is, the potential for runs), this form of financing was optimal because of the discipline it placed on the banker during normal times, given the asymmetric information between depositors and their banker about the banker's behavior. It is also possible to argue that demandable debt provided benefits during banking panics. By prompting suspension of convertibility it provided an incentive for banks speedily to resolve uncertainty about the incidence of a particular shock (Gorton, 1989; Calomiris and Gorton, 1991).

The circumstances that give rise to bank failures can be very different from those that cause panics. Bank failures can occur during nationwide downturns (including panic episodes) but may also be confined to specific regions or types of banking activity. High rates of bank failure in the Midwest during the 1890s sometimes coincided with panics (especially in 1893 and 1896) and sometimes not. The devastating agricultural bank failures of the 1920s coincided with an era of expansion in much of the economy. The observable shocks of the 1920s did not lead to a general run on banks because in each case the adverse shock was isolated to certain locations and sectors (primarily producers of grains, livestock, and cotton) and their banks.

The industrial organization of banking affected the propensities for panics and for nonpanic waves of bank failures. Systems composed of a small number of diversified large banks were less likely to fail. This also meant that there was less opportunity for panic, since the potential confusion about the incidence of failure risk was reduced. Moreover, coordination among banks was enhanced by limiting the number of banks in any system and thereby promoting mutual assistance during crises. Gorton (1985, 1989), Gorton and Mullineaux (1987), Calomiris (1989, 1990, 1992), Calomiris and Gorton (1991) and Calomiris and Schweikart (1991), emphasize that panics could be averted, or their costs reduced, if banks could form a coalition to coinsure credibly against an

observable shock to the system. If banks as a group agreed to bear the risk of any individual bank's default, then so long as depositors were confident of the solvency of the group, they would have no incentive to withdraw their funds. The mutual benefit of such coinsurance is the avoidance of the panic and the consequent disruption of commercial payments and credit.

The feasibility of such coordination depended crucially on the ability of banks to form successful coalitions, which depended in turn on the number and locations of banks. Coalitions had to be able credibly to guarantee support and to prevent free riding from individual banks on the support of the group. This required self-regulation and the enforcement of regulations by voluntary mutual monitoring among members. City clearing houses, like that of New York (which was organized in 1853), and systems with a small number of geographically coincident branching banks were quite successful at forming coalitions, establishing rules for participation in the coalition, and enforcing compliance. But systems of many geographically isolated unit banks could not do so. The costs of monitoring were higher, and the benefits to any member bank from monitoring a neighbor's actions were too diffuse given the large number of coinsurers. This explains why the United States, with its prohibitions on intrastate and interstate branch banking, has never developed a nationwide coalition of coinsuring banks, unlike many other countries.

I divide the evidence on the importance of bank market structure in the next section into evidence on the incidence of panics and evidence on the risk, incidence, and cost of bank failures.

1.3 Branch banking and bank panics in the United States

With the exception of the first and second Banks of the United States, which operated from 1791 to 1811 and 1816 to 1836, respectively, there has been no interstate branch banking historically in the United States. Except for these two banks, prior to the establishment of national banks during the Civil War all banks were incorporated according to the laws of individual states and operated within the confines of those states. Banks were not free to establish any form of corporate entity they pleased, and the location and activity of a bank was defined by its charter. The earliest banks chartered in the North were unit banks, while those in the South as a rule either were chartered with the intent of establishing branches or soon were granted branching authority upon request. By the 1830s there were several states in the South (Virginia, North Carolina, Louisiana, Kentucky, South Carolina, Georgia, and Tennessee)

operating substantial branch networks. The reasons for this initial difference and its persistence are examined below.

During the Panics of 1837 and 1839 branch banking enabled Southern banks to weather the storm of the credit crunch in international trade (which, according to Temin, 1969, produced the panics) remarkably well compared to their counterparts in the North. Evidence of cooperation among Southern banks within and across state lines is provided in Govan's (1936, pp. 15–19) analysis of the banks' response to the Panic of 1837. He finds that Southern banks suspended as a group in response to the exhortations of merchants who feared a drastic contraction of credit. The banks acted collectively to set the timing of suspension, the intended date of resumption, the rules governing the clearing of interbank transactions during the suspension, and rules limiting individual bank liabilities during the suspension. Similar coordination seems to have characterized the Panic of 1839 and seems to have helped to limit the incidence of bank failure during that panic. In the North during the Panic of 1839 suspension was less common and not coordinated among banks, and failure rates were higher than in the branching states of the South (Calomiris and Gorton, 1991, pp. 117–18).

Banks in states dominated by centralized urban control (Delaware, Rhode Island, Louisiana, and the District of Columbia) also coordinated suspension and avoided widespread failure during the Panic of 1839. Similarly, banks in the mutual-guaranty system of Indiana suspended together in 1837 and 1839 and avoided any failures during the panics. Like the branch banking South, city-dominated systems in the North were able to coordinate better because they involved a small number of geographically coincident banks. The Indiana system, though composed of unit banks spread throughout the state, was uniquely suited to coordination. The number of members was limited, the banks regulated one another through a collective board of directors, and they guaranteed each other's liabilities without limit. The board of directors had broad authority (including the right to close banks, regulate capital ratios, and restrict dividends) and had strong incentives to monitor and penalize violations. During its entire history, from 1834 to 1865, no member bank failed. Indeed, the stability of the system was so great that during panics after 1839 it was even able to avoid suspension of convertibility (Golembe and Warburton, 1958; Calomiris, 1989).

During the Panic of 1857, once again Southern banks and the mutual guaranty banks of Indiana and Ohio (which imitated Indiana's system in 1845) coordinated effectively, recovered their pre-panic asset levels relatively quickly and saw relatively few bank failures (Calomiris and Schweikart, 1991). As before, branching banks acted together to coordi-

nate their own and other banks' behavior, establish interbank markets for clearing notes and checks, transfer funds, and enforce agreed upon rules during the panic. For example, within one week of the onset of the panic, banks in Charleston agreed to receive each other's notes and the notes of other South Carolina banks and Augusta and Savannah banks at par. In his discussion of the Panic of 1857, Hammond (1957, p. 712), along with many other observers, notes that the successful coordination of the Southern banks was not possible in states like New York, where many geographically isolated unit banks in the periphery were forced to act independently. Markets for bank notes reflected these differences in coordination through lower discounts on the notes of Indiana, Ohio, and Southern banks before and during the crisis (Calomiris and Schweikart, 1988; Gorton, 1990).

The Panic of 1857 also saw the origin of crisis management among members of the New York City clearing house (Cannon, 1910; Gorton, 1985). Member banks pooled funds and issued joint liabilities, coordinated plans for maintaining credit to brokers and merchants, eventually suspended jointly, established the date of joint resumption, and after the panic organized the orderly flow of country bank notes (which had accumulated in New York City banks prior to the crisis) to enable the country banks to resume convertibility in a timely fashion. The successes of the New York City clearing house led to imitation in 1858 when Baltimore and Philadelphia banks established their own clearing houses.

Interestingly, formal clearing houses never developed in the branching South during the antebellum period. Understandably, the small number of branching banks had a lesser need to coordinate clearings and were able to respond to panics effectively without the formal rules and enforcement mechanisms of the clearing house. Similarly, clearing houses did not develop in Canada's branch banking system until 1887. As Breckenridge (1910, pp. 162–3) writes:

> The volume of transactions for settlement, of course, had always been smaller than what would be expected of a system of an equal number of banking offices, each under independent control. The settlement between two or between all the branches of the same bank, of course, would be effected in the books of that bank, and is so still, independently of the clearing house.

The large financing needs and the ultimate defeat of the South in the Civil War led to the insolvency of its banking system, which was called upon to bear much of the burden for the South's war finance. At the same time, the mutual-guaranty systems operating in Indiana, Ohio, and (beginning in 1858) Iowa ceased to operate, as many of their members converted to national bank charters (after 1863) in order to avoid the 10 percent federal tax on state bank notes. With the demise of Southern

branch banks and Midwestern mutual-guaranty banks, and the decision by the Comptroller of the Currency to restrict branching by national banks, the only form of interbank cooperation that remained in place during the immediate postbellum era was the clearing house, which had spread to the major cities of virtually every state by the end of the nineteenth century. As Johnson (1910, p. 10) writes in describing the Canadian branch banking system to an American audience:

> . . . to the student of the history of banking in the United States there is little that is radically new in the Canadian system. He finds in it many of the practices and expedients that were found excellent in the United States in the first half of the nineteenth century, and is almost persuaded that but for the civil war what is now known as the Canadian banking system would everywhere be called the American system.

While useful in coordinating the actions of local banks in large U.S. cities, clearing houses were unable to establish a national organization to coordinate clearings or the banking system's response to panics. Given its unusual position as the reserve center for the nation's interbank deposits, New York City banks and their clearing house came to play an increasing role as the main originator of policy during the panics of the National Banking Era. The clearing house continued to pool assets and issue joint liabilities (clearing house loan certificates) during panics, which at first were used only for interbank clearings but by 1893 were being used as a cash substitute by the public.

The ability of the New York clearing house to act as a lender of last resort for the economy as a whole was limited by the amount of high-quality assets that its members could contribute to the pool as backing for its loan certificates and by its ability to distinguish good from bad risks in interbank lending outside its own organization. While the use of loan certificates may have been helpful in forestalling suspension in 1884 and 1890, larger disturbances (1873, 1893, and 1907) resulted in widespread disintermediation followed by suspension of convertibility. The uncertainty regarding the incidence of shocks, which gave rise to panics, could not be entirely resolved by coinsurance of risk within the banking system (as it was in many other countries, notably England's resolution of the Baring Crisis in 1890). Thus the resolution of panics in the United States required prolonged delays in the convertibility of deposits on demand.

1.3.1 International evidence on branch banking and bank panics

International comparisons provide similar evidence on the role of branch banking, with its advantages of diversification and coordination, in reduc-

ing the incidence of panics. Bordo's (1985) useful survey of banking and securities-market panics in six countries from 1870 to 1933 concludes that "the United States experienced banking panics in a period when they were a historical curiosity in other countries." (p. 73) Bordo, like many others, notes the likely association between the unique unit banking system in the United States and its unique propensity for panics. But because the regulatory environment of any country differs from others along dimensions other than unit versus branch banking, it is difficult to attribute the relative stability of other countries to branching per se. To facilitate comparison, I will limit my discussion of other countries' banking systems to the English speaking world, which shared a legal tradition and many common institutional features. A more inclusive survey (including France and Germany) would corroborate the evidence presented here; Kindleberger (1984) provides an introduction to these literatures.

Scotland: Scotland's early banking system is usually held up as an example of a virtually unregulated system of branching banks, and its panic-free history is often attributed to its large number of branches. Banks in Scotland were free to branch as they pleased. By 1845 19 banks of issue operated 363 branches (L. H. White, 1984, p. 37). The Scottish Bank Act of 1845 restricted Scottish bank note issues to those outstanding at that date plus any additional issues backed 100 percent by specie reserves. This was less restrictive than the Peel Act of 1844, which was designed to shrink the note issues of English banks (see Hughes, 1960; Capie and Webber, 1985, p. 211). Both acts helped to consolidate the power of the Bank of England. After 1845, branch banking continued to flourish in Scotland, but Scotland ceased to be independent of the English system. Commenting on Scotland's panic-free history of branch banking, L. H. White (1984, p. 143) quotes two observers (from 1845 and 1832, respectively) as claiming that "runs are the last things that would ever enter into the mind of any man who is acquainted with the history of banking in this country," and that "A run upon a bank, such as happens in England sometimes, or a panic, are terms the meaning of which is hardly understood in Scotland."

The difficulty in attributing the stability of the Scottish system to branch banking per se is due to other unique features of the early Scottish system. Scottish banks generally were unlimited liability banks (with the exception of three limited-liability banks); thus depositors and noteholders of banks enjoyed greater protection than that afforded by the capital of a limited-liability bank. Furthermore, Scottish banks could be formed by as large a partnership and capital base as they chose, unlike

banks in England where restrictions limited the number of partners and the amount of bank capital (L. H. White, 1984, pp. 41–2). Finally, Scottish banks before 1845, unlike banks in the United States and elsewhere, faced no limitations on their note issues. In fact, within the British Isles Scottish bank notes often were brought into England and constituted a permanent component of the money stock, particularly in the Northern regions.

The right to issue bank notes was deemed especially important for allowing the branching network to expand. Withers et al. (1910, pp. 43–4) argue that the costs of holding "till money" in the form of specie or equivalently the notes of other banks was an important restriction to branching in other countries, but in Scotland banks were able to avoid this cost. Scottish banks (around 1910) held reserves (specie plus other banks notes) of less than 10 percent of their total liabilities (Withers et al., 1910, p. 46), which Withers et al. show is low by comparison to England and other countries. Munn (1981, p. 141) shows that from 1811 until the restriction imposed by the Scottish Bank Act, the ratio of specie to demand liabilities for each bank ranged between 0.5 and 1.6 percent. This confirms the view that, particularly in the early period of branch expansion, Scottish banks had a distinct advantage in the form of low till costs.

These features of the Scottish system raise a caveat for the purposes of comparison with the U.S. system. Before using the observed stability of early nineteenth-century Scottish banks to answer the counterfactual question "How different would the history of panics have been during the National Banking Era in the United States if national banks had been allowed to branch?," one should control for differences in the regulation of note issues, which may have influenced the potential for expansion and therefore diversification of the branching system (see the extended discussion of Canada below) and also control for differences in extended liability. Both of these features enhanced the Scottish system's stability.

England: Unlike that of Scotland, England's banking system experienced panics in the eighteenth and early nineteenth centuries, but saw none after 1866. It is hard to know whether to attribute the end of panics to the transformation of the English banking system from one of mainly unit banks to one of mainly branching banks, or to changes in the Bank of England's approach to dealing with crises. Private unit banks operated in England prior to the creation of joint stock banks in 1826. Initial restrictions on joint stock bank operations in London (to benefit the Bank of England) were relaxed somewhat in 1833. By 1836, the 61 reg-

istered joint stock banks operated 472 banking facilities, and the trend toward branching continued in the ensuing decades. By 1870, 111 joint stock banks operated 1,127 banking facilities. For Britain as a whole in 1870, there were 378 banks operating 2,738 banking facilities (Capie and Webber, 1985, p. 576).

At the same time, changes were occurring in the Bank of England's role in managing crises, and it is hard to separate this effect on the propensity for panic from that due to expanded branching. The monopolization of new English note issues in the hands of the Bank of England after 1844 and the restrictions on the note-issuing powers of the Bank of England (a 100 percent specie reserve requirement) limited the banking system's ability to protect itself from panics and made the system's fortunes heavily dependent on the discretionary policies of the Bank of England and the government during crises. The government had to provide the Bank with a special letter during the panics of 1847, 1857, and 1866 allowing it to violate its 100 percent reserve requirement on notes in order to create liquidity. By the 1870s (especially with the publication of Walter Bagehot's *Lombard Street* in 1873) such a relaxation of the rules during crisis was expected, and the mature view of the Bank of England's role as a lender of last resort had been articulated, perhaps most eloquently by Bagehot:

> . . . whatever bank or banks keep the ultimate banking reserve of the country must lend that reserve most freely in time of apprehension, for that is one of the characteristic uses of the bank reserve, and the mode in which it attains one of the main ends for which it is kept. Whether rightly or wrongly, at present and in fact the Bank of England keeps our ultimate bank reserve, and therefore it must use it in this manner.
>
> And though the Bank of England certainly do make great advances in time of panic, yet as they do not do so on any distinct principle, they naturally do it hesitatingly, reluctantly, and with misgiving. In 1847, even in 1866 – the latest panic, and the one in which on the whole the Bank acted the best – there was nevertheless an instant when it was believed the Bank would not advance on Consols, or at least hesitated to advance on them. The moment this was reported in the City and telegraphed to the country, it made the panic indefinitely worse. What is wanted and what is necessary to stop a panic is to diffuse the impression, that though money be dear, still money is to be had . . . (p. 64).

Interestingly, Bagehot lamented England's peculiar reliance on one bank to manage lending during crises and preferred the Scottish multicentric approach:

> I shall have failed in my purpose if I have not proved that the system of entrusting all our reserve to a single board, like that of the Bank directors, is very anomalous (p. 66).

> . . . the natural system – that which would have sprung up if Government had let banking alone – is that of many banks of equal or not altogether unequal size (p. 67).

After 1866, the Bank managed to preserve liquidity without deviating again from the provisions of the 1844 Act, perhaps, paradoxically, because of its known willingness to do so (Dornbusch and Frenkel, 1984; Dutton, 1984; Hughes, 1984; Pippenger, 1984). In one of the more interesting examples of interbank coordination, during the Baring Crisis of 1890, the commercial banks of London bailed out the Baring investment banking house by agreeing jointly to insure against losses to its creditors (with the Bank of England backing up the private bank co insurers). In so doing, the banks succeeded in dispelling uncertainty about the incidence of losses among their number from the Baring collapse, thus avoiding the threat of a bank panic. According to Eichengreen (1992), the Bank of England's increasing success in preventing panics during the late nineteenth and early twentieth centuries, and even in quelling disturbances outside its borders, was due in part to successful coordination across national boundaries with central bankers on the continent – something that set the mature classical gold standard of the late nineteenth century apart from previous and subsequent arrangements among central banks.

Canada: The comparison between the incidence of panics in the United States and Canada possibly provides the most convincing evidence of the efficacy of branching for reducing the risk of panic, since the two nations and their banking regulations were otherwise quite similar. Both countries are vast geographically. Neither country had a central bank in operation in the nineteeth century. The Bank of Canada began operation in 1935, although the government had a limited role as a lender of last resort beginning in 1907, which was expanded in 1914 and 1923, as is discussed in Bordo and Redish (1987). The trade and activities of the two nations were similar and interlinked. Johnson (1910, pp. 9–10) writes:

> Financially Canada is part of the United States. Fully half the gold reserve upon which its credit system is based is lodged in the vaults of the New York Clearing House. In any emergency requiring additional capital Montreal, Toronto, and Winnipeg call on New York for funds just as do St. Paul, Kansas City, and New Orleans. New York exchange is current and universal medium in Canada and is in constant demand among the banks. A Canadian wishing to invest in securities that may be quickly marketed commonly turns to the New York market for stocks and bonds. Yet the American banker visiting in Canada . . . finds himself in a land of financial novelties, for Canada has a banking system unlike any in operation in the United States at the present time. Twenty-nine

banks, known as the "chartered banks," transact all the banking business of the Dominion. They have 2,200 branches, and each may establish new branches without increase of its capital stock. They issue notes without depositing security with the government and in such abundance that no other form of currency in denominations of $5 and above is in circulation. Notwithstanding the fact that the notes are "unsecured," their "goodness" is unquestioned among the Canadian people.

Indeed, given the close connections among the two financial systems it is remarkable that the Canadian system did not suffer panics when they occurred in the United States.

One difference between the U.S. and Canadian systems worth commenting upon was the elastic supply of bank currency in Canada. As in Scotland, Canadian banks were permitted to issue their own currency. Until 1908, national banks wishing to issue currency in the United States had to deposit government bonds in the Treasury and await delivery of their notes from the government. Canadian banks were allowed to issue their own notes, during normal times, up to the amount of unimpaired paid-in capital. After July 1908, they were also allowed to issue an additional amount equal to 15 percent of capital and surplus during the crop-moving season (October 1 to January 1). As with the 1908 Aldrich-Vreeland Act authorizing emergency currency issues in the United States, emergency currency issues in Canada could be taxed. Unlike American banks in both the antebellum and postbellum periods, Canadian banks faced no reserve requirements on their note issues. Furthermore, the ceiling implied by paid-in capital was never a binding constraint on Canadian note issues (Johnson, 1910, Chart IV, after p. 66). The difference in the flexibility of the Canadian and United States currency stocks was widely noted historically (see, for example, Gage, 1906). Gage (1906) shows that the Canadian pattern was typical of other elastic-note-supply, branch-banking countries.

This differing flexibility in the supply of currency was noted by many contemporaries. As in Scotland and many other countries, banks' ability to issue notes in Canada likely reduced the specie reserves held by the banking system and facilitated branching. Conceivably, this could have reduced the propensity for panics to the extent that adding loans from especially thinly populated rural areas helped to diversify bank portfolios.

The option to issue notes also likely reduced the cost of providing credit in the form of an exchange medium for seasonal currency payments to agricultural workers (particularly in August and September). By accommodating credit needs in a liquid form, banks limited the seasonal fluctuations in interest rates in the periphery (see Breckenridge,

1899a, pp. 51–2; Gage, 1906; Eichengreen, 1984a; Miron, 1986). It is difficult to separate the effects of branching and note issuing on credit cost seasonality. Branch banks – by virtue of greater diversification and greater potential for interregional and interbank coordination – should have had flatter loan-supply functions than unit banks in the United States irrespective of note issuing authority. That is, banks should have been able to bear seasonal increases in the loan-to-reserve ratio without charging as high a cost to borrowers because the risk to the bank of doing so would have been less in Canada than in the United States. The marginal contribution of note issuing authority on the effective supply of credit depends on how large was the substitutability between notes and deposits as exchange media on the margin. To the extent the only exchange medium accepable to peripheral borrowers in August and September was currency, and currency was costly to import seasonally for this purpose, the supply of loans would effectively have been more inelastic seasonally (borrowers would have to pay a seasonal currency premium).

Regardless of its effects on seasonal credit cost or access of branches to remote areas, the ability to issue notes in and of itself seems not to have been an important determinant of panics in the United States or, conversely, a protection against panics in Canada (although one can strain to make such a connection, in theory, as a recent model by Champ, Smith, and Williamson, 1991, illustrates). During the antebellum period in the United States and in Canada, note issues were highly elastic but this did not prevent panics from occurring in both countries in 1837 and 1839 and in the United States in 1857.

Data on the cyclical elasticity of note supply under New England's Suffolk System show cyclical variation comparable to that shown for Canada in the nineteenth century. (For discussions of and data for Suffolk System note issues, see Root, 1901, p. 211; Mullineaux, 1987, p. 889; *Hunt's Merchants' Magazine*, 1840, vol. 2, pp. 137–42; Calomiris and Kahn, 1996.) *Hunt's Merchants' Magazine* (1851, vol. 25, p. 467) provides data on note redemptions under the Suffolk System. From month to month, note redemptions often varied as much as 10 percent. Calomiris and Schweikart (1988) find similar cyclical elasticity for bank notes in the South. For example, in Virginia, outstanding currency fell from $14.3 million to $10.8 million from January 1854 to January 1855. By the following January, outstanding currency was $13.0 million. Under New York's free-banking system note supply also showed elasticity. For example, from September 1855 to September 1856, total outstanding currency of New York banks increased from $31.3 million to $34.0 million. Weekly returns of New York City, Boston, Pittsburgh, and St. Louis

banks in 1858 as reported in *Hunt's Merchants' Magazine* (1859, vol. 40, p. 215) show large seasonal changes in note circulation. For example, in New York City, circulation increased nearly 12 percent from March 27 to May 8 and fell more than 6 percent from May 8 to May 29. In Indiana's mutual-guaranty banking system, outstanding note issues changed by more than 10 percent (from the beginning to the end of the year) 16 times in 27 years between 1835 and 1862, with 12 increases and 4 decreases (Golembe and Warburton, 1958, p. IV–11). Monthly changes also could be large for these banks, as shown in Harding (1898, pp. 279–81). From January to August, 1842, circulation fell 40 percent; from July to December, 1844, notes outstanding rose 14 percent. From 1845 to 1862, Ohio's insured banks varied their outstanding currency annually by more than 10 percent in 9 out of 17 years, with 7 increases and 2 decreases (Golembe and Warburton, 1958, p. VI–17).

The fact that elasticity of note issues was a common feature of many different regulatory regimes in the United States during the antebellum period did not prevent panics in the United States. This contradicts the view that panics were caused by inelastic supply of currency and large random currency-demand shocks, as Chari (1989) and Champ, Smith, and Williamson (1991) argue. Calomiris and Gorton (1991) and Calomiris and Schweikart (1991) show that panics were caused not by the scarcity of a particular form of medium of exchange, but by adverse economic disturbances that created confusion regarding the potential insolvency risk of commercial banks.

In summary, despite the advantages attributable to note issuing authority, it seems reasonable to attribute differences in the vulnerability of the U.S. and Canadian banking systems to panics primarily to the branching laws of the two countries, rather than to the elasticity of currency supply, or perhaps to the combination of branching and the elasticity of currency.

Canada's system allowed nationwide branching from its beginnings in the early nineteenth century. Ironically, at that time, it was following the banking doctrines of Alexander Hamilton to the letter (Breckenridge, 1910, pp. 7–8) and the precedent established in the United States by the Bank of the United States. Banks relied on coordination among a small number of banks (roughly 40 in the nineteenth century, falling to 10 by 1929) to resolve threats to the system. The Canadian Bankers' Association, formed in 1891, marked the formalization of cooperative arrangements that served to regulate failures of individual banks and mitigate their consequences for the banking system as a whole. The Bank of Montreal – the depository of most government funds, and the largest of the Canadian banks, with 20 percent of the banking system's assets in

1910 – sometimes acted as a private lender of last resort, stepping in to assist troubled banks (Breckenridge, 1910; Johnson, 1910; Vreeland et al., 1910).

Canada experienced no banking panics after the 1830s. During their history, Canadian banks suspended convertibility only twice, from May 1837 to June 1838 and from November 1838 to June 1939. Breckenridge (1910) describes these suspensions as of questionable necessity and mainly motivated as a defensive action to prevent large outflows of specie to the United States (which was the origin of the problem). The Canadian banks did not suspend during the Panic of 1857 and saw a reduction in their activities (presumably reflecting the large outflows of specie abroad). Still, no bank failed in Canada during or immediately after the panic.

During subsequent panics in the United States, Canada followed a similar path to that of 1857, acting as a shock absorber for the difficulties originating in the United States. Inflows of Canadian bank notes, as well as specie, helped to offset contractions in the U.S. money supply attendant to panics. These contractions had little effect on Canadian banks. For example, in the Panic of 1907, banks reduced their lending temporarily and rapidly rebounded. Johnson (1910, p. 96) describes 1908 as . . .

> . . . a breathing spell in Canadian industry and finance, but the bank returns show that there was no lack of confidence in the banks and that the floating capital of the country had not been seriously impaired.

Schembri and Hawkins (1988) argue that Canadian branches in the United States benefited from the relative stability of Canada's banks during panics in the United States. U.S. depositors transferred funds to these banks in times of trouble, viewing them as a safe haven.

Coordination among banks within Canada is nicely illustrated by the events of the Panic of 1907. The Sovereign Bank of Canada failed during the crisis, but without loss to its liability holders because of the intervention of other Canadian banks (led by the Bank of Montreal) who guaranteed its liabilities against loss. As the English banks had done during the Baring Crisis of 1890, the Canadian banks sought to eliminate any confusion regarding the incidence of loss among banks by standing together as a group, whose collective solvency was beyond question. The Canadian banks had done the same for the Bank of Ontario in 1906.

> On the evening of October 12 [1906] the bankers in Toronto and Montreal heard with surprise that the Bank of Ontario had got beyond its depth and would not open its doors the next morning. Its capital was $1,500,000 and its deposits $12,000,000. The leading bankers in the dominion dreaded the effect which the failure of such a bank might have. The Bank of Montreal agreed to take over the

assets and pay all the liabilities, provided a number of other banks would agree to share with it any losses. Its offer was accepted and a representative of the Bank of Montreal took the night train for Toronto . . . the bank opened for business the next day with the following notice over its door: "This is the Bank of Montreal." (Johnson, 1910, pp. 124–5).

The Bank of Montreal did not always bail out failing banks. When smaller banks failed (never with any losses to noteholders, and usually with small or zero losses to depositors), the bank did not intervene (Vreeland et al., 1910, p. 219; Johnson, 1910, p. 127).

Over time, beginning in 1907, the government provided additional protection to the Canadian banking system, through authorization of loans of currency (Dominion notes) against collateral of worthy securities. Johnson (1910, p. 121) argues that the intervention was unnecessary in 1907 and did not occur at the request of the banks, who opposed it. Bordo and Redish (1987) conclude that the rise of the Bank of Canada as a Depression measure in 1935 was not the result of economic necessity, but of political expediency due to domestic and international political pressures.

There is some disagreement about the role of Canada's branching system in preventing the collapse of the system during the Great Depression. Haubrich (1990) argues that Canada's resistance to panics during the Great Depression prevented Canada's financial system from propagating the severe external shocks that buffeted it, in contrast to the U.S. banking collapse, which Bernanke (1983) argues was so instrumental in prolonging the Depression in the United States. Both countries saw a large decline in GNP from 1929 to 1933 (42 percent in Canada and 46 percent in the United States). Kryzanowski and Roberts (1989) recently have questioned whether the success of the Canadian banking system in surviving the Depression was due to branch banking and coordination, or alternatively as they suggest, to an implicit guarantee by the government that depositors would be protected from loss. While they provide some interesting evidence in favor of the likelihood that some attempt might have been made to protect Canadian banks in the absence of successful private intervention, there is room for doubt regarding their conclusions. It seems unlikely that Canadian depositors would have resisted running on their banks because of the possibility of government backing, the existence of which remains controversial even today.

Australia: The single exceptional case of a mature, relatively laissez-faire, nationwide branch-banking system that experienced a panic involving widespread bank suspension was the Australian banking col-

lapse of 1893. But even here, the particulars of the experience hardly constitute an indictment of the potential efficacy of diversification and coordination through branching.

In the latter half of the nineteenth century Australia grew rapidly, with GDP rising at a rate of 5 percent per annum from 1860 to 1890. In the fifteen years prior to the crisis Australian banks' real assets tripled, as the banks moved away from traditional commercial lending to participate in the financing of the speculative land and construction boom (Pope, 1989). Throughout the period the banking sector was highly concentrated, with roughly half of the banking system's deposits residing in four of the 26 banks in existence. Despite this concentration (and despite the operation of a clearing house in Melbourne since 1867), the crisis caused half the banks in the country, operating nearly 1,000 branches, to suspend convertibility.

Coordination among banks did occur to some extent. The clearing house issued loan certificates during the crisis and thereby managed to reduce the specie needed for interbank clearings from 20 percent in 1892 to 5 percent during the crisis (Pope, 1989). But apart from this, there was no explicit interbank risk sharing to promote public confidence in the banking system, as there had been in Canada and Britain during financial crises.

Pope (1989) argues that part of the explanation for the lack of coordination among banks during the crisis was that some of the largest banks in the system did not perceive a great benefit to themselves from providing the necessary assistance to the failing banks. The logic of voluntary *ex post* mutual assistance requires that the assisting banks see a large negative externality from not providing such help. Pope (1989) claims that two of the larger banks in the country (the Australasia and the Union) entered the crisis in a relatively strong position and thus were unwilling to participate in a proposed mutual-assistance plan. Both had high reserve ratios, had not participated as much as other banks in financing the land boom, saw little threat to their own position from the run on other banks, and may have viewed the collapse of their competitors as an opportunity to expand their market share. The opposition of these two banks was sufficient to undermine the initial promises of mutual assistance among banks.

This interpretation suggests that the Australian case may not have been a "classic" panic (one involving substantial confusion about the incidence of the disturbance among banks). Indeed, Pope (1989) shows that available measures of balance sheet liquidity positions and risk exposure provide reasonably good predictions of which banks were forced to suspend during the crisis. This supports his view that banks

could be distinguished vis-à-vis their exposure to the shock. Moreover, the lack of interest in collective action suggests that the long-run social costs of the panic, in terms of disruption to the potential provision of credit by the banking system as a whole, were likely to be small. The existence of a few large nationwide branching banks of unquestioned health eventually would have provided a substitute source of commercial credit supply for failing banks.

All 12 of the banks that suspended in April and May of 1893 were able to reopen within three months. The Federal Bank, which alone had failed in January and had been denied assistance by all the banks at that time, was the only bank unable to resume business. The banks that were able to resume did so with the help of their depositors, who cooperated in providing capital infusions to their banks and converting their demandable obligations into shares or long-term debt. The fact that the failing banks were able to come up with a plan and have the plan successfully adopted at a national scale so quickly suggests that there may have been substantial ex post "coordination benefits" from bank concentration after all.

In summary, the Australian banking collapse involved an unusual set of circumstances (a very large shock to fundamentals with different consequences for different banks), and this explains the large suspension rate and lack of coordination among Australian banks. Furthermore, the social cost of the Australian banking collapse was probably small compared, for example, with the numerous bank failures during the similar land bust of the 1890s in the United States (see Calomiris and Gorton, 1991). In the United States, there was systemic suspension of convertibility (suggesting more ex ante confusion about the incidence of the disturbance among banks), failing banks were not able to reorganize through a coordinated recapitalization financed by depositors, and failed unit banks were not easily replaced (due to the prohibition on entry that branch banking restrictions entailed – see Calomiris, 1990, 1992, for related evidence on the role of branching in providing for replacement of failed banking facilities in the 1920s). Finally, the 1893 crisis was an isolated incident in the history of Australian banking. As one observer wrote in 1933,

> Perhaps the most remarkable feature of Australian banking since the crisis of 1893 is the almost complete absence of bank failures. No commercial bank, except the Federal Deposit Bank, which was a small bank in Queensland, has failed since the troublesome days of 1893. . . . As Australia is essentially an agricultural and pastoral country that suffers from prolonged drought, the almost complete absence of commercial bank failures since 1893 is truly remarkable (Jauncey, 1933, p. 30, cited in Chapman and Westerfield, 1942, p. 256).

The stability of the post-1893 banking system coincided with increased concentration of banking and expansion of access through an enormous increase in bank facilities. In 1912, there were 23 banks operating 2,064 facilities. By 1929 there were 16 banks operating 3,262 facilities.

1.3.2 Branch banking and diversification

As discussed above, diversification of individual bank assets is one of the key elements linking branch banking and a reduced propensity for bank panics. The benefits of greater asset diversification under branching appear in a variety of other indicators as well. For example, as noted above, seasonal smoothing of interest rates is enhanced (the loan-supply function is flatter) under branching; equivalently, increases in bank leverage and reserve ratios can be accommodated with smaller increases in interest rates charged borrowers when banks are well diversified. Another piece of evidence is the lower market discount rates on the bank notes of branching banks during the antebellum period (Calomiris and Schweikart, 1988; Gorton, 1990). As noted above, both of these pieces of evidence can be interpreted in other ways. The elasticity of currency under the branch banking systems of Canada, Scotland, and other countries may have facilitated the smoothing of interest rates, in addition to the effects of asset diversification due to branching. The coordination benefits during panics from branching, rather than within-bank diversification per se, may have been important in lowering discount rates on notes.

In what follows I consider several other indicators of lower asset risk of branching banks, which I will argue are clearer indicators of asset risk differences. These include: the propensity for bank failure (during and outside of panic episodes) across different types of systems; the propensity for failure of different types of banks within the same system; the recovery of banking (number of locations and asset levels) in response to shocks across different types of systems; the role of banks in equalizing rates of return across different locations; the greater expansion of branch-banking systems into thinly populated areas; and the reserve holdings of banks in branching and nonbranching systems.

Bank Failures: Prior to the 1980s four national waves of bank failures occurred in the United States: the disastrous episodes of 1837–1841, 1890–1896, 1921–1930, and 1931–1933. Especially in the first three of these episodes, bank failures were closely linked to the type of enterprises banks financed. Banks with close links to international trade (Temin, 1969, pp. 142–5) or to infrastructure investment (Schweikart,

1988a) were hardest hit by the collapse of 1837–1841. In the 1890s banks that had financed the rapid land expansion "on the middle border" in Kansas and Nebraska suffered the highest risk of failure (Bogue, 1955; Calomiris and Gorton, 1991, pp. 156–9). In the 1920s, the agricultural bust of the post-World War I period caused widespread bank failures in some states (those with many grain, cotton, and livestock producers, in particular), while leaving others unaffected (Calomiris, 1992).

The activities of banks and the shocks that buffeted them were important factors in predicting failure propensity during these disastrous episodes, but regulatory factors were important as well. In particular, systems that permitted branching saw lower failure rates and losses than systems that did not. During the 1837–1841 period, Virginia and South Carolina (two Southern states with advanced private branch banking systems) saw no bank failures (Klebaner, 1990, p. 51).

Regrettably, this same pattern persists to the present day. Comparisons across states, using evidence from the agricultural crisis of the early 1980s, confirm that branch banking systems have suffered lower failure rates than others, controlling for other factors. Calomiris, Hubbard, and Stock (1986, p. 469) found that California had an exceptionally high rate of troubled agricultural loans during the early 1980s. As of 1984, 8.4 percent of California's agricultural loans were in nonaccrual status, compared to an average of 4.7 percent for the rest of the country. The agricultural loan delinquency rate for California was 13.1 percent, compared to a national average of 8.9 percent. Net charge-offs as a percentage of agricultural loans were 6.1 percent in California and 1.8 percent in other states. Despite these difficulties, California accounted for only 1 of 68 agricultural bank failures in 1985. The reason they weathered the storm so well is that most agricultural lending in the state comes from large well-diversified banks, which hold only 3 percent of their portfolios in agricultural production loans.

Laderman, Schmidt, and Zimmerman (1991) show that bank diversification is inhibited by unit banking. After controlling for a variety of other factors, they find that rural banks devote a significantly larger proportion of their loan portfolios to agricultural loans than do urban banks. When statewide branching is allowed, rural and urban banks' portfolios are much more diversified. Smith (1987) shows that branching restrictions increase failure risk for agricultural and nonagricultural banks by limiting the potential for diversification.

> . . . banks in restricted-branching states are generally at greater risk of closure because of less diversified loan portfolios than are banks in statewide-branching states . . . in restricted-branching states, the probability of closure of banks seems equally influenced by the share of loans in the commercial and industrial cate-

gory and the share in the agricultural category . . . several of the financial ratio coefficients are statistically different between restricted-branching and statewide-branching states. (p. 35)

Historical comparisons across countries provide similar evidence of the benefits of diversification through branching. L. H. White (1984, pp. 44–9) emphasizes the low failure rates of Scottish banks compared to their counterparts in England during the early nineteenth century. Chapman and Westerfield (1942, p. 257) write:

The last two bank failures in Scotland were the Western Bank of Scotland in 1857 and the City of Glasgow Bank in 1878. . . . The shareholders suffered seriously, but the depositors and noteholders were paid in full.

Johnson (1910, p. 127) makes a similar point about the mature Canadian system:

Since 1889 six small banks have failed, but note holders have lost nothing and depositors very little. They were local institutions with few branches and their failures possess little significance in a study of the banking system as a whole.

Thirteen Canadian banks failed from 1868 to 1889. The available data indicate that the costs of these failures for noteholders were quite low (zero in the 11 cases where data are available); and in at least 8 of the 13 cases, depositors' losses were essentially zero as well (Vreeland et al., 1910, p. 219). During the period 1870–1909, when the failure rate for national banks in the United States was 0.36, the failure rate of Canadian banking facilities (banks and their branches) was less than 0.10 (Schembri and Hawkins, 1988). Comparing average losses to depositors over many years, Williamson (1989) finds an annual average loss rate in the United States of 0.11 percent, and in Canada, 0.07 percent. Perhaps even more telling, during periods when both economies were buffeted by substantial regional or economy-wide shocks (the agricultural bust of the 1920s and the drastic decline in GNP during the Great Depression), Canada's banks performed exceptionally well. E. N. White (1984a, p. 132) finds:

In Canada, from 1920 to 1929, only one bank failed. The contraction of the banking industry was carried out by the remaining banks reducing the number of their offices by 13.2 percent. This was very near the 9.8 percent decline in the United States. . . . In spite of the many similarities with the United States, there were no bank failures in Canada during the dark years of 1929–1933. The number of bank offices fell by another 10.4 percent, reflecting the shocked state of the economy; yet this was far fewer than the 34.5 percent of all bank offices permanently closed in the United States.

Chapman and Westerfield (1942, p. 258) show that losses to depositors in Canada were typically confined to small banks, which "could not by any reasonable test be regarded as branch banks . . ."

Within the United States, failure rates were lower for large banks, particularly those that branched. This pattern is evident beginning with the first and second Banks of the United States. During the Panic of 1857, Southern branch banks all survived, while a handful of small Southern unit banks failed (Calomiris and Schweikart, 1991).

Of the 5,714 bank suspensions in the United States from 1921 to 1929, only 459 had capital in excess of $100,000. Large banks accounted for only 8 percent of all suspensions, though they comprised roughly 25 percent of the number of banks in operation (American Bankers Association, 1935, pp. 33–6). States that allowed branching in the United States saw lower failure rates in the 1920s (measured either in bank numbers or bank deposits) than other states. In the six states with the most firmly established branch-banking systems by 1925 (California, Louisiana, Massachusetts, Michigan, New York, and Ohio), only 13 banks failed. The failed banks held only 0.03 percent of the total deposits of these states (E. N. White, 1983, pp. 218–19).

The vulnerability of small banks to failure in the 1920s and 1930s has been documented by a number of other researchers, including Bremer (1935), E. N. White (1983, 1984a), and Calomiris (1992). Prior to the general economic decline of the Great Depression, failures by large branching banks were virtually nonexistent. From 1921 to 1929, only 37 branching banks operating 75 branches were liquidated. More than two-thirds of these banks operated a single branch, and only 6 of them operated three or more branches (U.S. House of Representatives, 1930, vol. 1, p. 462). The failure rate for branch banks was roughly 4 percent for the entire period 1921–1929. The bank failure rate for this same period for the country as a whole was upwards of 20 percent.

The states with long-standing branching systems were not particularity hard hit by the agricultural decline of the 1920s, which might explain their superior performance; but more detailed evidence on the incidence of failure confirms a link between unit banking and bank vulnerability. Regional comparisons confirm the view that the period prior to 1930 saw exceptional stability of branching banks even in the hard-hit "agricultural-crisis" areas of the country. Calomiris (1992) identifies 32 states that were most affected by the agricultural bust of the 1920s. In 1924, the 32 agricultural-crisis states contained 1,312 of the 3,007 branching facilities in the country. State-by-state decompositions of failures by type of bank are not readily available, but even if all branching failures had been concentrated in these states during the 1920s, the annual rate of branch-bank facility failure would be only 0.85 percent. Overall failure rates for these states typically were several times as large (Calomiris, 1992, p. 42 and Table 20).

In some cases, specific within-state comparisons of branch and unit banks are possible. In the states that prohibited new branching from 1924 to 1928 but allowed banks to continue to operate existing branches (Alabama, Arkansas, Indiana, Minnesota, Nebraska, Washington, and Wisconsin), the annual failure (disappearance) rate of branch banks was a remarkably low 0.02 percent. Using *The Bankers Encyclopedia* one can trace the presence or absence or banks from 1920 to 1929. In all cases, a careful review of entries revealed whether disappearances were due to acquisitions or to closings. Calomiris (1992) traces the entries for the branching banks of three states, chosen because they experienced high rates of overall bank failure and had a small number of branching banks (making data collection easier) and because branching banks in these states were allowed to operate branches outside their home city. In Mississippi, all 24 branches in operation in 1920 were located outside their home banks' cities. The same was true of Arizona's 20 branches in operation in 1920. In South Carolina, 13 out of 15 branches operated outside the home city. These states, therefore, provide a useful measure of the potential advantages of statewide branching during a crisis.

Arizona permitted statewide branching throughout the period. In Arizona in 1920, 8 banks operated 20 branches. By 1929, 2 of these (each operating one branch) had been acquired by larger branching banks. One of the branching banks (operating one branch) failed. In the interim, three new branching banks had entered. The average annual failure rate for total branching facilities was 1.6 percent for 1921–1929, compared to 4.3 percent for Arizona's state-chartered banks as a whole.

Mississippi had allowed branching outside home cities, but later prohibited branching, except for the establishment of limited agency facilities within home cities. Nevertheless, the existing statewide branches were permitted to continue operating. During the 1920s none of the 10 branching banks operating 24 branches failed, while the average annual failure rate for state-chartered banks as a whole was 1.4 percent.

In South Carolina from 1920 to 1929, 4 out of 8 branching banks in operation in 1920 closed, but all of these were banks that operated a single branch, and 2 of the 4 operated branches within their home city. Thus of the 23 towns or cities in which branch-banking facilities were located, 19 retained their branch-banking facilities. This is important because the lack of available banking facilities in thinly populated areas (where virtually all branches were located in Arizona, Mississippi, and South Carolina) increases transactions costs in those locations and can inhibit the flow of capital to worthy enterprises located there. The overall failure rate of existing branching facilities in South Carolina was 2.9

percent, compared to a rate of 4.9 percent for all state-chartered banks. Entry into branching was especially strong in South Carolina in the 1920s, and entrants apparently learned the importance of establishing multiple branches. Two new banks – The Peoples Bank of South Carolina and the South Carolina Savings Bank – entered during the 1920s and established 18 and 9 branches, respectively, operating outside the banks' home cities.

The lessons of the high survival rates of branching banks during the 1920s agricultural crisis were not lost on bankers and policymakers. As Calomiris (1992, Table 17) shows, in states where branching was allowed, it flourished and increasingly took the form of multibranch banks, where possible. Four of the eight states that had deliberately enacted deposit insurance plans as an alternative to allowing branch banking prior to the 1920s passed laws allowing branching by the end of the 1930s. By 1939, for the United States as a whole, 19 states permitted full branching and 17 allowed limited branching, compared to 12 statewide and 6 limited-branching systems in operation in 1924 (Chapman and Westerfield, 1942, pp. 126–30). Of the 18 states that permitted branches to exist early on, only 3 saw a reduction in the number of total facilities from 1924 to 1928. These reductions all occurred in states that prohibited the establishment of new branches, but allowed existing branches to be maintained (Georgia, Minnesota, and Washington). In all three cases, the reductions consisted of the departure (failure or closure) of a single bank. In all the other states that allowed branching to continue, but prohibited the establishment of new branches, the number of branches remained the same. In states that allowed new branching, branches uniformly increased at a rapid rate, often as the total number of banks declined, and branching thus came to constitute a much larger fraction of total banking facilities (Calomiris, 1992).

Moreover, the recovery of total bank asset levels was higher for state banking systems that permitted growth in branch banking. Arizona, Kentucky, Louisiana, Michigan, North Carolina, Ohio, Tennessee, and Virginia all saw relatively high rates of asset recovery in the late 1920s relative to other states experiencing agricultural distress. These were also the states that experienced the largest increases in the average size of banks. South Carolina was the only exception to the rule, with negative asset growth over the 1920s. But despite its overall banking contraction, South Carolina witnessed a more than doubling of its branch banking facilities from 1924 to 1929.

More formally, Calomiris (1992) regresses bank asset growth from 1920 to 1926, and 1920 to 1930, for a sample of 32 agricultural-crisis

states, on a variety of control variables and branching dummies for limited and statewide branching. While the few degrees of freedom warrant a cautious interpretation, the branching indicator variables are both economically large and statistically significant, and they grow in importance with the longer time horizon. States that allowed branching enjoyed 40 percent higher growth in assets from 1920 to 1930, controlling for other differences.

In summary, evidence on the mortality rates and losses of failed banks indicate substantial advantages from branching. Branching also enhanced the banking system's ability to absorb weak institutions and to recover quickly from adverse shocks. It is worth noting that the examples of successful branching within the United States are all intrastate branching systems. A full nationwide system of banks would have done much better, as the example of Canada during the Depression illustrates. Indeed, at least two large branching banks (notably in the undiversified cotton-dependent economies of Georgia and South Carolina) did fail during the Depression.

1.3.3 Financial integration and diversification

In most countries, interregional capital flows are an important means of equalizing rates of return and providing diversification for capital providers. One way to examine whether nationwide branch banking facilitates diversification of banks' risk across regions is to ask whether branch banking systems do a superior job of equalizing interregional interest rates on loans.

There is a large literature on the question of capital market integration in the postbellum United States (Davis, 1965; Sylla, 1969, 1975; James, 1976a, 1976b, 1978; Eichengreen, 1984b; Snowden, 1987; Sushka and Barrett, 1984; Binder and Brown, 1991). This literature seeks to explain the rate of convergence of rates of return across regions of the United States during the late nineteenth century. While there has been some disagreement about which factors contributed most to the convergence in rates of return over time, all authors agree that the disparities in regional rates of return were the result of branching restrictions combined with the increasing geographical dispersion of economic opportunities. Bodenhorn (1990) shows that similarly large interregional differences in bank lending rates did not characterize the antebellum period. The antebellum environment differed both in terms of superior bank organization (branch banks operated in the South and coordinated groups of mutual-guaranty banks operated in Indiana, Ohio, and Iowa) and in less geographical dispersion of economic activity. These factors

may explain the greater integration of capital markets prior to the Civil War.

Interregional interest rate differences continued to be important in the United States throughout the late nineteenth and early twentieth centuries. Table 1.1 provides data on interest rates for first-class two-name commercial paper in various cities during the 1890s, collected and published by *Bradstreet's* and quoted in Breckenridge (1899b). The accuracy of these data has been questioned by James (1978, pp. 252–62). James (1978, pp. 16–19) provides alternative measures of interregional interest rate differentials, using estimated average bank loan interest rates, which show a greater degree of convergence by 1900 (the maximum interregional interest rate differential falls from roughly 4 percent in the mid-1890s to 3 percent by 1900) than do those reported in *Bradstreet's*. In defence of the accuracy of the *Bradstreet's* data one can point to the appearance of reproductions of Table 1.1 in many contemporary academic and trade journals and books. These data were often used by proponents of branch banking to show the extent of segmentation of U.S. capital markets. If the data were grossly inaccurate, one would expect that their validity would have been questioned at the time. Regardless of whether one prefers the James or the *Bradstreet's* data, however, both indicate large, persistent interest differentials across regions in the post-bellum period.

The commercial paper instruments priced in *Bradstreet's* were nearly default-free money-market instruments. Greef (1938, p. 56, footnote 65) shows that during the 1880s and 1890s, when many other debts were in default, commercial paper default rates were trivial (0.2 percent from 1886 to 1892 in New York according to one estimate; 0.05 percent from 1891 to 1895 in New York according to another estimate; 0.001 percent from 1897 to 1902 in Chicago according to a third estimate). Commercial paper was uniquely liquid during banking panics (Greef, 1938, p. 57). During the Great Depression default rates on commercial paper remained extraordinarily low (0.03 percent in 1931 and 0.02 percent in 1932, according to Greef, 1938, p. 309).

Clearly, the commercial paper market neither provided a means for interregional diversification (risky loans simply were not admitted to the market) nor a means for completely integrating the national capital market for riskless instruments (otherwise riskless rates of return would have been identical across regions). The large interregional differences in essentially riskless returns show that the elasticity of capital flows across regions in the United States was low. Commercial paper was purchased mainly by bankers, and commercial paper houses received their bridge financing from local banks. The reliance on local banks for funding

Table 1.1. *Average rate of discount on first-class two-name commercial paper in 43 cities of the United States, for the years 1893–1897, as reported weekly in* Bradstreet's

	Lower rates – percent					Higher rates – percent				
Place	1893	1894	1895	1896	1897	1893	1894	1895	1896	1897
Boston	5.27	2.76	3.19	4.92	2.99	6.60	3.77	4.84	6.29	4.03
New York	6.73	2.90	3.55	5.40	3.46	8.72	3.65	4.24	6.17	4.00
Baltimore	6.11	4.62	4.00	4.00	4.09	6.63	5.23	4.82	4.50	4.64
Hartford	6.09	3.43	4.06	5.72	3.70	7.16	4.32	4.61	6.67	4.27
Philadelphia	6.15	3.46	4.31	5.57	3.69	7.01	5.31	5.56	6.27	8.88
Providence	6.12	3.81	4.65	6.07	4.24	6.80	4.83	5.25	6.82	4.96
Cincinnati	5.88	4.60	4.83	5.61	4.12	6.96	5.44	5.61	6.17	5.17
Chicago	6.49	5.24	5.33	6.54	5.08	7.19	6.25	6.24	6.92	6.07
Pittsburgh	5.94	5.28	5.96	6.00	6.00	6.46	6.00	6.01	7.00	7.00
New Orleans	7.01	4.98	4.76	6.50	6.00	7.61	6.34	6.65	7.78	6.88
St. Louis	6.65	5.38	5.25	6.23	6.00	7.74	7.01	6.98	7.44	7.00
Portland, ME	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Richmond	6.00	6.00	6.00	6.00	6.00	7.00	7.00	6.00	6.00	6.00
Buffalo	6.11	6.00	6.00	6.00	5.92	7.78	7.65	7.00	7.94	7.92
Memphis	7.48	5.98	5.38	6.25	5.42	8.03	7.96	7.86	8.00	7.42
San Francisco	7.11	5.80	5.94	6.00	—	8.48	6.78	6.32	6.00	—
Milwaukee	6.98	6.11	6.00	6.28	6.00	7.00	6.98	7.00	7.15	7.00
Indianapolis	7.15	6.69	6.00	6.00	6.00	8.00	8.00	8.00	8.00	8.00
Cleveland	7.00	6.88	6.00	6.00	6.00	7.00	7.00	7.00	7.00	7.00
Detroit	7.00	6.23	6.00	6.84	6.00	7.19	7.23	6.09	6.84	6.00
St. Paul	7.61	7.69	6.00	6.34	5.38	8.00	7.69	6.32	7.69	7.38
Nashville	8.00	7.65	5.96	6.00	5.75	8.00	8.00	8.00	8.00	6.53
Louisville	7.03	6.40	6.78	6.94	6.96	7.07	7.23	7.00	6.96	7.00
Minneapolis	7.57	6.98	6.50	7.21	6.25	8.00	7.82	7.84	7.96	7.40
Kansas City	6.90	6.26	6.53	8.00	6.84	8.00	8.00	7.86	9.57	8.48
St. Joseph	6.84	7.00	7.00	7.00	7.00	7.84	8.00	8.00	8.00	8.00
Charleston	7.13	7.00	7.00	7.00	7.00	7.84	8.00	8.00	8.00	8.00
Los Angeles	7.28	7.00	7.00	7.00	7.00	9.28	9.00	9.00	9.00	9.00
Duluth	7.96	7.01	7.00	7.38	6.90	9.00	7.88	8.00	8.26	8.00
Galveston	7.01	7.00	7.00	7.53	8.00	8.00	8.00	8.00	8.00	8.00
Mobile	7.78	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Omaha	8.00	8.00	8.00	8.00	7.90	8.65	10.00	10.00	10.00	9.80
Savannah	8.00	8.00	8.00	8.00	7.96	8.80	10.00	10.00	10.00	9.96
Atlanta	8.00	8.00	8.00	8.00	8.00	8.03	8.00	8.00	8.00	8.00
Birmingham	8.00	8.00	8.00	8.00	8.00	9.46	10.00	10.00	10.00	9.88
Houston	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Portland, OR	8.00	8.00	8.00	8.00	8.00	10.00	10.00	10.00	10.00	10.00
Salt Lake City	8.00	8.00	8.00	8.00	8.00	10.00	10.00	10.00	10.00	10.00
Little Rock	8.07	8.00	8.00	8.00	8.00	9.88	9.84	10.00	10.00	8.73
Dallas	8.78	7.57	8.42	8.92	8.00	10.38	9.15	10.00	10.00	10.00
Tacoma	10.00	9.36	9.00	9.00	9.00	11.69	11.00	11.00	11.00	11.00
Seattle	10.00	10.00	10.00	10.00	9.84	12.00	12.00	12.00	12.00	11.84
Denver	10.00	10.00	10.00	10.00	10.00	10.38	12.00	12.00	12.00	12.00

Source: Breckenridge (1899b, p. 7).

limited the ability of the banking industry in the nation as a whole to channel funds elastically through the commercial paper market to their best use. The immobility of capital even in the riskless market likely reflected problems of delegated monitoring (Diamond, 1984; Calomiris and Kahn, 1991; Calomiris, Kahn, and Krasa, 1991). Local commercial paper houses were funded by local banks because banks made sure that they performed their duties as "delegated monitors" properly. The financing of commercial paper dealers was limited to local banks and was therefore constrained by local bank capital, because of problems of enforcing appropriate screening and monitoring of potential borrowers. Local bank capital was, in turn, limited by the capital of the local economy. A study of national banks by the Comptroller of the Currency in 1897 showed that out-of-state holdings of bank stock were limited. The largest out-of-state holdings were for the Western and Pacific regions, which had outsiders' holdings of less than 12 percent. Citing this evidence, Breckenridge (1899b, p. 10) concludes that "there is nothing which takes the place of branch banks. The local borrower is at the mercy of the local lender."

The exclusivity of the commercial paper market, combined with limitations on interregional financing of commercial paper, kept the commercial paper market small compared to total bank loans and discounts. For banks in the nineteenth century, the ratio of commercial bills to total loans and discounts never exceeded 3 percent and averaged 1.3 percent for 1892–1897 (Breckenridge, 1899b, p. 9). As late as the 1920s, the number of firms issuing single-name (open-market) paper in the United States and Canada never exceeded 2,754. In 1930, 1,674 firms issued open-market paper, of which only 292 originated in cities west of the Mississippi (Minneapolis, Dallas, Kansas City, and San Francisco), and only 9 originated in Canada. Firms in the textiles, foodstuffs, and metals industries accounted for 1,101 of the 1,674 firms. At the trough of the Great Depression, in 1933, only 548 firms issued open-market paper (Greef, 1938, pp. 246–8). Default rates remained low on commercial paper during the Depression because the quantity of short-term paper could fall quickly as default risk rose.

Data on interest rates for bank loans during the early twentieth century provide additional evidence of financial market segmentation. Riefler (1930, p. 79) reports data on prime commercial loans, interbank loans, and loans secured by stock or warehouse receipts for major cities in the United States at the end of 1926. The ranges reported in Table 1.2 are *not* the highest and lowest rates charged, but rather "the rates at which the bulk of the loans of each class are made by reporting banks." Thus some of the rates charged in these locations might have been higher

Table 1.2. *Money rates in federal reserve bank and branch cities: prevailing rates charged customers during the week ending December 15, 1926*

	Prime commercial loans	Interbank loans	Loans secured by prime stock exchange collateral		Loans secured by warehouse receipts	Cattle loans	Range
			Demand	Time			
Boston	4¾	4½	5	5	—	—	4½–5
New York	4½–4¾	4½–5	5	4¾–5	—	4½–5	4½–5
Buffalo	5–6	4¾–5	5–6	5–6	6	—	4¾–6
Philadelphia	4½–4¾	5	5	4¾–5	5–5½	—	4½–5½
Cleveland	6	5	6	6	—	5–6	5–6
Cincinnati	5½–6	5½–6	5½–6	6	6–7	—	5½–7
Pittsburgh	5–6	5–6	5–6	6	6	—	5–6
Richmond	5½–6	4¾–5½	4¾–5¼	5½–6	5½–6	—	4¾–6
Baltimore	5–5¾	5–5½	5–6	5½–5¾	5½–6	—	5–6
Atlanta	5–6	5–6	5–6	5–6	5–6	—	5–6
Birmingham	5–6	5–6	6	6	6	—	5–6
Jacksonville	4½–6	6	5–6	6	5–6	—	4½–6
Nashville	6	5½–6	5–6	6	5½–6	—	5–6
New Orleans	5½–6	5–6	5½–6	5½–6	5½–6	—	5–6
Chicago	4¾–5	5	5	5–5½	4¾–5½	5–5½	4¾–5½
Detroit	4½–6	5–6	5–6	5–6	5–6	—	4½–6
St. Louis	4¾–5½	5–5½	5–5½	5–5½	4¾–6	5½–6	4¾–6
Little Rock	5½–6	6	6	6–7	6–8	8	5½–8
Louisville	5½–6	5	6	5½–6	6	—	5½–6
Minneapolis	4½–5½	5–6	4¾–5½	4⅞–6	4¾–6	—	4½–6
Helena	8	6–8	8	8	6–8	6–8	6–8
Kansas City	5–5½	6	5	5–6	5–6	6–7	5–7
Denver	6	6	5½–6	5½–6	5½–8	6–8	5½–8
Oklahoma City	5–6	6	6	6–7	6	7–8	5–8
Omaha	4¾–7	6	5½	5½–6	5–7	7	4¾–7
Dallas	4½–6	5	6–7	5–7	6–7	6–7	4½–7
El Paso	8	6–7	8	8	7–8	6–10	6–10
Houston	5–6	5	5–6	5–6	5–7	6–8	5–8
San Francisco	5–5½	5–5½	5–6	5–6	6	—	5–6
Los Angeles	6	6	6–7	6–7	7	6	6–7
Portland	6	6	6–7	6	6	6	6–7
Salt Lake City	6	6	6	6	7	7–8	6–8
Seattle	6–7	6–6½	6–7	6–7	6–7	—	6–7
Spokane	6	6	—	6	7	6–8	6–8
Range	4½–6	4½–8	4¾–8	4¾–8	4¾–8	4½–10	—

Source: Riefler (1930, p. 79).

Table 1.3. *Cities having highest and lowest annual average interest rates on six major types of loans, by years, 1919–1925*

	Highest average rate for six types of loans		Lowest average rate for six types of loans		
Year	City	Rate (%)	City	Rate (%)	Difference between lowest and highest
1919	El Paso	7.82	New York	5.45	2.37
1920	El Paso	7.99	New York	6.22	1.77
1921	El Paso	7.92	New York	6.31	1.61
1922	El Paso	7.97	Boston	5.05	2.92
1923	Helena	8.00	New York	5.18	2.82
1924	El Paso	7.74	Boston	4.59	3.15
1925	El Paso	7.36	Boston	4.48	2.28

Source: Riefler (1930, p. 95).

or lower than indicated by the ranges reported here. Even at this late date, there were substantial differences in loan interest rates for these low-risk commercial loans. In all categories, the range of differences across cities within the United States was equal to or in excess of 3.25 percent. Even within cities, differences in rates were often between 1 and 2 percent. New York and Boston showed the lowest range of rates and among the smallest within-city range of rates, while El Paso, Helena, Spokane, Little Rock, Omaha, and Denver showed the highest maximum rates and wider ranges of rates within their respective locations. Riefler (1930, p. 95) also reports average rates charged on bank loans in selected cities for 1919–1925, which are reproduced in Table 1.3. Of course, all of these are *city* loans, so the comparable rates on loans in peripheral areas outside the high-interest-rate cities likely were even higher.

Riefler (1930, p. 80) argues that the rate differentials were not attributable to differences in risk:

> Fairly consistent differences are reported between the rates charged customers in different cities, but they apply to loans where the risk is constant as well as to those where differentials in risk can be inferred. Banks in the city of Chicago, for example, consistently reported higher rates for loans secured by Liberty bonds than did banks in the city of New York, yet Liberty bonds are just as secure for loans in Chicago as in New York.

Summarizing these and other related data, Riefler (1930, p. 82) writes:

> So far as rates customarily charged on the bulk of customers' loans are concerned, therefore, differentials between cities and between different types of col-

lateral security appear as frequently and consistently in those cases where there is no difference in risk involved as in those cases where differentials in risk can be inferred to exist.

Riefler (1930, p. 94) explains within-bank differences in interest rates as having at least as much to do with market power as with risk:

> . . . good "risks" are not distinguished so much by the type of collateral upon which they borrow as by their importance to the bank, the size of their balances, the amount of business which they bring to it, and their ability to establish banking connections elsewhere. These are the qualities which induce rate concessions, and distinguish those borrowers who pay the highest and lowest rates at the same bank on the same type of loan.

The establishment of the Federal Reserve System, with its intent to unify the national market, was not successful because it had little effect on the industrial organization of banking. Peripheral regions continued to be isolated from the main sources of capital in the East, and local bankers continued to enjoy substantial monopoly rents in the lending market. In part, the failure of the Fed to integrate the national money market resulted from the costs of Fed membership (which kept small peripheral banks from joining the system) and the resistance to branch banking, which would have increased membership in the Fed and promoted interregional capital flows and local competition in peripheral areas (E. N. White, 1983, pp. 149–87).

The interest rate differentials reported in Tables 1.1, 1.2, and 1.3 are large in comparison to similar interest rate differentials within and across countries. Using data on interest rates, exchange rates, and bill of exchange prices, Calomiris and Hubbard (1996) show that the comparable real interest differential between London and New York from the 1890s on was bounded by 3 percent and averaged roughly 2 percent. Breckenridge (1899b, p. 6) also discusses international interest rate differences:

> . . . as compared with an international system which hurries capital across frontiers and over seas, for the sake of differences of often less than one percent, it might better be said that the United States has nothing in the way of arbitrage apparatus for domestic purposes, in any worthy sense of the name.

By the criterion of tolerance for riskless interest rate divergence, one could argue that the Eastern United States was less integrated with the Western United States than it was with the rest of the world.

Studies of interest rate variation within other countries show similarly small differences in interest rates. Comparing the United States to the branch banking systems of Europe, Breckenridge (1899b, p. 5) writes:

> . . . there is not one of the leading States of Western Europe in which this process of equalization between domestic discount markets is not already far advanced.

Take whichever of these one may, it will be found that the price of capital in provincial cities varies in close and usual correspondence to the rates prevailing in the principal financial centers. In Germany, for example, there are no less than 260 towns where paper of a standard quality is discounted at precisely the same rate paid upon like securities in Berlin. In France there are more than 200 communities in which borrowers in good standing and credit can obtain loans on terms as favorable as those accorded in Paris. Similar conditions exist in Italy, Belgium, and Holland. In England again the country bank rate is seldom more than five or less than four percent an any part of the Kingdom, while in Scotland the banks of issue have agreed to charge, and do charge, identical rates at each of their thousand banking offices.

Gillett (1900, pp. 185–6) provides some additional information on interest rate divergence within other countries. Over the last 15 years of the nineteenth century, interest rates across regions in Denmark typically differed by less than 0.5 percent, while the level of interest rates varied within the range of 2.5 to 6 percent. In 260 peripheral towns in Germany and 200 towns in France interest rates were identical to those charged in Berlin and Paris, respectively. H. White (1902, pp. 53–4) claims that "the rate of interest in the smaller towns of the West [in Canada] is only 1 or 2 per cent. higher than in the large cities of the East on the same kind of loans." H. White may have been referring to the findings of a study in 1898 that found "the difference in interest paid by high-class borrowers of Montreal and Toronto and the ordinary merchants of the Northwest was not more than 1 or 2 per cent." (Chapman and Westerfield, 1942, p. 194). A similar study of Canadian interest rate differentials (cited by Willit, 1930, p. 185) also concludes that "so perfectly is this distribution of capital made, that as between the highest class of borrower in Montreal or Toronto, and the ordinary merchant in the Northwest, the difference in interest paid is not more than one or two percent." Johnson (1910, p. 92) writes that the "transference of funds from sluggish to active communities is the inevitable result of a system of branch banking and is the cause of the tendency of the rate of interest toward uniformity in all parts of Canada." Breckenridge (1899a, p. 55) concludes:

If a substantial uniformity in the rate of interest, extending to hundreds of widely separated markets, has been established in each of these countries [Canada, England, Scotland, Germany, and France] by means of branch banking, the "theory" that like results will follow the sanction of this device by the United States is entitled to some respect.

The fact that comparisons of low-risk interest rate differentials in other countries are typically for bank loans rather than for commercial paper illustrates another peculiar consequence of the American unit banking system – the reliance on commercial paper. In particular, an

exceptional characteristic of U.S. financial markets was the use of commercial paper rather than bank trade acceptances to finance interregional movements of goods. Only in the United States, two-name commercial paper, and later single-name paper, dominated the scene (Myers, 1931, pp. 47–52). As in many other areas of financial innovation in U.S. capital markets during the late nineteenth century (including innovations in life insurance, futures markets, mortgage securitization, and investment banking), the exceptional growth of the commercial paper market was an outgrowth, in part, of the failure of the U.S. banking system to provide an integrated national market for commercial credit.

Trade acceptances were defined by R. H. Treman (1919) as follows:

> A trade acceptance is a time draft drawn by the seller of merchandise on the buyer for the purchase price of the goods and accepted by the buyer, payable on a certain date, at a certain place designated on its face. (Quoted in Steiner, 1922, p. 113)

In essence, a trade acceptance is "an acknowledgment of the receipt of goods and a promise to pay for the same at a fixed date and place" (Steiner, 1922, p. 114). Bankers' acceptances financing trade were secured by goods in transit.

The advantage of trade acceptances from the standpoint of the seller of goods is the reduction in the need for credit during the interim period between the time goods are produced and the time payment is received from the buyer. The legal liability of sellers for delivery of goods as promised (the "doctrine of implied warranties") encouraged sellers (or their agents) to maintain ownership of the goods while in transit and to obtain credit to finance the costs of shipment. The commonly used alternative to the acceptance to finance trade within the United States during the nineteenth century was the "open account" system, in which sellers transfer goods to buyers, grant temporary trade credit to buyers (often for more than a month), and finance the float with bank credit or commercial paper.

The absence of bankers acceptances in the nineteenth-century United States is especially strange given the high costs of credit in the periphery, especially during the crop moving seasons. If bank credit was relatively costly in the region of production (as Table 1.1 shows, it often must have been), then a trade acceptance would be a useful means for the seller to obtain cheaper credit. The seller could trade his acceptance (say, on New York) for deposits in his home bank. The acceptance would also be a superior credit instrument to the extent that creditworthiness could be ascertained better by a local bank lending officer than by a distant merchant (Steiner, 1922, pp. 161–4).

Why then were trade acceptances so rare? One answer revolves around unit banking. The difficulty of a seller's obtaining credit from a distant unit bank could explain the disuse of acceptances. A local office of a nationwide branching bank, however, could provide the needed monitoring of the seller's goods and general creditworthiness, but provide delivery of the acceptance at another location. Interestingly, trade acceptances were used to a relatively large degree during the existence of the second Bank of the United States, but not as much before or afterward in the pre-World War I era. (After World War I, acceptances became more common, under the sponsorship of the Federal Reserve System, which saw them as the means to fulfill the dictates of the "real bills doctrine.") From 1823 to 1834, trade acceptances on the books of the Bank of the United States increased from $1.9 million to $16.3 million, while commercial paper increased from $22.5 million to $33.7 million (Myers, 1931, p. 50). Myers (1931, pp. 49–50) quotes Biddle's testimony describing the connection between the second BUS and acceptances:

> The crop of Tennessee is purchased by merchants who ship it to New Orleans, giving their bills founded on it to the branch at Nashville, which furnishes them with notes. These notes are in time brought to New York for purchasing supplies for Tennessee. They are paid in New York and the Nashville bank becomes the debtor of the branch at New York. The Nashville branch repays them by drafts given to the branch at New York on the branch at New Orleans, where its bills have been sent, and the branch in New York brings home the amount by selling its drafts on the branch at New Orleans; or the New Orleans branch remits.

Bodenhorn (1990, p. 37) finds that antebellum banks in the Southern branch-banking states of Tennessee and Kentucky, and in the mutual-insurance system of Indiana (a closely intertwined system of unit banks), had much higher holdings of trade acceptances than country (unit) banks in Pennsylvania. Comparable detailed data on bank asset holdings are not available for other states.

Similarly, in Canada's branch-banking system trade acceptances provided credit for transfer of goods from the point of production, freeing the seller from having to borrow on his personal credit to finance the transfer of goods to the buyer:

> Throughout the entire transaction, from the purchase from the farmer to the final sale to the eastern customer, the bank practically has title to all agricultural products which are being moved by means of its funds (Johnson, 1910, p. 48).

Clearly, unit banks would be unable to manage such transactions across regions.

1.3.4 Access to remote areas

One way in which branch banking facilitated bank diversification was by allowing banks access to thinly populated areas. Because of the relatively low overhead costs of establishing a branch office, branches could operate in locations where unit banks could not. This allowed expansion into new areas and activities and led to diversification of bank portfolios.

Calomiris and Schweikart (1988) show that in Georgia and Virginia during the antebellum period the locations of new branches closely followed the economic opportunities of the time. In Virginia, the opportunities included the rich grain-producing area of the Shenandoah Valley during the boom in the wheat market of the 1850s. In Georgia new offices followed the expansion of cotton production westward. Both movements involved diversification of loans by reducing the coincidence of risks among bank borrowers (from weather, factor prices, and product prices).

Evanoff (1988) provides a detailed empirical comparison of entry into remote areas by branch and unit banking systems within the United States. He measures access by the number of banking offices per square mile at the county level in 1980 and controls for other factors, including population and income. The results are striking. Branching increases the number of banking offices per square mile by 65 percent in remote areas.

Root (1897, p. 10) makes the same argument less formally for the Canadian branching system. He provides a plot of banking facilities in Canada in 1897 and notes a substantial presence of branch banking offices in remote and thinly populated locations. Chapman and Westerfield (1942, pp. 342–3) point out that the number of persons per banking office in Canada in 1940 was 3,410, compared to 7,325 in the United States. They also show that even in the most sparsely populated provinces the number of persons per banking office was in all cases less than 4,230. The comparable number for rural unit-banking states was sometimes much larger. For example, if one uses census data on population in 1940 (from US. Department of Commerce, 1975, Part 1, pp. 24–37) and Federal Reserve data on the number of banks in 1941 (commercial banks plus mutual savings banks, as reported in Board of Governors of the Federal Reserve System, 1976, pp. 24–32), the comparable ratios are: Illinois, 9,500; Texas, 7,700; and West Virginia, 10,500.

1.3.5 Reserve and capital ratios

Temin (1969, pp. 73–7) was among the first to relate cross-sectional evidence on bank reserve holdings across regions in the United States to

the riskiness of banks. He finds that in the 1830s banks in the Northwest held substantially higher ratios of reserves to liabilities than banks in other parts of the country. The largest difference was between the New England banks (with a reserve ratio of 0.06 in 1834), and the Northwest banks (with a reserve ratio of 0.46 in 1834). Temin argues that the reserve ratios in the Northwest had to be high to inspire confidence in the banks. In part, this reflected the perceived riskiness of banks' assets, as well as the absence of coordination among Western banks, which was present to a greater degree in the East, for example under New England's Suffolk System (see Calomiris and Kahn, 1996).

To the extent that branch banking reduced the riskiness of banks by allowing diversification in loans across locations it should have reduced banks' demand for reserves. In addition to reductions in bank-specific asset risk through diversification, interbank coordination (motivated by advantages of diversification across banks) could have reduced depositors' risk. As Calomiris and Kahn (1991) and Calomiris, Kahn, and Krasa (1991) argue, reserves may serve as "bonding" to reward monitoring by some depositors with a first-come first-served preference. To the extent branching reduces the costs of monitoring by other banks (through the creation of lower-cost monitoring and insurance arrangements among banks, as argued above), then branching could reduce the riskiness of deposits and the demand for reserves, independent of bank-specific diversification of assets.

Inferences about risk from comparisons of reserve ratios across banks are complicated by the need to adjust for other differences. For example, if one bank has a higher capital-to-asset ratio than another and a lower reserve-to-asset ratio, the riskiness of its deposits could be the same for a given riskiness of its assets. Thus, variation in asset risk due to location and variation in capital ratios (a substitute risk buffer for depositors) complicate drawing inferences about bank risk from reserve ratios. Nevertheless, there are a few relatively well-controlled "experiments" useful for isolating the effect of branching on bank asset risk through the window of reserve demand.

Large branching banks in Georgia in the 1850s had lower ratios of reserves to assets and lower capital-to-asset ratios than unit banks in Georgia. For example, in 1856 the four large branching banks had a capital ratio of 0.27 and a reserve ratio of 0.09, while all reporting banks averaged a capital ratio of 0.46 and a reserve ratio of 0.20 (Calomiris and Schweikert, 1988).

Comparisons across locations do not control for all relevant differences in regulations or economic environment. Nevertheless, such comparisons do provide some support for the proposition that branch-

banking systems entail lower risk than do unit-banking systems. Gillett (1900, pp. 203–4) compares reserve ratios of national banks in the United States to those of British joint stock banks in the late nineteenth century. He finds reserve ratios of U.S. national banks were more than double their British counterparts.

The comparison between the United States and Canada is more revealing. Table 1.4 compares loan-to-asset and capital-to-asset ratios of Canadian banks and U.S. national banks in the various states for 1904, a relatively calm year before any substantial presence of branching within (postbellum) state-chartered U.S. banking. Using the loan-to-asset ratio (rather than the reserve-to-asset ratio) to control for the ratio of risky assets biases the results against finding lower asset risk for Canadian banks, since relatively unrestricted Canadian loans, and the complement of loans and reserves in Canada, were probably riskier. Securities other than national government bonds accounted for roughly equal shares of bank assets in the two economies (8 percent in Canada, and 9 percent for national banks), but Canadian banks held fewer government bonds and more of other investments. The comparison of national banks across states allows one to maintain constancy of the regulatory regime to identify state-specific environmental factors. Data are from Johnson (1910, Appendix C) and Board of Governors of the Federal Reserve System (1959, passim).

Table 1.4 shows that the capital ratios for American and Canadian banks were roughly comparable, but the American banks had much lower loan ratios. This is consistent with greater portfolio risk for American banks. That is, banks had to hold more "reserves" (broadly defined) to reduce depositors' risk in the American system for any given ratio of deposits to assets.

The introduction of branch banking in California was associated with a reduction in capital ratios and an increase in loan ratios for state-chartered and national banks, as shown in Table 1.5. Branching began in 1909. By June 1928, 63 California banks were operating 826 branches (Board of Governors of the Federal Reserve System, 1929, p. 102). Fourteen of these were national banks (operating 478 branches), and 39 were state banks (operating 348 branches). National banks in California maintained the same loan ratio in 1928 as they had in 1904, but substantially reduced their capital ratio from 0.22 to 0.12. Over this same period, other banks in the United States maintained roughly the same ratios of loans-to-assets and capital-to-assets as in 1904. Data for the ratios of all member banks of the Federal Reserve System for 1928, which include national banks and state member banks, are identical to the ratios of the

Table 1.4. *Loans-to-asset and capital-to-asset ratios, U.S. national banks and Canadian banks, June 1904*

	Loans / Assets	Capital + Surplus/Assets
Canada	0.73	0.19
United States	0.55	0.20
Alabama	0.53	0.24
Arizona	0.44	0.17
Arkansas	0.60	0.24
California	0.51	0.22
Colorado	0.38	0.12
Connecticut	0.52	0.35
Delaware	0.53	0.32
Florida	0.53	0.20
Georgia	0.64	0.27
Idaho	0.53	0.19
Illinois	0.57	0.16
Indiana	0.50	0.19
Iowa	0.61	0.20
Kansas	0.54	0.19
Kentucky	0.53	0.24
Louisiana	0.59	0.21
Maine	0.58	0.31
Maryland	0.53	0.23
Massachusetts	0.58	0.23
Michigan	0.61	0.18
Minnesota	0.61	0.20
Mississippi	0.61	0.26
Missouri	0.52	0.16
Montana	0.62	0.20
Nebraska	0.53	0.17
Nevada	0.64	0.21
New Hampshire	0.45	0.27
New Jersey	0.54	0.26
New Mexico	0.55	0.21
New York	0.53	0.17
North Carolina	0.64	0.25
North Dakota	0.67	0.21
Ohio	0.57	0.21
Oklahoma	0.57	0.30
Oregon	0.45	0.16
Pennsylvania	0.53	0.23
Rhode Island	0.57	0.38
South Carolina	0.60	0.26
South Dakota	0.59	0.21
Tennessee	0.55	0.19
Texas	0.57	0.29
Utah	0.48	0.20
Vermont	0.46	0.34
Virginia	0.58	0.21
Washington	0.56	0.14
West Virginia	0.57	0.23
Wisconsin	0.61	0.17
Wyoming	0.61	0.21

Sources: Board of Governors of the Federal Reserve System (1959, passim); Johnson (1910, Appendix C).

Table 1.5. *Loan-to-asset and capital-to-asset ratios of California state and national banks, June 1928*

	State banks	National banks	All U.S. Banks belonging to Federal Reserve System
Loans/Assets	0.60	0.55	0.54
Capital + Surplus/Assets	0.10	0.12	0.19

Sources: Board of Governors of the Federal Reserve System (1959, pp. 152–9) and Board of Governors of the Federal Reserve System (1976, pp. 72–3).

national banks reported in Table 1.4 (Board of Governors of the Federal Reserve System, 1976, p. 72).

Under the provisions of the McFadden-Pepper Act of 1927, national bank branch locations were more restricted than those of state banks. Thus one might expect California's state banks to have achieved better diversification and therefore to have been able to maintain lower capital ratios and higher loan ratios than its national banks. Table 1.5 confirms that prediction. In 1928 state banks had capital ratios of 0.10 and loan ratios of 0.60, which represented a substantial improvement over their 1904 ratios of 0.19 and 0.57, respectively.

1.3.6 Summary

In summary, bank balance sheets provide ex ante evidence that branching banks were perceived as less risky, which complements the ex ante evidence on bank note discount rates of branching banks, the ex post evidence on bank failures, and the other indicators of diversification discussed above. Taken together the evidence shows that unit banks were less diversified, more vulnerable to failure, less able to grow in the aftermath of adverse shocks, less efficient in their use of scarce bank capital and reserves, less able to provide credit at low cost during times of peak demand, less able to provide services in remote areas, less competitive in local markets, less able to transfer capital across regions, and less able to finance interregional commodities trade. It is no wonder that the unit banking system was so uncommon in the international history of banking. The main puzzle is why it persisted so long, despite its disadvantages, in the American banking system.

1.4 The persistence of branching restrictions in U.S. banking

One can divide the question of why branch banking has been so limited in the U.S. experience into two parts: First, why did the U.S. system start with a system based primarily on unit banks (with the notable exception of the South); and, second, why did limitations on branch banking persist in many states, despite the obvious advantages (enumerated above) of liberalizing branching laws? Once one poses the question this way, the puzzling predominance of unit banking in the American experience can be analyzed *historically*. Rather than offering a disembodied "model" of the choice for unit banking, I will offer a model embedded in a "story" – a story in which the economic, legal, and political contexts in which banks originally were chartered and regulated combined with subsequent historical events to produce a particular (in retrospect, possibly a very inefficient) set of regulations. Before one can answer the difficult questions about governments' choices of industrial organization for banks, one must understand the context in which the controversies over branching arose.

1.4.1 A brief history of bank chartering

The story of unit banking in the United States begins with the historical motivations that underlay the chartering of banks. In the beginning, of course, there were no banks in America. Colonial "commercial banking" was carried on as a part of general merchant enterprises, along with importing and exporting, insurance, and transport. While some colonials called for the formal establishment of banks to promote greater liquidity, land development, and commerce (notably, Franklin, 1729), there was substantial resistance to the chartering of banks in the colonies and in England. The corporate form based upon limited liability was viewed with great suspicion – sometimes it was seen as a means for avoiding responsibility for debts incurred – and the granting of such a corporate form was seen as a privilege of government to be used selectively, until the mid-nineteenth century. Moreover, money-issuing authority for banks was sometimes viewed as a means to government-sponsored inflation, which was feared by creditors. (For a review of the debates over the inflationary effects of early currency creation by governments and banks see Bullock, 1895, 1900; Davis, 1900, 1911; Nettles, 1934; Lester, 1939; Ernst, 1973; Hurst, 1973; Brock, 1975; McCusker, 1978; Smith, 1985a, 1985b; Wicker, 1985; Michener, 1987, 1988; Calomiris, 1988a, 1988b; M. Schweitzer, 1989).

The first commercial bank in the United States, the Bank of North

America, was chartered in 1781 by the Confederacy to help finance the Revolution, was opposed by some from its inception, and was forced to abandon its controversial national charter to take up business as a state-chartered bank, first in Delaware, and later (in 1787) in Pennsylvania (Hurst, 1973, p. 7). The history of the Bank of North America illustrates two important elements of the political and legal context of early bank chartering in the United States. First, the constitutional basis for chartering banks by the federal government was unclear and highly controversial. Second, bank charters granting the right to issue money and allowing limited liability for stockholders were not freely available to all who wanted them, but were seen as a privilege and as a tool of the state (and, possibly, federal) governments to be used to achieve specific, appropriate objectives.

Americans were free to sign contracts of indentured servitude, but they were not free to establish limited-liability corporations, in banking or in other areas. As Hughes (1976, 1991), Hartz (1948), Handlin and Handlin (1947), and many others emphasize, the legal system of the United States grew out of the mercantilistic colonial system, in which the guiding principle was the exchange of monopoly privileges (including charters, land grants, exclusions of competition, and licensing) for advantages to the government (including new sources of government revenue, and strategic military advances). This was a system for promoting expansion, but in a heavily controlled atmosphere, in which society's interests (as interpreted by the government) took precedence over individual gain and the freedom to contract in particular ways. In banking, in particular, government would decide which activities and places warranted the establishment of banks and would tax, regulate, and own substantial shares of the banks that were created.

Early state chartering of commercial banks differed greatly across states with respect to the scope of bank activities and assets permitted and required, bank capital requirements, collateralization of note issues, extended liability of directors and stockholders, and a host of other regulations, including those pertaining to branching (Sumner, 1896; Knox, 1900; Dewey, 1910; Redlich, 1951; Hammond, 1957; Fenstermaker, 1965; Rockoff, 1972; Schweikart, 1988a; Calomiris and Schweikart, 1988; and Bodenhorn, 1990). Prior to 1838 charters were typically granted by state legislatures upon special request. Even banks within the same state often faced very different regulations on their lending and financing.

The Panic of 1837 was a watershed in the history of bank chartering in the United States. The destruction of banks brought an increase in the demand for new banks and offered an opportunity to change the form of chartering throughout the country. In the North, the "free-banking"

movement emerged as a means to allow entry into banking for anyone willing to abide by the terms of a common set of regulations. Following New York's example in 1838, some systems (primarily in the North) permitted free entry into banking. Banks under the free-banking laws of a particular state faced many regulations, including a 100 percent reserve requirement against note issues in the form of government bonds (see Rockoff, 1972, for the details of the different state laws). Despite the spread of free banking in the 1840s and 1850s, many banking systems (notably in the South) continued to rely on special chartering, requiring that applicants demonstrate a public need for new banks before granting a new charter.

As states established new charters for banks, they typically allowed older chartering forms to continue. For example, in Ohio in the 1850s there were four different types of banking institutions in existence: old individually chartered banks, and three newer types of bank charters, including free banks and insured banks. In New York, there were three chartered forms: insured banks (dating from 1829), limited-liability free banks, and banks with unlimited liability. Some bank charters were perpetual, some were limited in duration. In some cases, banks were chartered to promote specific projects, including canals, bridges, roads, and railroads (for example, the Manhattan Company of New York was chartered to provide water to New York City), while others had no specific mandate.

All chartering systems helped to finance their respective state governments. In some cases, states taxed banks; in others (notably Pennsylvania and South Carolina) governments owned substantial shares in the banks; and in still others (free banks) governments forced banks to hold their bonds as security for notes. Sylla, Legler, and Wallis (1987) report data on the share of state revenues from banks in the antebellum period. They show that in some states, banks were the main source of revenue. For example, from 1811 to 1860 the bank share of state revenue in Massachusetts varied between 37 and 82 percent, with a median of 66 percent. The trend over time was to rely increasingly on taxation and bond reserve requirements, rather than direct ownership or control, as the method of rent extraction for the government. As Schweikart (1988a) shows, in the South, the period from 1837 to 1841 was something of a watershed in this respect. The high failure rates and large losses of banks organized and owned by the state governments (which often were involved in specific – typically unprofitable – public works projects) encouraged a movement away from direct government control and ownership. Similar lessons from the panic and depression years of 1837 to 1841 motivated the free-banking movement in the North.

With respect to the national government, chartering was sporadic. Despite constitutional and political controversies surrounding the federal chartering of a nationwide bank, the Bank of the United States (BUS) was chartered in 1791. This bank was founded by Alexander Hamilton with specific purposes in mind: to facilitate the marketing of government debt, to facilitate the collection of government revenues, and to make loans to the government in times of need at subsidized interest rates. In addition to performing these services for the government (Calomiris, 1991a, pp. 70–1), the government also owned a substantial stake in the bank and profited greatly from it. The Treasury Department estimated that the earnings for the government from dividends and sale of stock (in 1796) from its interest in the BUS amounted to $573,580, representing a return on capital of 28 percent (U.S. Treasury, 1897, cited in Love, 1931, p. 31). The bank's 20-year charter was not renewed in 1811, and its absence was sorely felt by the government during the War of 1812. This led to the bank's rechartering in 1816. Subsequent controversy over whether the bank constituted a national monopoly, and disagreement between Biddle and Jackson over the details of the renewed charter, led to a confrontation and a Presidential veto of the rechartering of the bank, which was not overridden by Congress (contrary to Biddle's expectations). From 1836 until 1863 there was thus no federal government presence in the chartering of banks.

Initially, limitations on branching seem not to have been an important constraint on what bankers who received charters wanted to do. From the beginning, banks in the South operated branches (Schweikart, 1988a, pp. 52–7, 62, 76, 98–9, 102, 120, 125–7, 174, 179, 202–3, 262), and banks in the North did not (Redlich, 1951, p. 193), but there was little clamor in the North to allow or prohibit branching. It seems not to have been an important bone of contention (Chapman and Westerfield, 1942, pp. 59–60). Opposition to the second BUS has sometimes been identified with an early opposition to branching, per se, but this seems incorrect. As Martin (1974) and Schweikart (1988b) show, Jacksonian opposition to the Bank mainly was fueled by a desire to reduce the connection between bank lending and bank currency issuing and to curtail the Bank's monopoly power, not by an opposition to federal chartering or branching, per se (see also Duncombe, 1841). Indeed, the branching South was a Jacksonian stronghold.

1.4.2 Branching and consolidation controversy in the 1890s

After the virtual disappearance of branch banks in the South in the 1860s (due to Southern banks' financing the Civil War), branching was

restricted in many Southern states relative to its status before the War. Interestingly, Southern state governments, which had generally favored branching in the antebellum period, showed less interest in it in the immediate postbellum period, although Southern branching grew in importance in the early twentieth century. Although it is often difficult to describe the extent to which branching was prohibited, since it often was prohibited by the discretionary actions of regulators rather than by legal rules, the presence of branches is a fairly good indicator of the freedom to branch. In 1900, for the United States as a whole, there were 87 branching banks operating 119 branches. Forty-eight of these banks were in the South (which I define to include the obvious candidates, as well as Kentucky, Tennessee, Oklahoma, and Texas), and each of them operated only one branch located in the city of its head office (Board of Governors of the Federal Reserve System, 1976, pp. 298–9).

In the North, there was no significant movement in favor of branching until the bank-consolidation/branching movement of the 1890s. Only then did major struggles ensue over whether state-chartered or national banks could operate branches. This was the era that saw the mobilization of special lobbying groups to oppose bank consolidation and branching in particular (notably, the American Bankers Association).

National banks from the beginning were prohibited from opening new branches (but allowed to operate existing ones upon change of charter from a state system). The first Comptrollers of the Currency gave the National Banking Act a very narrow interpretation, arguing that it prohibited the establishment of branches. With minor and brief exceptions, this remained the policy of the Comptroller's office until the enactment of the McFadden Pepper Act of 1927.

The consolidation/branching movement of the 1890s in the North had two important sources. One was the high rate of bank failures during the 1890s, which prompted consideration of the advantages of large, nationwide, diversified banks (Chapman and Westerfield, 1942, pp. 62–74). Bank stress would also play a dominant role in the dramatic merger wave in banking during the 1920s (Willit, 1930, pp. 125–30, 159–247; Cartinhour, 1931; Chapman, 1934; Chapman and Westerfield, 1942, pp. 109–15; E. N. White, 1985). As before, unit bankers would react to the demand for consolidation and branching by lobbying to oppose it (and, in 1930, by establishing the Independent Bankers Association, to spearhead the opposition).

The second source of demand for bank branching and consolidation was the secular changes occurring elsewhere in the economy in the production, distribution, and management systems of corporations, which affected their borrowing needs. In the United States, particularly with

the expansion of transcontinental railroads after the Civil War and the coming of the "second industrial revolution" of the latter quarter of the nineteenth century, the scale of firms and their financial requirements increased dramatically. Aside from the growth of firm size for technological reasons (for example, in the chemical and steel industries) the spread of the railroad and the associated extension of a firm's relevant "market" led to the emergence of the large-scale enterprise, with a managerial hierarchy and a complex nationwide distribution network for coordinating movements of factors and output (Chandler, 1977). These dramatic changes in the scale of corporate financing needs first appeared in the financing of railroads, which were the harbinger of the new wave of large-scale national industrial and commercial enterprises.

The demand for large-scale corporate finance affected the propensity for bank consolidation and branching in at least four important ways. First, there was the direct effect of the increase in demand by the bank's customers for large-scale loans. Limitations on the amount any bank was willing to loan (or legally could loan) to an individual customer favored the establishment of large banks. To some extent, the American banking system had participated in the financing of the railroads of the 1840s and 1850s, but these financings were on a smaller scale than those of the transcontinental railroads of the postbellum era, and they were not accompanied by the enormous increase in corporate scale and scope witnessed in the last quarter of the nineteenth century (Fishlow, 1965).

Second, because the fragmented unit banking system in the United States was ill-suited to finance the new corporate giants, and because of existing limitations on branching and mergers, competing methods of corporate finance arose that began to erode bank profitability, thus compounding bank distress and encouraging consolidation. The new markets for commercial paper and corporate stocks and bonds helped to motivate efforts by bankers to consolidate. Corporate finance prior to the 1890s was a local endeavor. As the demand for capital by large-scale firms grew, however, the credit system adapted, and competition on a national scale (for the business of a limited class of firms) became important. Part of that adaptation was visible within the banking system. Prior to the 1890s banks did not have formal credit departments with systematic procedures for evaluating creditworthiness (Lamoreaux, 1991a). Rather, they relied on informal knowledge of local borrowers in determining access to, and the cost of, credit. As banks turned outward in the 1890s, that began to change.

Financial innovations outside of banking were at least as important, and these allowed competitors of banks to gain a foothold in the credit market. As early as 1857, *Bradstreet's* printed the first rating book – a

volume of 110 pages, listing 17,000 firms located in nine cities (Schultz, 1947, p. 57). The coverage of the various rating agencies increased over the latter half of the nineteenth century, and the data reported became more detailed and systematic, as the national and international markets for commercial paper and inter-firm trade credit grew. Growth in the commercial paper market was especially large from 1873 until the mid-1880s (Greef, 1938, p. 54), and the ability of commercial paper to remain safe and liquid during the panics of the 1890s led to its increasing use. The Mercantile Agency (the predecessor of Dun and Bradstreet's) opened 90 offices in the United States between 1871 and 1890. From 1891 to 1916, 115 new offices were opened, including 83 outside the borders of the United States (Foulke, 1941, pp. 294–5). As noted above, the United States was unique in its reliance on commercial paper for commercial and industrial finance of high-quality borrowers.

Another peculiarity of U.S. financial history that was an outgrowth of changes in corporate scale and branching restrictions was the development of securities markets and investment banking syndicates in the nineteenth century. In other countries, commercial banks financed firms, often owning equity as well as debt and often involving themselves in corporate decision making, as well as finance. Markets for corporate stocks, bonds, and commercial paper were virtually nonexistent. The Japanese keiretsu (Hoshi, Kashyap, and Scharfstein, 1990a, 1990b, 1991) and the similar German system dating from the nineteenth century (Riesser, 1911) provide examples of large-scale corporate finance within the banking system. In the United States in the 1890s, for the first time, investment banking houses (which previously had dealt almost exclusively in railroad securities issues and the financing of corporate reorganizations) began to market the common stock of other corporations on a national scale (Carosso, 1970, pp. 29–50). During this period New York became the preeminent center for investment banking, as investment banks relied increasingly on commercial banks as a source of funding, financed through the pyramiding of reserves in New York (due to New York's dominance as a commercial center). Ironically, the fragmented banking system would help to finance its own decline by fueling its main sources of competition in credit markets. The pioneering efforts in common stock flotations for relatively small firms were by Lehman Brothers and Goldman-Sachs, beginning in 1906 with the United Cigar Manufacturers and Sears, Roebuck flotations (Carosso, 1970, pp. 82–3).

Significant changes in corporate law helped to usher in the increasing reliance on large-scale enterprise and the growing attractiveness of corporate bonds and stocks, by clarifying and extending the protection

afforded corporations in the law. Changes in attitudes toward incorporation, which had evolved over the previous century (Horwitz, 1971, 1977, 1985; Hurst, 1970), accelerated in the 1880s and 1890s, giving rise to what Sklar (1988) terms the "corporate reconstruction of American capitalism." In a series of cases beginning in 1886, for example, changes in the law of property and views of contractual liberty gave corporations rights similar to those of individuals, which served to protect large-scale corporations from arbitrary government disappropriation:

> . . . the [Supreme] Court established a legal doctrine of substantive and procedural due process, which further elaborated the reformulation of liberty attached to corporate property. In effect, with the limited liability of the stockholder it combined the limited liability of the corporation in the face of the legislative and executive powers of government. . . . It defined property to include the pursuit, and therefore the legal protection, of intangible value, or earning power . . . (Sklar, 1988, p. 49)
>
> . . . the resort to the corporate form of enterprise based upon negotiable securities and limited liability as a mode of property ownership became increasingly more compelling in the United States than in Britain and continental Europe, and its extension to intercorporate combination a familiar routine. Protected in part by law and otherwise by executive policy, the property form matched inducement and need with effective and available market instrumentalities. (p. 166)

Banks in the United States were forced as never before to compete with new forms of finance.

A third connection between the increased scale of corporate finance and the consolidation/branching movement also came from the growth of the securities market. Commercial banks played a crucial role as conduits of information and outlets for the marketing of securities flotations by investment-banking syndicates. This role dates back to Cooke's government bond syndication campaign of the 1860s, in which the initial links between Eastern investment bankers and commercial banks throughout the country were forged (Carosso, 1970, pp. 51–3). Benveniste and Spindt (1989) argue that a crucial feature of investment banking syndicates is that they collect information necessary to price new issues from the same parties who ultimately purchase the new issues. By combining the two, Benveniste and Spindt show, syndicates can minimize information costs by creating appropriate incentives for the collection and sharing of information within the coalition. This model seems well suited to understand the role of commercial bankers in early stock and bond flotations. They may have had special insights about individual firms' credit histories and about the types of securities their local customers were most interested in purchasing. The involvement of commercial bankers in underwriting and trust activities was a two-

edged sword from the standpoint of the banking industry. It allowed them to share in the profits from the new financial innovations, but it also made them unwitting accomplices in the decline of banks as a source of direct finance. Banks that saw the possibility of participating more directly in underwriting of securities (at a higher level in the syndicate pyramid) and that saw potential economies of scale in trust activities and securities marketing (E. N. White, 1985) yearned to increase their size and their geographical range, which would enhance their role in the syndicate.

Fourth, and finally, the changes in the scale of corporate finance, and the consequent growth of investment banking, reduced the costs of arranging bank mergers, which encouraged banks to consolidate and branch. In addition to planning new securities issues and coordinating the marketing and pricing of the issues and the distribution of fees within the syndicate, investment bankers assisted in reorganizing the banking industry. By the turn of the century, bank consolidation in New England began, and investment banks played an important role in the process:

> At the urging of an organization of Massachusetts savings associations, which collectively owned more than 40 percent of Boston's bank stock, a syndicate of private bankers under the leadership of Kidder, Peabody & Company liquidated nine of [Boston's] national banks and consolidated their operations into an enlarged and reorganized National Shawmut Bank. A year later, the Industrial Trust Company, under the aggressive leadership of Samuel P. Colt, acquired two banks in Providence and seven others elsewhere in the state. Each of these consolidations triggered a number of smaller mergers in their respective locales. As a result, by 1910 the number of banks in Boston had fallen to 23, little more than a third of the 60 banks operating in the city in 1895. . . . Over the same period, the number of national banks in Providence fell from 25 to 9. . . . (Lamoreaux, 1991b, p. 549)

Lamoreaux (1991b, pp. 549–50) finds that the profits of the new merged banks were substantially raised by the mergers. In explaining the timing of the mergers in New England, Lamoreaux (1991b, p. 551) emphasizes the importance of the demand for credit by large-scale industrial enterprises, which

> may explain why private banking houses like Kidder, Peabody showed a sudden interest in merging national banks. The heightened level of activity in the securities markets may thus explain much about the timing of the merger movement in banking.

The concentrated holdings of stock in the national banks, and the adept management of Kidder, Peabody allowed stockholders to merge the banks, despite the frequent opposition of "entrenched" bank managers (especially in Massachusetts).

Despite all these motivations for consolidation and branching, major changes in industrial organization of banking from 1900 to 1909 were confined to a few states and banks, as Table 1.6 shows (Chapman, 1934, pp. 52–3; Board of Governors of the Federal Reserve System, 1976, pp. 298–9). National banks, as already noted, were prohibited from opening new branches, and prior to 1918 bank consolidation was only allowed after banks went through the costly process of asset liquidation (Chapman, 1934, p. 43). State banking laws also acted as a continuing impediment to consolidation or branching. In addition to requiring very large supernumerary majority votes by stockholders as a condition for merger, regulators in all states reserved for themselves the right to deny consolidations (Chapman, 1934, p. 46).

One way around restrictions on new branching or merging, which offered an alternative means to expand in size and geographical scope, was to form "chains" (more than one bank owned primarily by the same shareholders) or "groups" (banks owned directly by a bank holding company). While the degree of control and organization of chains and groups was not as great as that of branching banks, it certainly encouraged some joint decision making in lending, cooperation in marketing and trust activities, and interbank lending within the group on favorable terms. Chain banking developed considerably after 1890, and became displaced in importance by group banking by the 1910s. As Cartinhour (1931) and Calomiris (1992) show, some of the states with the largest chain and group presence were unit banking states. The rise of chain and group banking in Minnesota was particularly dramatic. By 1930, chain and group banks controlled 30 percent of the banks and 66 percent of bank assets in the state (Cartinhour, 1931, p. 110). By 1929, for the United States as a whole, 10 percent of the banks, and 21 percent of bank assets, were in groups or chains (Cartinhour, 1931, p. 101). Roughly half of these entities were controlled by holding companies (Cartinhour, 1931, p. 103). Beginning in the 1930s, the number and assets of groups and chains began to decline, in part due to failures of individual members and to the replacement of these entities with branching banks (Chapman and Westerfield, 1942, pp. 328–9). Perhaps most importantly, regulation at the state and federal level began to be restrictive. The Banking Act of 1933 prevented the shares of any member bank of the Federal Reserve System from being voted by a group without a permit from the Board of Governors (Chapman and Westerfield, 1942, p. 334).

Clearly, Sklar's (1988) spirit of "corporate reconstruction" that dominated the legal and institutional changes of corporate capitalism did not extend to banks. Government remained opposed to consolidation (through mergers or holding companies) and branching, with few excep-

Table 1.6. *Bank mergers and consolidations, by state, and branching, 1900–1910*

State Banks	*Consolidations and Mergers*[a] 1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	Total
Arizona	—	—	—	—	—	—	—	—	—	1	1
Connecticut	—	—	—	—	—	1	—	1	—	—	2
Florida	—	—	—	—	—	1	—	—	1	—	2
Georgia	—	—	—	—	—	—	—	—	13	10	23
Idaho	—	—	—	—	—	—	1	1	4	—	6
Illinois	—	6	—	4	1	6	7	4	4	2	34
Indiana	—	—	1	—	1	—	1	1	1	1	6
Kansas	1	1	1	—	—	—	—	—	—	—	3
Louisiana	—	—	1	1	2	5	4	2	—	—	15
Michigan	—	—	—	—	6	—	2	4	7	4	23
Minnesota	—	1	1	—	1	—	3	2	5	9	22
Missouri	—	3	3	3	5	7	6	7	5	11	50
Nebraska	1	5	5	2	1	4	2	—	4	2	26
North Carolina	—	—	2	1	—	—	2	3	5	2	15
Ohio	—	—	—	—	1	3	—	—	—	—	4
Oklahoma	—	—	—	—	—	—	—	—	2	8	10
Oregon	—	—	—	—	—	—	—	—	4	—	4
Pennsylvania	—	1	2	4	3	4	1	1	1	1	18
Rhode Island	1	2	1	—	2	1	1	—	—	1	9
South Carolina	—	—	—	—	—	—	—	—	4	2	6
South Dakota	—	—	6	—	1	1	—	—	—	—	8
Texas	—	—	—	—	—	—	1	—	—	1	2
Utah	—	—	—	—	—	1	—	—	—	—	1
Washington	—	—	—	—	—	—	—	—	7	—	7
West Virginia	1	—	2	—	—	—	2	1	—	—	6
Wisconsin	—	—	—	2	5	2	1	—	—	—	10
Wyoming	—	—	—	—	2	—	—	—	—	—	2
Total											
All State Banks	4	19	25	17	31	36	34	27	67	55	316
All National Banks	16	22	25	20	32	33	22	27	30	25	252
Grand Total	20	41	50	37	63	69	56	54	97	80	568

	Branching 1900	1905	1910
State banks with branches	82	191	283
Number of branches	114	345	536
National banks with branches	5	5	9
Number of branches	5	5	12
All banks with branches	87	196	292
Number of branches	119	350	548

[a] Data are incomplete. See Chapman (1934, pp. 52–3) for a discussion.
Sources: Chapman (1934); Board of Governors of the Federal Reserve System (1976, p. 297).

tions. The state and federal governments' responses to increased demand for banking in rural areas and to the bank failures in the 1890s were to decrease capital requirements and thereby promote bank expansion through small, unit banks. For national banks, minimum capital requirements were reduced in 1900. Details of state policies are provided in James (1978, p. 230).

The limits on banks' participation in large-scale corporate finance due to restrictions on branching imposed large costs on the economy. We have already noted that local firms in peripheral locations faced high costs of external finance due to the scarcity of bank capital. The instability of unit banks and the lack of competition in rural areas also increased costs to these borrowers periodically when their local banks failed (Calomiris, Hubbard, and Stock, 1986). And all bank-dependent borrowers suffered from general contractions of credit at cyclical and seasonal frequencies (Miron, 1986; Calomiris and Hubbard, 1989).

By impeding the integration of the national market for capital, branching restrictions also imposed costs on large-scale firms, which had to rely on investment banking syndicates to finance their large fixed-capital investments. SEC data on the fees paid to investment bankers in the late 1930s (Butters and Lintner, 1945) and estimates of external finance costs derived from firms' responses to the taxation of retained earnings in 1936–1937 (Calomiris and Hubbard, 1995) both indicate that for publicly traded firms excess costs of external finance through securities issuances often averaged in excess of 20 percent of the value of the issue. The SEC data are a lower bound on excess financing cost since these fees do not include other costs, like losses to shareholders due to the undervaluation of stock issues, as discussed in Myers and Majluf, 1984; Asquith and Mullins, 1986; and Korajczyk, Lucas, and McDonald, 1990. Calomiris and Hubbard (1995) find that more than 20 percent of the firms in the economy in 1936 likely faced excess financing costs in excess of 25 percent. Similarly high investment banking fees seem to have characterized earlier years, although data on these earlier transactions are scarce. Brandeis (1914, p. 95) cites scattered evidence on the fees for common and preferred stock and for bonds that are quite similar to those reported for the 1930s. Brandeis views such high fees as prima facie evidence of monopoly power by the "money trust." While it is difficult to distinguish the extent to which the high costs borne by some U.S. borrowers resulted from information production or monopoly rents (for the former view, see Chapter 5 of this volume), in either case U.S. costs were unusually high compared to the "main bank" system of financing large corporate investment, like that employed in Germany to finance the second indus-

trial revolution (Riesser, 1911; Tilly, 1966; Neuberger and Stokes, 1974; Kindleberger, 1984, pp. 122–9; Chapter 4 of this volume).

The contrast with the German system is striking. German joint stock banks, which came into existence after 1848, combined investment and commercial banking activities and exercised enormous control over the enterprises they financed. Enterprises typically borrowed from only one bank, and the degree of integration and information exchange between bank and firm management was unprecedented. As Neuberger and Stokes (1974, p. 713) write:

> Contemporaries who analyzed the role of the *Kreditbanken* were most fascinated by the intimate relations with the major German industrial firms. The origins of this intimacy are not at all mysterious. Such close relations were a natural outgrowth of the scheme according to which the banks arranged industrial financing. The policy of granting large credits for fixed capital against security of uncertain value was unusually risky so that measures to reduce risk must have been a matter of special concern. One simple expedient was the requirement that the borrower conduct all business through one bank (or in cases where a loan was made by a consortium, through the leading bank). If this rule was followed, a bank was guaranteed adequate knowledge of a firm's condition. A second measure was the requirement that bank officials be appointed to the supervisory boards of the firms to which credit was granted.

The directorships ensured the banks a voice in policy making in the industries they financed.

While Morgan's men in the United States performed a similar function in monitoring firm activities (De Long, 1991), German banks were able to internalize the costs and benefits of monitoring within a single entity and to avoid the complications and costs of marketing securities and coordinating information flows among thousands of syndicate participants. Unbelievably (by American standards) this internalization of costs and benefits in the German main bank system allowed large-scale industrial firms in Germany to borrow and finance large amounts of fixed capital on the same terms as merchants financing import and export trade. The form of finance was very short term, which further facilitated the discipline of banks over firms, since it gave banks a useful threat (the withdrawal of funding) if firms deviated from the straight and narrow (Neuberger and Stokes, 1974, pp. 713–5). (For a theoretical discussion of the use of short-term debt as a disciplinary device, see Calomiris and Kahn, 1991; Calomiris, Kahn, and Krasa, 1991.)

Despite the costs of regulatory limitations in the United States, it took the disaster of the 1920s to prompt meaningful regulatory reform in branching. Even then, local special interests that opposed liberalization were protected, in part, by the continuing dominance of state law over federal in matters of industrial organization. Under the stress of the

1920s many states in all regions of the country, especially agricultural states that previously had resisted branching reform, liberalized their branching laws. (For a useful and compact description of state and federal regulatory changes on branching from 1910 to 1990, see Mengle, 1990.) Branching restrictions for national banks were also liberalized to conform more to the regulations prevailing in the various states. The National Banking System followed, rather than led, the procession to branch banking. The 1920s saw a reversal in the position of the Comptroller of the Currency, who now pressured Congress to relax branching regulation (Chapman and Westerfield, 1942, pp. 95–7), due to concern over the loss of membership to the state chartering authorities, with their more liberal branching laws. But the initiatives of the Comptroller in the early 1920s were limited by the initially strong opposition of unit bankers (many of whom had disappeared by the end of the 1920s, or possibly lost the financial capability to influence their elected officials), and by a Supreme Court ruling in 1924 that gave state governments the right to restrict branching by national banks, if their banks were similarly limited and if Congress did not specifically legislate otherwise. In other industries, state laws that restricted trade were unconstitutional (through the "commerce clause"); in banking, however, commerce-clause protection was found not to apply, and state law ruled supreme.

Interestingly, the first attempt at meaningful reform for national banks occurred only after the Comptroller had received the assent of the American Bankers Association, as a result of its 1921 convention held in Los Angeles, which was apparently dominated by California banks.

> The . . . Comptroller . . . was encouraged to take a more aggressive attitude for branch banking by the fact that the National Bank Division of the American Bankers Association had at its Los Angeles convention, after extensive debate, resolved to request the Congress . . . to permit national banks to maintain and operate branches within a prescribed radius from the head office of such a national bank in states in which state banks were authorized to have branches . . . (Chapman and Westerfield, 1942, pp. 95–6)

The approach advocated by Comptroller Crissinger in 1921 would eventually become codified in the McFadden-Pepper Act of 1927, but in 1922 Congress was not so disposed. Neither was the American Bankers Association, which reversed the position advocated at the Los Angeles convention and adopted a strong antibranching platform at its 1922 convention (Chapman and Westerfield, 1942, p. 97). When the Comptroller decided to push through the changes on his own authority, Congress rebelled, and the political heat that was generated was sufficient to drive him from office. The weakening of the opponents of

Table 1.7. *Consolidation and branching, 1910–1931*

Year	Chapman series		White Series				Loans and investments of branching banks ($ millions)
	Number of mergers	Banks absorbed	Banks absorbed	Total Assets ($millions)	Branching banks	Branches	
1910	127	128	—	—	292	548	1,272
1911	119	119	—	—	—	—	—
1912	128	128	—	—	—	—	—
1913	118	118	—	—	—	—	—
1914	142	143	—	—	—	—	—
1915	154	154	—	—	397	785	2,187
1916	134	134	—	—	—	—	—
1917	123	123	—	—	—	—	—
1918	119	125	—	—	—	—	—
1919	178	178	172	650	—	—	—
1920	181	183	184	874	530	1,281	6,897
1921	281	292	250	710	547	1,455	8,354
1922	337	340	311	750	610	1,801	9,110
1923	325	325	299	1,052	671	2,054	10,922
1924	350	352	341	662	706	2,297	12,480
1925	352	356	280	702	720	2,525	14,763
1926	429	429	348	1,595	744	2,703	16,511
1927	543	544	477	1,555	740	2,914	17,591
1928	501	507	455	2,093	775	3,138	20,068
1929	571	575	529	5,614	764	3,353	21,420
1930	699	698	627	2,903	751	3,522	22,491
1931	706	719	635	2,757	723	3,467	20,681

Sources: Chapman (1934, p. 56); E. N. White (1985, p. 286); Board of Governors of the Federal Reserve System (1976, p. 297).

branching and the demonstrated benefits of branch banking during the 1920s hastened the passage of the McFadden-Pepper Act in 1927 and led to further liberalization of national bank branch locations in the Banking Act of 1933.

After 1920, states also allowed greater consolidation through acquisition and merger (Table 1.7). The large number of unit bank failures and the relative success of branch-banking systems during the crisis years weakened opposition to branching and consolidation (Chapman, 1934; Chapman and Westerfield, 1942; E. N. White, 1985). From 1920 to 1930 the number of banks operating branches (and branches) increased from 530 (1,281 branches) to 751 (3,522 branches). The annual number of banks absorbed by mergers from 1910 to 1920 averaged 139. From 1921

to 1931, mergers increased steadily, averaging 467 per year and reaching a peak of 719 in 1931 (Chapman, 1934, p. 56).

1.4.3 Modeling the political economy of branching restrictions

From the standpoint of optimal-contracting models of banking, which assume frictionless bargaining (no transactions costs), freedom of contracting, and freedom to choose asset and liability composition optimally (as in, for example, the very simple visions of banking in Fama, 1980, or Diamond, 1984), the absence of large, multibranch banks is puzzling. Opportunities for the diversification of risk, coordination in response to shocks, and a superior allocation of capital across regions should have been irresistible to a competitive banking system, which would be governed by the principles of cost minimization of banks and utility maximization of depositors. From this perspective opposition to branching seems inexplicable on economic grounds and instead appears to be the result of irrational populist distrust of large, big-city bankers.

From the standpoint of the historical context in which banks were chartered in the United States, however, restrictions on branching and bank consolidation are less puzzling and can be understood as a rational economic strategy of some segments of the population. In a world where banks are a tool of the state, where their activities are deemed a proper subject for public debate and government control, where it is presumed that their supply should be limited and their income should be shared with the state in compensation for the granting of the privilege of limited liability, it is little wonder that the maximization of depositors' utility was not achieved.

Bank regulations, and branching laws in particular, clearly were determined in large part by the lobbying of special interest groups. Indeed, the mercantilist partnership between banks and government often gave the interests of existing banks special weight. For example, in Rhode Island and Massachusetts in the antebellum period bank supervisors explicitly stated that their opposition to branching was based on the concern that existing banks (sometimes in the country, sometimes in the city) might be damaged by allowing competition in their lending markets (Dewey, 1910, pp. 141–2). While in some states the demands of the 1890s prompted a move toward branching (for example, in New York in 1898, see Klebaner, 1990, p. 71), in other states the lobbying by unit bankers and farm interests successfully blocked branching. Indeed, the number of states specifically authorizing branching fell from 20 to 12 over the years 1896 to 1910 (Klebaner, 1990, p. 71), although several other states allowed branching without specific legislation.

Given the transactions costs of lobbying the government, only those with special interests (i.e., with a lot to gain or lose) will pay the price to express their opinion and influence policymakers. This explains why bank regulation seldom maximizes depositors' welfare and why borrowers heavily dependent on banks, and bankers, would be the dominant players in the political regulatory game. This perspective also helps to explain why once a banking system begins as a unit banking system (giving location-specific rents to particular unit banks), unit bankers would resist change and often were able to do so successfully. And this explains why the destruction of unit bankers or the reduction in their wealth (and hence, influence) in the 1920s (and again, in the 1980s and early 1990s) coincided with the relaxation of branching and consolidation restrictions. Indeed, these are common themes in the political history of branching (Cartinhour, 1931; Chapman and Westerfield, 1942; E. N. White, 1982, 1983).

Understanding the differences in regulatory structure across states and over time, however, is far more challenging than stating the truism that change was governed by dominant special interest groups. In what follows, I address what I think are the three most puzzling features of the regulatory differences across states and eras, relying on economic theory to construct conjectures of what might have governed particular groups' interests and on some empirical evidence to buttress these conjectures. The three puzzles are: (1) Why was branching initially a feature of Southern, but not Northern banking? (2) Why did some agrarian areas in the South embrace branching in the antebellum period and not in the early postbellum era? (3) Why was California a major exception to this rule – that is, why was consolidation and branching into agricultural areas in California not successfully opposed?

The answer to the question of why antebellum Northern bankers and bank-dependent borrowers did not push for branching, while Southerners did, seems to come down to the specific differences in the goals of the states and to the common mercantilist principle that connected bank chartering to these goals. As discussed above, bank charters were initially established to promote particular activities. In the North, the main growth opportunities, and the activities promoted by the government, were primarily financing commerce and industry in cities; in the South they were primarily financing the crop cycle and moving the crops to market. The differing nature of the activities affected the desirability of branching. The special advantages of branch banking in the rural South were well understood in contemporary discussions of banking (Schweikart, 1988a; Calomiris and Schweikart, 1988). These included enhanced intrastate and intraregional capital mobility, access to thinly

populated areas, and the ability to move agricultural goods long distances easily through the use of trade acceptances.

Similarly, three agriculture-dependent states in the North – Indiana, Ohio, and Iowa – established successful mutual-guaranty systems, which as noted above approximated some features of branching systems (coordination of clearings and acceptance transactions, diversification of risk *ex ante*, and coordination in the face of disturbances, *ex post*). The main difference between these Northern states and their counterparts in the South was that, like the free-banking systems of the antebellum Midwest, entry was sharply limited in the Northern mutual guaranty systems, while it was not so limited in the South. In the three Northern systems, banks were not permitted to branch into each other's local markets, which Southern banks often did.

In the Northeast, the commercial and industrial lending by banks typically had a different purpose from that of bank lending in the South, and the absence of branches was not an important obstacle to the satisfaction of those goals. In her studies of New England's banks, Lamoreaux (1991a, 1991b) argues that early nineteenth-century banking was nicely adapted to the needs of local industry:

> At that time, scarcity of information and the modest scale of enterprise had combined to keep credit markets localized and financial institutions small . . . (1991b, p. 539).

According to Lamoreaux, New England bank managers, particularly in Boston and Providence, often ran banks as credit cooperatives to finance their own firms' needs for working capital. They would have had less interest in diversifying risk, since they were most interested in lending money to themselves.

Maryland provides an interesting case of a banking system that allowed, but did not take advantage of, branching. Maryland's banking system was modeled on the Scottish system. Like the Scottish system, it allowed free branching. Bryan (1899, p. 15) writes:

> This principle was introduced into Maryland in 1804, but it has received comparatively little development. No bank in Maryland has had more than two branches performing a regular banking business, and but a limited number have had branches at all; these were organized early. . . . Perhaps on this account outlying agricultural districts were developed more slowly than they might have been under a system of branch banking.

Furthermore, attempts to charter a state branching bank on the Southern model specifically to channel resources to the countryside were debated in great detail and defeated several times from 1829 to 1837 (Bryan, 1899, pp. 83–5). Why was there so little private branching or support for a public initiative to organize an agricultural branch bank?

Like other Mid-Atlantic coastal cities, Baltimore was a hotbed of commerce and industry, and its banks concentrated on financing these activities, rather than searching out opportunities in rural Maryland. For these purposes, from the standpoint of bankers, Baltimore entrepreneurs, and politicians, branches were not particularly necessary.

These conditions changed in the last third of the nineteenth century. Lamoreaux (1991a) shows that in New England as local industrial and commercial opportunities waned and the potential for profits in other regions increased (notably the Midwest and the low-wage South, as discussed in Gates, 1951; Johnson and Supple, 1967; Wright, 1981), New England banks (and some industrialists) became more outward-looking and began channeling funds to borrowers in other regions. Banks evaluated creditworthiness with newly developed formal methods implemented by newly created credit departments. Now the profitable opportunities for Northeastern banks involved outward-looking participation in the financing of large-scale enterprise in the national capital market. These changes were also related to changes in the sources of banks' external finance (their increasing reliance on deposits), and a change in the relationship between banks' management and shareholders (Lamoreaux, 1991b; Calomiris, 1991b). Changes in the incentives of bankers – whose opinions were instrumental in shaping regulatory policy – which encouraged them to pursue opportunities in the burgeoning national capital market help to explain the timing of the relatively successful branching and consolidation movements in the postbellum North.

In addition to its advantages in helping move crops, branch banking provided other benefits to wealthy antebellum Southerners, who could gain from capital mobility in the South in ways that wealthy Northerners could not. Wright (1986) argues that the profit-maximizing strategy of Northerners was to increase the value of land and local capital and that this encouraged large expenditures on public works and local "boosterism." Wright argues that Southerners with large slave holdings, who were the dominant political force, had little incentive to invest in local public works; instead, they wished to augment the value of their main capital asset, which was slaves. Territorial expansion, and the ability to move slave labor to its highest use were the hallmarks of this strategy. One can see the promotion of branch banking in the South as an example of the pursuit of this interest. Branching promised greater mobility of capital and greater access to new, remote areas, as needed.

From this perspective, one can also understand why the Northwest opted for its mutual-guaranty and free-banking systems, rather than free-entry branching. Entry restrictions helped to create location-specific

bank capital and thereby limited potential capital losses on local property values. Location-specific bank capital ensured that banks would not move on to marginally "greener pasture" at the expense of local businesses and farms. One can view this arrangement as a form of insurance of wealth (where the "insurance premium" is the inefficiency, potential for bank failure, and high costs of borrowing in the unit banking system). In the absence of Arrow-Debreu markets, or nationwide mutual funds that offered opportunities to diversify all systematic risk, as imagined in the frictionless capital asset pricing model, landowners saw location-specific bank capital as a way to tie banks' fortunes to their own. If their city or town received an adverse shock associated with a long-term negative revision in expectations regarding the profitability of investment there (say, an expected long-term decline in the terms of trade), local farmers and businessmen could be confident that their bankers would continue to lend to them, even on reduced collateral. The unit bankers had little choice. Branches of banks, facing those same choices, might simply close or at least sharply curtail their lending in that community.

Similarly, the motivation farmers would have had for creating location-specific bank rents was a desire for "loan insurance." In addition to limitations on diversification of wealth holdings, to the extent that borrowers faced external finance constraints, their creditworthiness may have depended importantly on their level of wealth (Leland and Pyle, 1977; Stiglitz and Weiss, 1981; Myers and Majluf, 1984; Gale and Hellwig, 1985; Williamson, 1986; Bemanke and Gertler, 1990; Calomiris and Hubbard, 1990). Given that wealth – particularly in undiversified land – was highly volatile in value, middle-class landowning borrowers had an additional motive to "purchase" loan insurance by supporting unit banking. The desire to tie banks to local lending markets is also visible in more recent regulation, notably the Community Reinvestment Act of 1977. Out-of-state banks that acquire local banks must commit to continue making local loans and not merely use the acquired banks as sources of deposits.

These explanations do not imply that branching restrictions or the earmarking of loans to specific regions are "optimal," or even "second-best," for society as a whole. One can argue that branching restrictions were a way for early settlers to benefit at the expense of later settlement elsewhere in the state – a "beggar-thy-neighbor" regulatory policy supported by the agrarian middle class. In any case, welfare comparisons, which are relatively easy in a frictionless world, are much more difficult in a setting where the standard assumptions of welfare economics (including no costs of information or bargaining) do not hold. These costs, as already

noted, are precisely what give rise to "incompleteness" in capital markets, which motivates the taste for unit banking.

In summary, the antebellum South favored branching because the dominant economic interests (wealthy slaveholders) benefited from it. High costs of financing the movement of crops over long distances through peripheral unit banks explains this in part. Additionally, in the South the dominant form of collateral in the antebellum period was slaves rather than land (Kilbourne, 1992); thus there was little advantage from "bonding" the banker to a particular locale. In the Northeast, branching restrictions were not an important constraint on the dominant economic class, composed of merchants and industrialists. Indeed, they benefited by the creation of charter rents to the extent they could use their control of banks to improve their own costs of credit. In the Northwest, the middle-class farmer (later the "populist') would carry the day. In the mutual-guaranty systems of Indiana, Ohio, and Iowa farmers received many of the benefits of branching, while retaining the advantages of location-specific bank capital. Other banking systems of the Northwest opted simply for unit free banks. None authorized free entry in the form of branch banks.

The Civil War brought an end to slavery in the South. The declining price of cotton, as well as the reorganization of labor and land allocation after the War, made the South much poorer than it had been (Ransom and Sutch, 1977; Wright, 1986). There was no longer a plantation elite with an interest in establishing branch banks to promote the efficient movement of capital or commodities. Indeed, one could argue that the wealthy landlords benefited by the lack of competition in finance, which facilitated the "debt peonage" of tenants (Ransom and Sutch, 1977, 148–70). Despite its own antebellum successes with branch banking, there was no powerful political constituency to push for branching in the immediate postbellum period.

1.4.4 Empirical support

There is a great deal of qualitative evidence to support the generalization that "rural interests" have opposed the branching movement from 1890 to the present. But that opposition has not been uniform. For example, Illinois has had a long history of opposition to branching. In a 1924 statewide referendum, the public voted against permitting branching, two to one (E. N. White, 1982, p. 38, citing Bradford, 1940, p. 17). Similar opposition was present in many states prior to the 1920s, but some relaxed their regulations after the destructive 1920s and 1930s, while

others did not. Other states with a large agricultural sector – perhaps most notably, California – favored branching long before the 1920s.

One way to verify the "insurance model" of the rural support for unit banking after 1890 is to see whether cross-sectional variation in the "taste" for branching is correlated with variables that should matter from the standpoint of the "insurance model." The greater the demand for land and loan insurance, the greater the support should have been for unit banking laws. A formal econometric study of this type is beyond the scope of this paper, but there are some facts that appear consistent with it.

Table 1.8 reports data on rural per-capita wealth in 1900 for various agriculture-dependent states. I divide these states into two categories: those that made progress toward relaxing branching restrictions by 1910, and those that did not. Interestingly, with the exception of California, with its very high rural wealth per capita, branching states tended to have much poorer farmers than states that prohibited (new) branching. This is true even controlling for the presence of the Southern states in each group (which were dominated by tenant farming and sharecropping). The median index of relative rural wealth for the branching states was 0.5 (1.2 for non-Southern states), while the states that prohibited branching had a median index of 1.4 (1.8 for non-Southern states). In the latter states, landowning farmers would have been able to lobby politicians more effectively and may have been more interested in protecting their accumulated wealth through the "land and loan insurance" provided by unit banking. Much more empirical work needs to be done, however, before one can interpret this tentative finding conclusively.

E. N. White's (1984b) study of the 1924 Illinois referendum on branching provides evidence consistent with the insurance model. He finds that the presence of banks increases the probability of opposition to branching at the county level and interprets this as evidence that the public was influenced by local unit banks' propaganda. That may be true, but another interpretation of this finding is that the existence of a bank is a proxy for wealth insurance by banks. According to this interpretation, relatively well-off agrarian communities in Illinois were more prone to have banks and to support unit banking. Future empirical work can distinguish between these two interpretations by close examination of county level data.

The case of California is somewhat anomalous from the standpoint of the model and the patterns shown in Table 1.8. California, however, was an unusual state in other ways. For example, the long distances within the state that commodities had to travel and the consequent benefits of coordination of finance through a branching system may have appealed

Table 1.8. *Rural wealth and branching restrictions*

	Rural per capita wealth index, 1900[a]	Number of banks with branches, 1910	Number of branches 1910	Ratio of branch-banking facilities to total banking facilities 1910
	States allowing some branching, 1910			
Alabama	0.3	6	17	0.07
Arizona	0.7	7	15	0.34
California	2.5	34	45	0.12
Florida	0.3	5	7	0.07
Georgia	0.3	15	17	0.05
Louisiana	0.5	3	3	0.03
Michigan	1.1	23	55	0.10
Mississippi	0.4	15	30	0.12
North Carolina	0.3	8	13	0.05
Ohio	1.3	22	39	0.05
Oregon	1.4	5	6	0.05
South Carolina	0.3	2	7	0.03
Tennessee	0.5	3	4	0.02
Virginia	0.5	18	37	0.13
Washington	1.2	8	12	0.06
Mean	0.8	—	—	—
Median	0.5	—	—	—
Mean (non-South)	1.4	—	—	—
Median (non-South)	1.2	—	—	—
	States not allowing further branching, 1910			
Arkansas	0.4	3	3	0.02
Colorado	1.3	0	0	0.00
Idaho	1.0	0	0	0.00
Illinois	2.1	0	0	0.00
Indiana	1.4	0	0	0.00
Iowa	2.6	0	0	0.00
Kansas	1.8	0	0	0.00
Minnesota	1.6	0	0	0.00
Missouri	1.2	0	0	0.00
Montana	1.9	0	0	0.00
Nebraska	2.2	1	1	0.00
Nevada	1.9	0	0	0.00
New Mexico	0.6	0	0	0.00
North Dakota	2.1	0	0	0.00
Oklahoma	0.9	0	0	0.00
Pennsylvania	0.9	8	8	0.01
South Dakota	1.8	0	0	0.00
Texas	0.9	0	0	0.00
Utah	0.9	0	0	0.00
Vermont	0.9	1	1	0.03
West Virginia	0.6	0	0	0.00
Wisconsin	1.4	7	9	0.03
Wyoming	3.0	0	0	0.00
Mean	1.5	—	—	—
Median	1.4	—	—	—
Mean (non-South)	1.7	—	—	—
Median (non-South)	1.8	—	—	—

[a]The per-capita rural wealth index is the ratio of a state's share of national rural wealth, as calculated in Lee et al. (1957, pp. 730–811), divided by a state's share of national rural population, as reported in U.S. Department of Commerce (1975, Part 1, pp. 24–37).
Sources: Lee et al. (1957); U.S. Department of Commerce (1975); Board of Governors of the Federal Reserve System (1976, p. 298).

to wealthy farmers in the California interior, much as it had to antebellum Southern plantation owners. Moreover, the details of the history of California branching seem to provide some support for the model. Specifically, branching was permitted only after the acquiescence of powerful agricultural interests to entry by city banks, and this entry seems to have been the result initially of local distress and eventually of the benefits to this powerful group from allowing branching. Branching was subject to the approval of the State Superintendent of Banks, whose approval was subject to the influence of special interests.

The first branch of the Bank of Italy that A. P. Giannini opened (with the requisite permission of state regulators) was in San Jose. The Superintendent of Banks found that San Jose "needed" the bank's help in the face of the collapse of the local bank. In fact, the failing local banker, himself a large landowner whose family had relied on his bank for large land-backed loans for the past 30 years, visited San Francisco to suggest the acquisition of his bank by Giannini. This was a crucial ingredient in the Superintendent's willingness to have the branch open. Large landowners stood to benefit from the preservation of the bank's stock value and the preservation of the local economy, which depended on the bank. The small landowners, many of whom were Italians who knew Giannini from his childhood days in San Jose, also saw the entry by the Bank of Italy as a favorable change, since previously they had not been granted equal access to the bank, which was being run first and foremost in the interests of large local landowners (James and James, 1954, pp. 48–51). Giannini realized that further expansion of branching required the support of the powerful land interests:

> Giannini realized that, unless his branches could do more for the California ranchers than existing unit banks were doing, there would be little excuse for the branches (James and James, 1954, p. 52).

Giannini's next acquisition was in Los Angeles in 1910, where, again. the "reason for the speed of this acquisition was the fact that the Park Bank [of Los Angeles] was not in good shape" (James and James, 1954, pp. 58–9). Other attempts at takeovers in Los Angeles by the Bank of Italy met with failure. "These deals fell through in a manner that suggests intervention by the larger banking interests of Los Angeles" (James and James, 1954, p. 59). Giannini acquired another Los Angeles bank in 1913, again only after a fight with local bankers.

Giannini's statewide branching campaign did not begin in earnest until 1916, as the Bank of Italy expanded into the Santa Clara, San Joaquin, and Napa Valleys. The wartime increase in demand, his previous successes and growing popularity, and the scarcity of sound institutions willing and able to finance the expansion all helped Giannini to win over

farmers, regulators, and politicians who otherwise might have been opponents to branching. Just as important was Giannini's adept handling of the financing of large movements of goods over long distances, a natural comparative advantage of branching:

> Valley farming is pretty big business. Many of the crops were perishable or semi-perishable; their movement had to be rapid; their handling and packing, skillful; and their flow to the distant consumer, flexible and constantly under control. Moreover, the principal markets lay as far east as Chicago and New York. Much of the barley harvest was sold on the London market; valley orchardists had long supplied Europe with a good part of her prunes; delta rice was shipped to Japan; and Cuba and Puerto Rico were regular customers for California beans. (James and James, 1954, pp. 88–9)

Giannini also was able to enlist the strong support of the Italian community and of small farmers involved in farm co-ops, which the Bank of Italy strongly supported.

In summary, several factors combined to make Giannini the right man in the right place at the right time. Initially, he fought an uphill battle against other banks and entrenched landowners who did not welcome his competition. At first, it was bank distress that would allow acquisitions. But gradually, he was able to convince the powerful, and the not so powerful alike, that on balance they stood to benefit from branch banking. In another state, or even in California at another time, he may never have been able to overcome the obstacles to branching.

Giannini's experience and the data in Table 1.8 run contrary to the view that the populist agrarian support for unit banks came from poor farmers. Instead, it was established farmers with significant land holdings (and often interests in unit banks) who opposed competition from outside. Indeed, agricultural impoverishment (like the destruction of agricultural banks in the 1920s and 1980s) has been good news for branching. Fifteen states allowed expanded branching from 1920 to 1939. During the expansionary years from 1939 to 1979 only 4 states relaxed their branching laws. In the face of the agricultural crisis of the 1980s once again 15 states loosened restrictions on branching (Mengle, 1990; Calomiris, 1992).

1.4.5 Explaining the uniqueness of US. unit banking

Other countries have agricultural middle classes (notably Canada), yet the successful U.S. support for unit banking is unique. Why was the United States so different? The answer lies in the institutional and historical peculiarities of the American political experience: the protection of local interests ensured by federalism, the distinctly American method

for allocating power among national legislators (which also gives disproportionate weight to regionally concentrated minorities), and the legal precedents established by the Supreme Court, which gave states great latitude in the chartering of banks.

By not extending constitutional protection to banking as an activity involving interstate commerce the Supreme Court opened the way to state regulatory prohibitions on bank activities across and within states. Throughout the nineteenth and twentieth centuries state banking authority was limited only by the increasing incursions of the federal government in chartering and regulating banks, which were justified constitutionally by appeal to the federal government's special role in regulating the money supply, and therefore banks, and not by appeal to any constitutional protection on banking activities under the commerce clause. In 1924 the Supreme Court further insulated state government control over banking by ruling that state banks could enforce branching restrictions against state and national banks alike within their borders (in the absence of specific contrary action by Congress). Through these rulings the Supreme Court ensured that the struggle over branching would be fought locally rather than nationally, unless Congress decided to intervene. This approach was codified by Congress in 1927.

The Court's and Congress's willingness to allow state governments to limit the activities of state and national banks within and beyond their boundaries gave locally concentrated special-interest groups a better forum for lobbying than the national arena where they would have been up against all the opposing interest groups in the national economy. Thus federalism's decentralization of legislative power, supported by some crucial Supreme Court rulings and the absence of action by Congress, helps to explain the unique success of unit bankers and their allies in the United States.

The American method for electing national legislators and the means of allocating power within Congress also have helped to constrain opposition to unit banking and to enhance the power of geographically concentrated minorities that opposed branch banking. In contrast to many countries' parliamentary systems in which the national performance of the party can determine which individual representatives hold office, the support of local constituents is a sufficient condition for election to Congress. This tends to enhance the power of geographically concentrated interest groups on politicians. Moreover, congressional committees control the agenda of Congress, and these committees are often dominated by representatives whose constituents tend to agree and feel strongly about the set of issues under the aegis of that committee. Thus representatives from pro-unit banking agricultural states have tended to

dominate the congressional committees that control banking regulation. Other states' representatives "trade" influence over these committees for committee appointments in areas of greater concern to their constituents. Congressional "horse-trading" over committee appointments and votes have thus tended to stifle the advocacy of branch banking by the "silent majority" and have favored the power of regionally concentrated enclaves of support for unit banking.

1.5 The origins and effects of pre-FDIC bank liability insurance

Studies of the political history of deposit insurance legislation show that it was the desire to preserve unit banking and the political influence of unit bankers and their supporters that gave rise to the perceived need for deposit insurance, both in the antebellum period and in the twentieth century (Golembe, 1960). It was understood early on (through observing the successful operation of branch banks in the South and in other countries) that branching – with its benefits both of greater diversification and coordination – provided an alternative stabilizer to liability insurance. But unit banks and their supporters successfully directed the movement for banking reform toward creating government insurance funds. All six antebellum states that enacted liability insurance were unit-banking states. In the antebellum branch-banking South neither government insurance nor urban clearing houses developed. Similarly, the eight state insurance systems created from 1908 to 1917 were all in unit-banking states.

In evaluating the performance of the various government-created liability-insurance schemes, Calomiris (1989, 1990, 1992) analyses which experiments failed or succeeded, and why. Deposit insurance in many cases destabilized historical banking systems, as recent theoretical and empirical analyses of banks and savings and loans suggest it has today. The failures of insurance systems seem mainly attributable to flaws in their design, rather than to insurmountable exogenous shocks.

1.5.1 Antebellum successes and failures

Detailed analysis of each of the antebellum bank insurance programs is provided in Golembe and Warburton (1958). New York's Safety Fund was the first, established in 1829, funded by limited annual contributions of members and regulated by the state government. Losses severely depleted the accumulated resources of the fund from 1837 to 1841 until, in 1842, it ceased to be able to repay losses of failed banks and thus ceased to provide protection to the payments system.

New York in 1838 created an alternative to the insured system through its free-banking statute and allowed Safety-Fund banks to switch to that system. The depletion in membership of the insured system kept its losses small during subsequent panics. After 1840 Safety-Fund banks comprised a small and continually shrinking proportion of total banks or total bank assets. Losses were also limited by the 1842 restriction on coverage of member banks' liabilities to bank notes, thus excluding the growing liability base in deposits.

Ultimately, the small number of banks that chose to remain in the system and make continuing annual contributions to its fund did manage to repay in 1866 the obligations incurred some thirty years earlier, but this "success" was not anticipated in the intervening years (as shown by the high discount rates attached to failed member-banks' notes during the 1850s), and the fund did not protect current bank liabilities or the payments system *ex ante*, as it was intended to do.

Not only did the system fail to provide protection to the payments system, but it also suffered unusually large losses due to fraud or unsound banking practices. While a supervisory authority was established to prevent fraud and excessive risk taking, supervision was ineffectual, and fraud or unsafe practices were common. Ten of sixteen member-bank failures prior to 1842 (the period when insurance was still perceived as effective) were traceable to fraud or unsafe practices. Moreover, such problems were not detected until after they had imposed large losses on the fund.

The failure of the Safety Fund was not the fault of external shocks, severe as they were. In aggregate, banking capital was large relative to losses, and thus coinsurance among all New York banks would have been feasible. Rather it was the design of the insurance system that made it weak. Upper bounds on annual premia prevented adequate *ex ante* insurance during panics, and ineffectual supervision allowed large risk takers to free ride on other banks. Finally, adverse selection caused a retreat from the system through charter-switching to the alternative free-banking system, once solvent banks realized the extent of the losses.

Vermont and Michigan followed New York's example and suffered its problems. In Vermont banks were even allowed to join and depart at will. It took only two bank failures to cause the dissolution of that system; one failure was due to fraud, and the other was that of a bank that joined the system after that bank's prospects had deteriorated. Again, an incentive-compatible, broadly based system could have provided coinsurance among banks, but adverse selection and poor supervision prevented this.

Michigan's system, created in 1836, collapsed because it (like the other

two systems) depended for its resources on accumulated contributions to the collective fund, which would be used to support banks during a crisis. The Michigan system had no time to accumulate a sufficient fund prior to the Panics of 1837 and 1839 and thus was unable to provide protection.

Not all antebellum experiments ended so disastrously as these three. Indiana enacted a different sort of liability insurance plan in 1834, one based on the principles of self-regulation and unlimited mutual liability that would later be imitated by private clearing houses. The Indiana system did not suffer the supervisory laxity or membership retreat of New York and Vermont, nor the illiquidity of Michigan and New York. Coverage was broad-based, and there was no problem in attracting and keeping members. During its thirty-year history no insured bank failed. There was a suspension of convertibility in 1837 and again in 1839, but this was the last time banks were even forced to suspend. During the regional panic of 1854–1855 and the national Panic of 1857, all insured banks maintained operations and convertibility. During those same panics 69 of 126 nonmember, uncoordinated free banks failed in Indiana.

The Indiana system relied on bankers themselves to make and enforce laws and regulations through a board of directors and, importantly, gave it authority to decide when to close a bank. Unlimited mutual liability provided bankers the incentive to regulate and enforce properly. The Indiana system was imitated in Ohio and Iowa, with similarly successful results. Ohio's law granted its Board of Control even greater authority than Indiana's Board, allowing it virtually unlimited discretionary powers during a banking crisis, including the right to force banks to make loans to one another. Interbank loans were successfully used during the Panic of 1857 to avoid suspension of convertibility. The insured banks, it seems, even came to the assistance of nonmember banks during the Panic, as indicated by flows of interbank loans. Only one Ohio bank failed during the crisis, and it was not a member of the insured system. Iowa's system was in place for a shorter and more stable period, but its operation was similarly successful.

Like clearing houses, these three successful insurance schemes aligned the incentive and authority to regulate and made insurance protection credible through unlimited mutual liability among banks. Like Southern branch banks in the Panics of 1837 and 1857 these systems were able to minimize systemic disruption through a coordinated, incentive-compatible response. They were brought to an end not by insolvency, but by federal taxation of bank notes designed to promote the National Banking System.

1.5.2 *The second, postbellum wave of state insurance*

The eight deposit-insurance fund systems of the early twentieth century failed to learn the lessons of the antebellum experience; they repeated and compounded the earlier errors of New York, Vermont, and Michigan. Supervisory authority was placed in government, not member bank, hands, and often its use or disuse was politically motivated (Robb, 1921). Furthermore, the numbers of banks insured were many more than in the antebellum systems (often several hundred), and this further reduced the incentive for a bank to monitor and report the misbehavior of its neighbor banks, since the payoff from detection was shared with so many and the cost of monitoring was private.

During the halcyon days for agriculture, from 1914 to 1920, deposit insurance prompted unusually high growth, particularly of small rural banks on thin capital. The insured states' banks grew faster, were smaller, and had lower capital ratios than their state-chartered counterparts in fast-growing, or neighboring states. Table 1.9 reports regression results that confirm the unusually high growth of state-chartered insured banks (controlling for other variables) relative to other agricultural states. A decomposition among voluntary- and compulsory-insurance laws reveals that the incentives to grow were especially pronounced in the compulsory-insurance systems (where the potential for cross-subsidization, or free riding through excessive risk taking, was highest).

When agricultural prices fell, insured banking systems suffered the highest rates of decline and failure among state-chartered banks in agricultural states (although the statistical significance of failure rate comparisons is sensitive to choice of data and controls for interstate comparisons – see Thies and Gerlowski, 1989; Calomiris, 1992; Alston et al., 1994). All the insurance fund systems collapsed during the 1920s (American Bankers Association, 1933; Federal Deposit Insurance Corporation, 1956). Insured systems also saw greater delays in closing and liquidating insolvent banks, reminiscent of politically motivated delays that have occurred during the recent thrift crisis (Calomiris, 1992).

Comparisons of losses by failed banks, however, leave little doubt that the presence of insurance was associated with greater bank stress. North Dakota, South Dakota, and Nebraska – the three states that had long-lived, free-entry, compulsory deposit insurance, which provided the worst and most prolonged incentives for risk taking – experienced the most drastic losses by far among the state- and national-chartered systems. While several state-chartered systems experienced shocks comparable to those suffered by these three, in no other cases were the asset shortfalls of insolvent banks nearly large enough to threaten the capital

Table 1.9. *Regression results: Asset growth of state-chartered banks*[a]

Independent variables	Coefficient	Standard error	Significance level
Dependent Variable: Growth in total assets of state-chartered banks, 1914–1920			
Intercept	0.101	0.465	0.829
National bank growth	0.681	0.147	0.000
(Reserve center) × (National bank growth)[b]	–0.132	0.060	0.038
Growth in land values, 1914–1920	0.555	0.333	0.107
Ratio of farm to nonfarm population	–0.283	0.654	0.669
Presence of voluntary or compulsory insurance	0.518	0.165	0.004
$R^2 = 0.670$			
$\bar{R}^2 = 0.607$			
Dependent Variable: Growth in total assets of state-chartered banks, 1914–1920			
Intercept	0.156	0.468	0.741
National bank growth	0.682	0.147	0.000
(Reserve center) × (National bank growth)[b]	–0.115	0.063	0.080
Growth in land values, 1914–1920	0.526	0.334	0.127
Ratio of farm to nonfarm population	–0.328	0.655	0.621
Presence of voluntary insurance	0.327	0.251	0.205
presence of compulsory insurance	0.609	0.189	0.004
$R^2 = 0.683$			
$\bar{R}^2 = 0.607$			

[a] Asset growth is defined as the log difference of total assets. All variables are defined at the state level for a sample of 32 agricultural states.

[b] National bank growth in each state is used as a control for state-chartered bank growth. In reserve-center states, national bank growth may be larger, as it reflects growth of correspondent banks outside the state as well. To control for this difference, I interact national banking growth with an indicator variable for states with reserve centers.

Source: Calomiris, 1992.

of the banking system as a whole (Table 1.10). In contrast, banks in these states showed shortfalls of between 1.5 and 5 times the remaining bank equity of state banks. In light of the differences in the failure experiences of insured and branch banking in the 1920s, it is little wonder that four of the eight states that previously had opted for deposit insurance were among those liberalizing their branching restrictions during this period.

Table 1.10. *Estimated asset shortfalls of failed banks relative to remaining bank equity in "severe-failure" states*

	National banks						State chartered banks						All banks
	Deposits of suspended banks ($000) 1921–30[a]	Number of liquidations relative to suspensions[b]	Size ratio[c]	Rate of asset shortfall[d]	Estimated shortfall[e]	Total bank equity ($000) June 1930	Deposits of suspended banks ($000) 1921–30[a]	Number of liquidations relative to suspensions[b]	Size ratio[c]	Rate of asset shortfall[d]	Estimated shortfall[e]	Total bank equity ($000) June 1930	Ratio of shortfall to equity
Arizona	1,256	0.67	0.83	0.50	349	3,815	15,056	0.80	0.06	0.09	65	8,496	0.03
Colorado	11,003	0.94	0.45	0.40	1,862	13,776	12,187	0.95	0.95	0.32	3,520	10,273	0.22
Georgia	16,538	0.84	0.09	0.49	613	39,064	46,318	0.75	0.70	0.56	13,618	39,805	0.18
Idaho	10,601	0.81	0.65	0.53	2,958	4,612	9,185	0.85	0.63	0.51	2,509	4,983	0.57
Iowa	55,984	0.79	0.50	0.31	6,855	35,750	138,995	0.75	0.66	0.46	31,649	74,935	0.35
Minnesota	28,338	0.97	0.59	0.42	6,812	69,387	80,634	0.77	0.47	0.52	15,174	38,417	0.20
Montana	16,287	0.87	0.44	0.66	4,115	9,999	31,361	0.89	0.47	0.48	6,297	9,947	0.52
Nebraska	13,695	0.80	0.94	0.56	5,767	26,083	78,093	0.85	1.04	0.65	44,872	27,760	0.94
North Dakota	17,438	0.84	0.80	0.55	6,445	9,210	45,199	0.92	1.05	0.83	36,240	9,695	2.26
Oklahoma	27,364	0.72	0.70	0.57	7,861	41,251	38,986	0.79	0.28	0.44	3,794	11,493	0.22
South Carolina	12,153	0.92	0.57	0.49	3,123	11,665	50,970	0.91	0.58	0.34	9,147	17,069	0.43
South Dakota	21,109	0.93	0.60	0.49	5,772	9,477	91,619	0.77	1.00	0.76	53,615	10,848	3.07
Wyoming	9,154	0.91	0.45	0.30	1,125	4,819	7,536	0.80	0.48	0.46	1,331	3,844	0.28

[a] Deposits are defined at the time of bank suspension.
[b] The number of bank liquidations relative to suspensions measures the proportion of suspended banks that were liquidated.
[c] The average size of liquidated banks is divided by the average size of suspended banks to produce this ratio.
[d] The rate of asset shortfall equals 1 minus the ratio of the value of liquidated assets to deposit liabilities.
[e] The estimated shortfall is the product of the preceding four columns.
[f] The all-bank ratio of shortfall to equity divides estimated asset shortfall for state and national banks by the equity of surviving banks of both types.
Source: Calomiris, 1992.

The evidence of moral-hazard and adverse-selection problems in these antebellum and postbellum liability insurance plans provide a fortiori evidence of similar dangers in current federal deposit insurance. The state insurance systems of the 1920s limited interest paid on deposits, typically required ratios of capital to deposits in excess of 10 percent, and were funded by the accumulated contributions of members. By contrast, today's federal insurance does not restrict interest payments to depositors, requires a smaller proportion of capital to deposits, and is supported by the full faith and credit of the federal government. Thus today's financial intermediaries can maintain higher leverage and attract depositors more easily by offering higher rates of return with virtually no risk of default. From this perspective, the unprecedented losses of Texas banks and thrifts in the 1980s should come as no surprise (Horvitz, 1991).

1.6 From history to informed policy

Notwithstanding political-economic explanations, which I have argued can help to explain bank regulation, the regulatory mistakes of American banking history are remarkable and unique. Is there any hope for undoing the mistakes of the past, which have produced a fragmented, unstable, and inefficient banking system? Can we learn usefully from history?

In principle, the lessons are straightforward: The United States should move to an uninsured, interstate branching system with broad powers for banks (for historical perspectives on the advantages of broad powers for banks prior to Glass-Steagall see Osterweis, 1932; Peach, 1941, E. N. White, 1986; and Kaufman and Mote, 1989, 1990). In practice there are many obstacles. Change is often less comprehensive than we would wish, and introducing "lessons from history" is more risky than one might expect. The problem in the openness to "learn" from history is the possibility one will learn incorrectly or too selectively. In the history of banking regulation in the United States policymakers have been perhaps too willing to learn from immediate history. Banking regulation has traditionally been forged in the crucible of crisis. Consider the following examples: the rechartering of the Bank of the United States in the aftermath of the War of 1812; the introduction of entirely new chartering forms (including free banking) as a means of rapidly increasing the number of banks in the 1840s; the creation of the National Banking System as a Civil War measure; the enactment of state deposit insurance plans and the Federal Reserve Act on the heels of the Panic of 1907; branching and consolidation reforms during the agricultural distress of the 1920s; and the

creation of the FDIC and the separation of investment and commercial banking during the trough of the Great Depression. In each case, policymakers in the United States have seemed incapable or unwilling to look farther back than the last crisis, farther ahead than the next election, or beyond the borders of their own nation or state. In some extreme cases, like the Glass-Steagall Act, one can find little rational basis for Congressional action (E. N. White, 1986; Benston, 1989).

While this "knee-jerk" approach to bank regulation has offered great flexibility in times of need, it also has led to myopic and simplistic applications of the lessons of the past. These reactions often have lasting effects, given that important changes are infrequent. Consider the most important changes wrought in the 1930s. An alternative to deposit insurance as a means to stabilize banking – one that was understood and considered – was a movement toward nationwide branch banking. Why was it rejected? One explanation for the failure to move in that direction was the weakening of support for branching by an influential policymaker (Marriner Eccles, the Chairman of the Federal Reserve System) during the debate over the 1935 Banking Act. Doti and Schweikart (1991, pp. 133–34, 139–40, 171–72) argue that Eccles' change of heart regarding branching was attributable in part to his desire to constrain the growth of the Bank of America, possibly due to Eccles' personal dislike of A. P. Giannini (who would have stood to benefit greatly from the reform) or to Eccles' hope to maximize the influence of the Federal Reserve Board by maintaining a fragmented banking system. In the absence of a strong supporter of branch banking in the Roosevelt Administration, congressional hostility to branch banking faced no significant opposition. Once the crisis had passed, any real opportunity for branching reform had disappeared, as well. Eccles' support at a crucial juncture could have made a difference. The lessons of this episode seem to be that the window of opportunity for policymaking is often brief, and the guiding principles of policymakers during such opportune moments often may have little to do with the optimal allocation of scarce resources.

Not only has the accident of the Great Depression had a lasting regulatory effect through the inertia of policy, it has provided selective "lessons from history" that continue to exert a death grip on the imaginations of academics and policymakers, providing seemingly incontrovertible evidence of the inherent instability of banking and the need for constant government intervention to prevent a "meltdown." A better set of lessons would have been how preventable and unusually bad the Great Depression was, even from the jaundiced perspective of earlier American banking history; and more important, that the fragility of

American banking has always been an artifact of a fragmented, inefficient, and uncoordinated unit banking system.

A similar sort of regime-specific tunnel vision has preoccupied much of the recent academic literature on economies of scale and scope in banking. It simply does not make sense to reject the efficiency of a nationwide branching system, or the efficacy of relaxing Glass-Steagall (the economies of which could not possibly show themselves in a restrictive regulatory environment) on the basis of failing to find large economies of scale or scope for banks because the gains from expanded powers and size may be highly regime-dependant (Litan, 1987, pp. 110–11; Brewer, 1989, 1995; Kaufman and Mote, 1989, 1990; Brewer and Mondschean, 1991). Here our own history and the experiences of other countries are a much better guide to the advantages of deregulation.

1.6.1 Which lessons, which cures?

If reform is to be more modest, successful advocates must be selective in the enthusiasm with which they advocate particular reforms. Before suggesting a cure, or a triage ordering – even one informed by history – it helps to know which disease is likely to kill the patient first. There is much that is wrong with U.S. banking today, and there are many competing priority lists for which things to "fix" first. Which historical episodes are most relevant for the current declines and high failure rates of banks? Have banks taken on too much risk in the face of the perverse incentives of deposit insurance, as in the agricultural boom of the 1910s? If so, then a reform of bank capital regulations or a move to "narrow banking" might be sufficient to reverse the trend (for a discussion of the relative merits of these views, see Calomiris, 1991c, 1991d). In contrast, simply allowing bank consolidation or branching as a means to stability, without reforming deposit insurance, may be highly inappropriate in the current context, and may lead to even greater losses. As Boyd and Graham (1991) point out, in today's economy large banks do not seem less likely to fail, possibly because the incentives to take on risk (due to the mispricing of deposit insurance) are largest for these banks. Calomiris (1991c) suggests a means for simultaneously reforming (partly privatizing) deposit insurance and expanding bank branching and other bank powers while avoiding the potential problems of moral hazard due to mispriced deposit insurance.

But there may be bigger problems to address than insurance reform. While there is an accumulating body of evidence that deposit insurance

has increased the risk taking and losses from failure of savings and loans (Barth, et al., 1989; Brewer, 1995), there is little evidence of this as a cause of the current distress of commercial banks, with the significant exception of Texas (Horvitz, 1991) and possibly some large, low-capital, "too-big-to-fail" banks in the East.

Gorton and Rosen (1995) propose a different explanation for bank distress, which sees banks as a protected industry with entrenched management. Declining lending opportunities, a captive deposit base, and bank managements' unwillingness to shrink, according to their view, reduced the portfolio quality of commercial banks in the 1980s. In the absence of a means for banks to be acquired more readily (thus disciplining managers) banks continued to operate inefficiently and failed. The closest historical parallel to this case is banking in the 1880s and 1890s. Lamoreaux's (1991a, 1991b) discussion of the entrenchment of some New England bank managements in the 1890s and their resistance to profitable consolidation is informative. By limiting branching and consolidation in the 1890s and by allowing expansion through lowered capital requirements, bank regulation set the stage for the increased fragmentation and subsequent collapse of the next four decades.

Another pitfall from historical learning in bank regulation is the selective application of lessons, which can be counter productive. For example, the trend in bank consolidation in the 1980s has been to allow within-state, rather than interstate mergers. In some states (notably California) this may reduce the number of competitors so much that the system becomes monopolistic. Aside from the inefficiency of creating monopoly, such a development would tend to reinforce the unfortunate incorrect association between large-scale banking and bank monopolization that has plagued U.S. regulatory history for 200 years. If Bresnahan and Reiss's (1991) findings regarding competition in local retail service markets is applicable to banks, somewhere between 3 and 5 competitors in any local market is adequate for competition. Indeed, Shaffer (1991) applies a similar method to measure the extent of market power in the current highly concentrated Canadian branch banking system and strongly rejects its existence. Thus the concentration ratios for some statewide-branching systems as of 1979, reported in L. J. White (1986, p. 187), probably did not pose a great problem for competition. Within-state mergers with barriers to entry by out-of-state banks, however, would threaten to restrict the field in some states to one or two major banks or bank holding companies, and this is worrisome.

A final caveat to applying the lessons of the past is the mutability of the economic environment. For example, Gorton and Pennacchi (1991) suggest that the technology of banking has changed significantly in the

last decade and that securitization of loans and loan sales indicate a reduction in the asymmetric information problem that gives rise to banking panics (which has motivated deposit insurance, or alternatively, bank consolidation and branching). To the extent that banks increasingly can diversify risk *ex ante* through loan sales and securitization, the historical problems of fragility and inefficient capital allocation associated with fragmentation in banking are reduced.

This reduction does not mean that restrictions on the industrial organization of intermediaries have become irrelevant. So long as there are some links between bank loan portfolios and bank customer bases, entry restrictions will continue to be important impediments to diversification. Despite the important growth of loan sales without recourse, I remain skeptical that loans of many small- and medium-scale industrial and commercial borrowers of commercial banks, and even those of some larger firms, can be sold without recourse to passive investors. For example, the recent empirical findings of Hoshi, Kashyap, and Schartstein (1990b); Gilson, John, and Lang (1990); and Brown, James, and Mooradian (1993) all point to a continuing role for financial intermediaries to manage renegotiations of debt in distress states (rather than simply to screen borrowers initially). In particular, bank recontracting of debt can provide signals to other debt holders as to whether they should force liquidation of the firm or accept a particular form of renegotiation. What is not clear from any of these studies is whether the benefits of bank control over recontracting might depend, at least for some firms, on bank ownership of loans. For some firms an impediment to loan sales may be the incentive problem of delegating recontracting decisions to relatively informed bank agents who do not themselves own the loans. If this were the case, then for some firms and their banks it would be beneficial to allow bank diversification directly through new products and locations.

References

Aharony, Joseph, and Itzhak Swary (1983). "Contagion Effects of Bank Failures: Evidence from the Capital Markets." *Journal of Business* 56 (July), 305–22.

Alston, Lee J., Wayne A. Grove, and David C. Wheelock (1994). "Why Do Banks Fail? Evidence from the 1920s." *Explorations in Economic History* 30 (October), 409–31.

American Bankers Association (1933). *The Guaranty of Bank Deposits.* New York: The Association.

(1935). *The Bank Chartering History of the United States.* New York: The Association.

Asquith, Paul, and David W. Mullins, Jr. (1986). "Equity Issues and Offering Dilution." *Journal of Financial Economics* 15 (January/February), 61–89.

Baer, Herbert L., and Larry R. Mote (1991). "The United States Financial System." Federal Reserve Bank of Chicago working paper.

Bagehot, Walter (1873). *Lombard Street: A Description of the Money Market.* New York: Scribner, Armstrong.

Bankers Encyclopedia Co. *The Bankers Encylcopedia.* New York, semiannual.

Barth, James R., Philip F. Bartholomew, and Carol J. Labich (1989). "Moral Hazard and the Thrift Crisis: An Analysis of 1988 Resolutions." Federal Home Loan Bank Board Research Paper No. 160.

Benston, George J. (1989). *The Separation of Commercial and Investment Banking: The Glass-Steagall Act Revisited and Reconsidered.* Norwell: Kluwer Academic.

Benveniste, Lawrence M., and Paul A. Spindt (1989). "Bringing New Issues to Market: A Theory of Underwriting." Federal Reserve Board Finance and Economics Discussion Paper No. 39.

Bernanke, Ben S. (1983). "Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression." *American Economic Review* 73 (June), 257–76.

Bernanke, Ben S., and Mark L. Gertler (1990). "Financial Fragility and Economic Performance." *Quarterly Journal of Economics 105* (February), 87–114.

Bernanke, Ben S., and Harold James (1991). "The Gold Standard, Deflation, and Financial Crisis in the Great Depression: An International Comparison." In *Financial Markets and Financial Crises*, ed. R. Glenn Hubbard, Chicago: University of Chicago Press, pp. 33–68.

Binder, John J., and Anthony T. Brown (1991). "Bank Rates of Return and Entry Restrictions, 1869–1914." *Journal of Economic History* 51 (March), 47–66.

Board of Governors of the Federal Reserve System (1929). "Branch Banking Developments, June 30 1928." *Federal Reserve Bulletin* (February), 97–105.

(1959). *All Bank Statistics.* Washington, D.C.: Board of Governors.

(1976). *Banking and Monetary Statistics*, 1914–1941. Washington, D.C.: Board of Governors.

Bodenhorn, Howard N. (1990). "Banking and the Integration of Antebellum American Financial Markets, 1815–1859." Rutgers University, Ph.D. diss.

Bogue, Allan G. (1955). *Money at Interest: The Farm Mortgage on the Middle Border.* Lincoln: University of Nebraska Press.

Bordo, Michael D. (1985). "The Impact and International Transmission of Financial Crises: Some Historical Evidence, 1870–1933." *Revista di Storia Economica* 2, 41–78.

Bordo, Michael D., and Angela Redish (1987). "Why Did the Bank of Canada Emerge in 1935?" *Journal of Economic History* 47 (June), 405–18.

Boyd, John H., and Stanley L. Graham (1986). "Risk, Regulation, and Bank Holding Company Expansion into Nonbanking." *Federal Reserve Bank of Minneapolis Quarterly Review 10* (Spring), 2–17.

(1988). "The Profitability and Risk Effects of Allowing Bank Holding Companies to Merge with Other Financial Firms: A Simulation Study." In *The Financial Services Industry in the Year 2000: Risk and Efficiency, Proceedings of a Conference on Bank Structure and Competition*, pp. 476–514.

(1991). "Investigating the Banking Consolidation Trend." *Federal Reserve Bank of Minneapolis Quarterly Review* 15 (Spring), 3–15.

Boyd, John H., Stanley L. Graham, and R. Shawn Hewiitt (1988). "Bank Holding Company Mergers with Nonbank Financial Firms: Their Effects on the Risk of Failure." Federal Reserve Bank of Minneapolis Working Paper No. 417.

Boyd, John H., and Edward C. Prescott (1986). "Financial Intermediary-Coalitions." *Journal of Economic Theory* 38, 211–32.

Bradford, Frederick A. (1940). *The Legal Status of Branching in the United States.* New York: American Bankers Association.

Brandeis, Louis D. (1914). *Other People's Money and How the Bankers Use It.* New York: Frederick A. Stokes.

Breckenridge, Roeliff M. (1899a). "Bank Notes and Branch Banks." *Sound Currency* 6 (April), 49–56.

(1899b). "Branch Banking and Discount Rates." *Sound Currency* 6 (January), 1–14.

(1910). *The History of Banking in Canada.* National Monetary Commission. 61st Congress, 2nd Session. Senate Document 332. Washington, D.C.: U.S. Government Printing Office.

Bremer, C. D. (1935). *American Bank Failures.* New York: Columbia University Press.

Bresnehan, Timothy F., and Peter C. Reiss (1991). "Entry and Competition in Concentrated Markets." *Journal of Political Economy* 99 (October), 977–1009.

Brewer, Elijah (1989). "Relationship between Bank Holding Company Risk and Nonbank Activity." *Journal of Economics and Business* 41, 337–53.

(1995). "The Impact of Deposit Insurance on S&L Share-holders' Risk/Return Trade-offs." *Journal of Financial Services Research* 9, 65–89.

Brewer, Elijah, and Thomas H. Mondschean (1991). "An Empirical Test of the Incentive Effects of Deposit Insurance: The Case of Junk Bonds at Savings and Loan Associations." Federal Reserve Bank of Chicago Working Paper WP-91-18.

Brewer, Elijah, Diana Fortier, and Christine Pavel (1988). "Bank Risk from Nonbank Activities." Federal Reserve Bank of Chicago Economic Perspectives (July/August), 14–26.

Brock, Leslie (1975). *The Currency of the American Colonies, 1700–1764: A Study of Colonial Finance and Imperial Relations.* New York.

Brown, David T., Christopher James, and Robert M. Mooradian (1993). "The Information Content of Distressed Restructurings Involving Public and Private Debt Claims." *Journal of Financial Economics* 33 (February), 93–118.

Bryan, Alfred C. (1899). "History of State Banking in Maryland." *Johns Hopkins University Studies in Historical and Political Science* (January), 1–144.

Bullock, Charles J. (1895). "The Finances of the United States from 1775 to 1789, with Especial Reference to the Budget." *Bulletin of the University of Wisconsin; Economics, Political Science, and History Series I*, 117–273.

(1900). *Essays on the Monetary History of the United States.* New York: Macmillan.

Butters, J. Keith, and John Lintner (1945). *Effect of Federal Taxes on Growing Enterprises.* Boston: Harvard University.

Calomiris, Charles W. (1988a). "Institutional Failure, Monetary Scarcity, and the Depreciation of the Continental." *Journal of Economic History* 48 (March), 47–68.

(1988b). "The Depreciation of the Continental: A Reply." *Journal of Economic History* 48 (September), 693–98.

(1989). "Deposit Insurance: Lessons from the Record." *Federal Reserve Bank of Chicago Economic Perspectives* (May/June), 10–30.

(1990). "Is Deposit Insurance Necessary? A Historical Perspective." *Journal of Economic History* 50 (June), 283–95.

(1991a). "The Motives of U.S. Debt-Management Policy, 1790–1880: Efficient Discrimination and Time Consistency." *Research in Economic History* 13, pp. 67–105.

(1991b). "Comment on 'Information Problems and Banks' Specialization in Short-Term Commercial Lending: New England in the Nineteenth Century'." In *Inside the Business Enterprise: Historical Perspectives on the Use of Information*, ed. Peter Temin Chicago: University of Chicago Press, pp. 195–203.

(1991c). "Getting the Incentives Right in the Current Deposit Insurance System: Successes from the Pre-FDIC Era. "In *Reform of Deposit Insurance and the Regulation of Depository Institutions in the 1990s*, eds. James Barth and Dan Brumbough. New York: Harper Business, 13–35.

(199ld). "Comment on International Bank Capital Standards." *Research in International Business and Finance*, 9, pp. 75–81.

(1992). "Do Vulnerable Economies Need Deposit Insurance? Lessons from U.S. Agriculture in the 1920s." In *If Texas Were Chile: A Primer on Bank Regulation*, ed. Philip L. Brock. San Francisco: The Sequoia Institute.

Calomiris, Charles W., and Gary Gorton (1991). "The Origins of Banking Panics: Models, Facts, and Bank Regulation." In *Financial Markets and Financial Crises.* ed. R. Glenn Hubbard Chicago. University of Chicago Press, pp. 107–73.

Calomiris, Charles W., and R. Glenn Hubbard (1989). "Price Flexibility, Credit Availability, and Economic Fluctuations: Evidence from the United States, 1894–1909." *Quarterly Journal of Economics* 104 (May), 429–52.

(1990). "Firm Heterogeneity, Internal Finance, and 'Credit Rationing'." *The Economic Journal* 100 (March), 90–104.

(1995). "Internal Finance, and Investment: Evidence from the Undistributed Profits Tax of 1936–1937." *Journal of Business* 68 (October), 443–482.

(1996) "International Adjustment Under the Classical Gold Standard: Evidence for the U.S. and Britain, 1879–1914." In *Modern Perspectives on the Gold Standard*, eds. T. Boyonmi, B. Eichengreen, and M. Taylor. Cambridge: Cambridge University Press, 186–217.

Calomiris, Charles W., R. Glenn Hubbard, and James H. Stock (1986). "The Farm Debt Crisis and Public Policy." *Brookings Papers on Economic Activity* 2, 441–79.

Calomiris, Charles W., and Charles M. Kahn (1991). "The Role of Demandable Debt in Structuring Optimal Banking Arrangements." *American Economic Review* 81 (June), 497–513.

Calomiris, Charles W., and Charles M. Kahn (1996). "The Efficiency of Self-Regulated Payments Systems: Learning from the Suffolk System." *Journal of Money, Credit and Banking* 28 (November), Part 2, 766–97.

Calomiris, Charles W., Charles M. Kahn, and Stefan Krasa (1991). "Optimal Contingent Bank Liquidation Under Moral Hazard." Federal Reserve Bank of Chicago, Working Paper WP-91-13.

Calomiris, Charles W., and Larry Schweikart (1988). "Was the South Backward? North-South Differences in Antebellum Banking." Columbia University working paper.

(1991). "The Panic of 1857: Origins, Transmission, and Containment." *Journal of Economic History* 51 (December), pp. 807–34.

Campbell, Tim, and William Kracaw (1980). "Information Production, Market Signalling and the Theory of Financial *Intermediation."Journal of Finance* 35 (September), 863–81.

Cannon, James G. (1910). *Clearing Houses.* National Monetary Commission. 61st Congress, 2nd Session. Senate Document 491. Washington. D.C.: U.S. Government Printing Office.

Capie, Forrest, and Alan Webber (1985). *A Monetary History of the United Kingdom, 1870–1982, Volume I.* London: George Allen and Unwin.

Carosso, Vincent P. (1970). *Investment Banking in America.* Cambridge: Harvard University Press.

Cartinhour, Gaines T. (1931). *Branch, Group and Chain Banking.* New York: Macmillan.

Champ, Bruce, Bruce D. Smith, and Stephen D. Williamson (1991). "Currency Elasticity and Banking Panics: Theory and Evidence." Cornell University, CAE Working Paper No. 91-14.

Chandler, Alfred D. (1977). *The Visible Hand: The Managerial Revolution in American Business.* Cambridge: Harvard University Press.

Chapman, John M. (1934). *Concentration of Banking: The Changing Structure and Control of Banking in the United States.* New York: Columbia University Press.

Chapman, John M., and Ray B. Westerfield (1942). *Branch Banking: Its Historical and Theoretical Position in America and Abroad.* New York: Harper and Brothers.

Chari, V. V. (1989). "Banking Without Deposit Insurance or Bank Panics: Lessons

from a Model of the U.S. National Banking System." *Federal Reserve Bank of Minneapolis Quarterly Review* (Summer), 3–19.

Davis, Andrew M. (1900). *Currency and Banking in the Province of the Massachusetts Bay.* New York: Macmillan.

(1911). *Colonial Currency Reprints. Boston.* Reprinted in New York by Augustus Kelley, 1970.

Davis, Lance E. (1965). "The Investment Market, 1870–1914: The Evolution of a National Market." *Journal of Economic History* 25 (September), 355–93.

DeLong, J. Bradford (1991). "Did J. P. Morgan's Men Add Value? In *Inside the Business Enterprise: Historical Perspectives on the Use of Information*, ed. Peter Temin. Chicago: University of Chicago Press, 205–36.

Dewey, Davis R. (1910). *State Banking Before the Civil War.* National Monetary Commission. 61st Congress, 2nd Session. Senate Document 581. Washington, D.C.: U.S. Government Printing Office.

Diamond, Douglas (1984). "Financial Intermediation and Delegated Monitoring." *Review of Economic Studies* 51 (July), 393–414.

Dornbusch, Rudiger, and Jacob A. Frenkel (1984). "The Gold Standard and the Bank of England in the Crisis of 1847." In *A Retrospective on the Classical Gold Standard, 1821–1931*, eds. Michael D. Bordo and Anna J. Schwartz. Chicago: University of Chicago Press, 233–64.

Doti, Lynne P., and Larry Schweikart (1991). *Banking in the American West: From the Gold Rush to Deregulation.* Norman: University of Oklahoma Press.

Duncombe, Charles (1841). *Duncombe's Free Banking.* Cleveland: Sanford and Co.

Dutton, John (1984). "The Bank of England and the Rules of the Game under the International Gold Standard: New Evidence." In *A Retrospective on the Classical Gold Standard*, eds. Michael D. Bordo and Anna J. Schwartz. Chicago: University of Chicago Press, pp. 173–95.

Eichengreen, Barry (1984a). "Currency and Credit in the Gilded Age." *Research in Economic History* 3 (supplement), 87–114.

(1984b). "Mortgage Interest Rates in the Populist Era." American *Economic Review* 74 (December), 995–1015.

(1992). *Golden Fetters: The Gold Standard and the Great Depression, 1919–1939.* Oxford: Oxford University Press.

Ernst, Joseph (1973). *Money and Politics in America, 1755–1775.* Chapel Hill: University of North Carolina Press.

Evanoff, Douglas D. (1988). "Branch Banking and Service Accessibility." *Journal of Money, Credit and Banking* 20 (May), 191–202.

Fama, Eugene F. (1980). "Banking in the Theory of Finance."*Journal of Monetary Economics* 6 (January), 39–58.

Federal Deposit Insurance Corporation (1956). *Annual Report.* Washington, D.C.: FDIC.

Fenstermaker, J. Van (1965). *The Development of American Commercial Banking, 1782–1837.* Kent, Ohio: Kent State University.

Fisher, Irving (1933). "The Debt-Deflation Theory of Great Depressions." *Econometrica* 1, 337–57.

Fishlow, Albert (1965). *American Railroads and the Transformation of the AnteBellum Economy.* Cambridge: Harvard University Press.

Foulke, Roy A. (1941). *The Sinews of American Commerce.* New York: Dunn and Bradstreet.

Franklin, Benjamin (1729). "A Modest Inquiry into the Nature and Necessity of a Paper Currency." In *The Works of Benjamin Franklin, II*, ed. Jared Sparks. p. 1840.

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

Gage, Lyman J. (1906). "Currency Reform a Necessity." *Moody's Magazine*, 457–67.

Gale, Douglas, and Martin Hellwig (1985). "Incentive-Compatible Debt Contracts: The One-Period Problem." *Review of Economic Studies* (October), 647–63.

Gendreau, Brian (1990). "Federal Reserve Policy and the Great Depression." University of Pennsylvania working paper.

Gillett, A. D. S. (1900). "Better Credit Facilities for our Rural Communities." *Sound Currency* 7. 183–208.

Gilson, Stuart C., Kose John, and Larry H. P. Lang (1990). "Troubled Debt Restructurings." *Journal of Financial Economics* 27, 315–53.

Golembe, Carter H. (1960). "The Deposit Insurance Legislation of 1933: An Examination of Its Antecedants and Its *Purposes." Political Science Quarterly* (June), 189–95.

Golembe, Carter H., and Clark S. Warburton (1958). *Insurance of Bank Obligations in Six States During the Period 1829–1866.* Washington, D.C.: Federal Deposit Insurance Corporation.

Gorton, Gary (1985). "Clearing Houses and the Origin of Central Banking in the U.S." *Journal of Economic History* 45 (June), 277–83.

(1989). "Self-Regulating Bank Coalitions." University of Pennsylvania working paper.

(1990). "Free Banking, Wildcat Banking, and the Market for Bank Notes." University of Pennsylvania working paper.

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 (November), 458–68.

Gorton, Gary, and George Pennacchi (1991). "Banks and Loan Sales: Marketing Non-Marketable Assets." NBER Working Paper No. 3551.

Gorton, Gary, and Richard Rosen (1995). "Corporate Control, Portfolio Choice and the Decline of Banking," *Journal of Finance* 50 (December), 1377–420.

Govan, Thomas (1936). "The Banking and Credit System in Georgia." Vanderbilt University, Ph.D. dissertation.

Grammatikos, Theoharry, and Anthony Saunders (1990). "Additions to Bank Loan-Loss Reserves: Good News or Bad News?" *Journal of Monetary Economics* 25 (March), 289–304.

Greef, Albert O. (1938). *The Commercial Paper House in the United States.* Cambridge: Harvard University Press.

Hamilton, James (1987). "Monetary Factors in the Great Depression." *Journal of Monetary Economics* 19 (March), 145–69.

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

Handlin, Oscar, and Mary F. Handlin (1947). *Commonwealth: A Study of the Role of Government in the American Economy, Massachusetts, 1774–1861.* New York: New York University Press.

Hartz, Louis (1948). *Economic Policy and Democratic Thought: Pennsylvania, 1776–1860.* Cambridge: Harvard University Press.

Haubrich, Joseph G. (1990). "Nonmonetary Effects of Financial Crises: Lessons from the Great Depression in Canada." *Journal of Monetary Economics* 25 (March), 223–52.

Horvitz, Paul M. (1991). "The Causes of Texas Bank and Thrift Failures." In *If Texas Were Chile: A Primer on Bank Regulation*, ed. Phillip L. Brock. San Francisco: The Sequoia Institute.

Horwitz, Morton J. (1971). "The Emergence of an Instrumental Conception of American Law, 1780–1820." *Perspectives in American History* 5, 285–326.

(1977). *The Transformation of American Law, 1780–1860.* Cambridge: Harvard University Press.

(1985). "Santa Clara Revisited: The Development of Corporate Theory." *West Virginia Law Review* 88, 173–224.

Hoshi, Takeo, Anil Kashyap, and David Scharfstein (1990a). "Bank Monitoring and Investment: Evidence from the Changing Structure of Japanese Corporate Banking Relationships." In *Asymmetric Information, Corporate Finance, and Investment*, ed. R. Glenn Hubbard. Chicago: University of Chicago Press, pp. 105–26.

(1990b). "The Role of Banks in Reducing the Costs of Financial Distress." *Journal of Financial Economics 27* (September), 67–88.

(1991). "Corporate Structure, Liquidity, and Investment: Evidence from Japanese Industrial Groups." *Quarterly Journal of Economics* 106 (February), 33–60.

Hughes, Jonathan R. T. (1960). *Fluctuations in Trade, Industry, and Finance: A Study of British Economic Development, 1850–1860.* Oxford: Oxford University Press.

(1976). *Social Control in the Colonial Economy.* Charlottesville: University of Virginia Press.

(1984). "Comment on 'The Gold Standard and the Bank of England in the Crisis of 1847." In *A Retrospective on the Classical Gold Standard, 1821–*

1931, eds. Michael D. Bordo and Anna J. Schwartz. Chicago: University of Chicago Press, pp. 265–71.

(1991). *The Governmental Habit Redux.* Princeton: Princeton University Press.

Hunt's Merchants' Magazine. New York: G. W. and J. A. Wood.

Hurst, James W. (1970). *The Legitimacy of the Business Corporation.* Charlottesville: University of Virginia Press.

(1973). *A Legal History of Money in the United States, 1774–1970.* Lincoln: University of Nebraska Press.

James, Christopher (1987). "Some Evidence on the Uniqueness of Bank Loans." *Journal of Financial Economics* 19, 217–35.

James, Christopher, and Peggy Wier (1989). "Are Bank Loans Different? Some Evidence from the Stock *Market." Journal of Applied Corporate Finance*, 46–54.

(1990). "Borrowing Relationships, Intermediation, and the Cost of Issuing Public Securities." *Journal of Financial Economics* 28 (November/December), 149–72.

James, John A. (1976a). "The Development of the National Money Market, 1893–1911." *Journal of Economic History* 36 (December), 878–97.

(1976b). "Banking Market Structure, Risk, and the Pattern of Local Interest Rates in the United States, 1893–1911." *Review of Economics and Statistics* 58 (November), 453–62.

(1978). *Money and Capital Markets in Postbellum America.* Princeton: Princeton University Press.

James, Marquis, and Bessie R. James (1954). *Biography of a Bank: The Story of Bank of America.* New York: Harper and Brothers.

Jauncey, L. C. (1933). *Australia's Government Bank.* London: Cranley and Day.

Johnson, Joseph F. (1910). *The Canadian Banking System.* National Monetary Commission. 61st Congress, 2nd Session. Senate Document 583. Washington, D.C.: US. Government Printing Office.

Kaufman, George G., and Larry Mote (1989). "Securities Activities of Commercial Banks: The Current Economic and Legal Environment." Federal Reserve Bank of Chicago working paper.

(1990). "Glass-Steagall Repeal by Regulatory and Judicial Reinterpretation." *Banking Law Journal* (September–October), 388–421.

Kindleberger, Charles P. (1984). *A Financial History of Western Europe.* London: George Allen and Unwin.

Klebaner, Benjamin J. (1990). *American Commercial Banking: A History.* Boston: Twayne Publishers.

Knox, John J. (1900). *A History of Banking in the United States.* New York: Bradford Rhodes.

Korajczyk, Robert A., Deborah Lucas, and Robert L. McDonald (1990). "Understanding Stock Price Behavior Around the Time of Equity Issues." In *Asymmetric Information, Corporate Finance, and Investment*, ed. R. Glenn Hubbard. Chicago: University of Chicago Press, pp. 257–78.

Kryzanowski, Lawrence, and Gordon S. Roberts (1989). "The Performance of the

Canadian Banking System, 1920–1940." In *Banking System Risk: Charting a New Course, Proceedings of the 25th Annual Conference on Bank Structure and Competition.* Chicago: Federal Reserve Bank of Chicago.

Laderman, Elizabeth S., Ronald H. Schmidt, and Gary C. Zimmerman (1991). "Location, Branching, and Bank Portfolio Diversification: The Case of Agricultural Lending." *Federal Reserve Bank of San Francisco Economic Review* (Winter), 24–37.

Lamoreaux, Naomi R. (1991a). "Information Problems and Banks' Specialization in Short-Term Commercial Lending: New England in the Nineteenth Century." In *Inside the Business Enterprise: Historical Perspectives on the Use of Information*, ed. Peter Temin. Chicago: University of Chicago Press, pp. 154–95.

(1991b). "Bank Mergers in Late Nineteenth-Century New England: The Contingent Nature of Structural Change." *Journal of Economic History* 51 (September), 537–58.

Lamy, Robert, and G. Rodney Thompson (1986). "Penn Square, Problem Loans, and Insolvency Risk." *Journal of Financial Research* 9 (Summer), 167–83.

Lee, Everett S., Ann Ratner Miller, Carol P. Brainerd, and Richard A. Easterlin (1957). *Population Redistribution and Economic Growth, United States 1870–1950.* Philadelphia: American Philosophical Society.

Leland, Hayne, and David Pyle (1977). "Informational Asymmetries, Financial Structure, and Financial Intermediation." *Journal of Finance* 32 (May), 371–87.

Lester, Richard A. (1939). *Monetary Experiments: Early American and Recent Scandinavian.* Princeton: Princeton University Press.

Litan, Robert E. (1985). "Evaluating and Controlling the Risks of Financial Product Deregulation." *Yale Journal on Regulation* 3 (Fall), 1–52.

(1987). *What Should Banks Do?* Washington, D.C.: The Brookings Institution.

Martin, David (1974). "Metallism, Small Notes, and Jackson's War with the B.U.S." *Explorations in Economic History* 11 (Spring), 227–47.

McCusker, John J. (1978). *Money and Exchange in Europe and America, 1600–1775: A Handbook.* Chapel Hill: University of North Carolina Press.

Meinster, David R., and Rodney D. Johnson (1979). "Bank Holding Company Diversification and the Risk of Capital Impairment." *Bell Journal of Economics* 10 (Autumn), 683–94.

Mengle, David L. (1990). "The Case for Interstate Branch Banking." *Federal Reserve Bank of Richmond Economic Review* 76 (November/December), 3–17.

Michener, Ronald (1987). "Fixed Exchange Rates and the Quantity Theory In Colonial America." *Carnegie-Rochester Conference Series on Public Policy* 27 (Autumn), 233–308.

Michener, Ronald (1988). "Backing Theories and the Currencies of Eighteenth-Century America: A Comment." *Journal of Economic History* 48 (September), 682–92.

Miron, Jeffrey A. (1986). "Financial Panics, the Seasonality of the Nominal Interest Rate, and the Founding of the Fed." *American Economic Review 76* (March), 125–40.

Moen, Jon, and Ellis W. Tallman (1992). "The Bank Panic of 1907: The Role of Trust Companies." *Journal of Economic History* 52 (September), 610–630.

Mullineaux, Donald J. (1987). "Competitive Moneys and the Suffolk Bank System: A Contractual Perspective." *Southern Economic Journal* (April), 884–97.

Munn, Charles W. (1981). *The Scottish Provincial Banking Companies. 1747–1864.* Edinburgh: John Donald.

Musumeci, James, and Joseph Sinkey (1988). "The International Debt Crisis and the Signalling Content of Bank Loan-Loss-Reserve Decisions." University of Georgia working paper.

Myers, Margaret G. (1931). *The New York Money Market: Origins and Development.* New York: Columbia University Press.

Myers, Stewart, and Nicholas Majluf (1984). "Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have." *Journal of Financial Economics* 13, 187–221.

Nettles, Curtis P. (1934). *The Money Supply of the American Colonies Before 1720.* Madison: University of Wisconsin Press.

Neuberger, Hugh, and Houston H. Stokes (1974). "German Banks and German Growth, 1883–1913: An Empirical View." *Journal of Economic History* 34 (September), 710–32.

Osterweis, Steven L. (1932). "Security Affiliates and Security Operations of Commercial Banks." *Harvard Business Review* 11 (October), 124–31.

Peach, W. N. (1941). *The Security Affiliates of National Banks.* Baltimore: Johns Hopkins Press.

Pippenger, John (1984). "Bank of England Operations, 1893–1913." In *A Retrospective on the Classical Gold Standard, 1821–1931*, eds. Michael D. Bordo and Anna J. Schwartz. Chicago: University of Chicago Press, pp. 203–27.

Pope, David (1989). "Free Banking in Australia Before World War I." Australian National University working paper.

Pozdena, Randall J. (1991). "Is Banking Really Prone to Panics?" *Federal Reserve Bank of San Francisco Weekly Letter 91-35* (October 11).

Ransom, Roger L., and Richard Sutch (1977). *One Kind of Freedom: The Economic Consequences of Emancipation.* Cambridge: Cambridge University Press.

Redlich, Fritz (1951). *The Molding of American Banking: Men and Ideas.* New York: Hafner Publishing.

Riefler, Winfield W. (1930). *Money Rates and Money Markets in the United States.* New York: Harper and Brothers.

Riesser, Jacob (1911). *The Great German Banks and Their Concentration, in Connection with the Economic Development of Germany.* Translation of third edition. Washington, D.C.: United States Government Printing Office.

Robb, Thomas B. (1921). *The Guaranty of Bank Deposits.* Boston: Houghton Mifflin.

Rockoff, Hugh (1972). "The Free Banking Era: A Re-Examination." University of Chicago, Ph.D. dissertation.

Root, L. Carroll (1897). "Canadian Bank-Note Currency." *Sound Currency* 4 (May), 1–16.

Root, L. Carroll (1901). "Twenty Years of Bank Currency Based on General Commercial Assets." *Sound Currency* 8 (December), 209–32.

Schembri, Lawrence L., and Jennifer A. Hawkins (1988). "The Role of Canadian Chartered Banks in U.S. Banking Crises: 1870–1914." Carleton University working paper.

Schultz, William J. (1949). *Credit and Collection Management.* New York: Prentice Hall.

Schweikart, Larry (1988a). *Banking in the American South from the Age of Jackson to Reconstruction.* Baton Rouge: Louisiana State University Press.

Schweikart, Larry (1988b). "Jacksonian Ideology, Currency Control and Central Banking: A Reappraisal." *The Historian* (November), 78–102.

Schweitzer, Mary M. (1989). "State-Issued Currency and the Ratification of the U.S. Constitution." *Journal of Economic History* 49 (June), 311–22.

Schweitzer, Robert (1989). "How Do Stock Returns React to Special Events?" *Federal Reserve Bank of Philadelphia Business Review* (July/August), 17–29.

Sheard, Paul (1989). "The Main Bank System and Corporate Monitoring and Control in Japan." *Journal of Economic Behavior and Organization* 11, 399–422.

Sklar, Martin J. (1988). *The Corporate Reconstruction of American Capitalism, 1890–1916: The Market, the Law, and Politics.* Cambridge: Cambridge University Press.

Smith, Bruce D. (1985a). "Some Colonial Evidence on Two Theories of Money: Maryland and the Carolinas." *Journal of Political Economy* 93 (December), 1178–1211.

Smith, Bruce D. (1985b). "American Colonial Monetary Regimes: The Failure of the Quantity Theory of Money and Some Evidence in Favor of an Alternate View." *Canadian Journal of Economics* 18 (August), 531–65.

Smith, Hilary H. (1987). "Agricultural Lending: Bank Closures and Branch Banking." *Federal Reserve Bank of Dallas Economic Review* (September), 27–38.

Snowden, Kenneth A. (1987). "Mortgage Rates and American Capital Market Development in the Late Nineteenth Century." *Journal of Economic History 47* (September), 671–91.

Steiner, William H. (1922). *The Mechanism of Commercial Credit: Terms of Sale and Trade Acceptances.* New York: D. Appleton.

Stiglitz, Joseph E., and Andrew Weiss (1981). "Credit Rationing in Markets with Imperfect Information." American *Economic Review 71* (June), 393–410.

Sumner, William G. (1896). A *History of Banking in the United States.* New York: Journal of Commerce and Commercial Bulletin.

Sushka, Marie E., and W. Brian Barrett (1984). "Banking Structure and the National Capital Market, *1869–1914.*" *Journal of Economic History* 44 (June), 463–77.

Swary, Itzhak (1986). "Stock Market Reaction to Regulatory Action in the Continental Illinois Crisis." *Journal of Business* 59 (July), 451–73.

Sylla, Richard (1969). "Federal Policy, Banking Market Structure, and Capital Mobilization in the United States, 1863–1913." *Journal of Economic History* 29 (December), 657–86.

Sylla, Richard (1975). *The American Capital Market, 1869–1914.* New York: Arno Press.

Sylla, Richard, John B. Legler, and John J. Wallis (1987). "Banks and State Public Finance in the New Republic: The United States, 1790–1860." *Journal of Economic History* 47 (June), 391–404.

Temin, Peter (1969). *The Jacksonian Economy.* New York: W. W. Norton.

Thies, Clifford F., and Daniel A. Gerlowski (1989). "Deposit Insurance: A History of Failure." *Cato Journal* 8 (Winter), 677–93.

Tilly, Richard H. (1966). *Financial Institutions and Industrialization in the Rhineland, 1815–1870.* Madison: University of Wisconsin Press.

Treman, R. H. (1919). *Trade Acceptances, What They Are and How They Are Used.* New York: American Acceptance Council.

U.S. Department of Commerce (1975). *Historical Statistics of the United States: Colonial Times to 1970.* Washington, D.C.: U.S. Government Printing Office.

U.S. House of Representatives (1930). Branch, Chain, and Group Banking. Hearings Before the Committee on Banking and Currency, 71st Congress, 2nd Session. Washington, D.C.: U.S. Government Printing Office.

Vreeland, Edward B., John W. Weeks, and Robert W. Bonynge (1910). *Interviews on the Banking and Currency Systems of Canada.* National Monetary Commission. 61st Congress, 2nd Session. Senate Document 584. Washington, D.C.: U.S. Government Printing Office.

Wall, Larry D. (1987). "Has Bank Holding Companies Diversification Affected Their Risk of Failure?" *Journal of Economics and Business* 39 (November), 313–26.

Wall, Larry D., and David R. Petersen (1990). "The Effect of Continental Illinois' Failure on the Financial Performance of Other Banks." *Journal of Monetary Economics* 26 (August), 77–100.

White, Eugene N. (1982). "The Political Economy of Banking Regulation, 1864–1933." *Journal of Economic History* 42 (March), 33–40.

White, Eugene N. (1983). *The Regulation and Reform of the American Banking System, 1900–1929.* Princeton: Princeton University Press.

White, Eugene N. (1984a). "A Reinterpretation of the Banking Crisis of 1930." *Journal of Economic History* 44 (March), 119–38.

White, Eugene N. (1984b). "Voting for Costly Regulation: Evidence from Banking Referenda in Illinois, 1924." *Southern Economic Journal,* 1084–98.

White, Eugene N. (1985). "The Merger Movement in Banking, 1919–1933." *Journal of Economic History* 45 (June), 285–91.

White, Eugene N. (1986). "Before the Glass-Steagall Act. An Analysis of the Investment Banking Activities of National Banks." *Explorations in Economic History* 23 (January), 33–55.

White, Horace (1902). "Branch Banking: Its Economies and Advantages." *Sound Currency* 9 (June), 51–64.

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

White, Lawrence J. (1986). "The Partial Deregulation of Banks and Other Depository Institutions." In *Regulatory Reform: What Actually Happened.* Boston: Little, Brown, eds. Leonard W. Weiss and Michael W. Klass. pp. 169–209.

Wicker, Elmus (1985). "Colonial Monetary Standards Contrasted: Evidence from the Seven Years' War." *Journal of Economic History* 45 (December), 869–84.

Williamson, Stephen D. (1986). "Costly Monitoring, Financial Intermediation, and Equilibrium Credit Rationing." *Journal of Monetary Economics* 18 (September), 159–80.

Williamson, Stephen D. (1989). "Bank Failures, Financial Restrictions, and Aggregate Fluctuations: Canada and the United States, 1870–1913." *Federal Reserve Bank of Minneapolis Quarterly Review* (Summer), 20–40.

Willit, Virgil (1930). *Selected Articles on Chain, Group and Branch Banking.* New York: H. W. Wilson.

Withers, Hartley, R. H. Inglis Palgrave, and others (1910). *The English Banking System.* National Monetary Commission. 61st Congress, 2nd Session. Senate Document 492. Washington, D.C.: U.S. Government Printing Office.

Wright, Gavin (1979). "Cheap Labor and Southern Textiles Before 1880." *Journal of Economic History 39* (September), 655–80.

Wright, Gavin (1986). *Old South, New South.* New York: Basic Books.