

FDIC Banking Review

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This year's *FDIC Banking Review* features papers from the FDIC's Future of Banking project. Initiated by Chairman Donald Powell, the study projects likely trends in the structure and performance of the banking industry and anticipates the policy issues that will confront the industry and the regulatory community in the coming years.

The Future of Banking in America

Summary and Conclusions (page 1)

by George Hanc

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The Effect of U.S. Banking on Payment System Changes (page 67)

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The author discusses the major payments methods with emphasis on the major interbank networks and their implications for banks and the regulatory community.

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The Future of Banking in America

Summary and Conclusions

George Hanc*

Purpose and Approach of the Future-of-Banking Study

The purpose of the FDIC's study of the future of U.S. banking is to project likely trends in the structure and performance of the banking industry over the next five to ten years and to anticipate the policy issues that will confront the industry and the regulatory community.¹

This study comes 17 years after the FDIC's last comprehensive consideration of the future of banking.² That earlier study, *Mandate for Change*, was undertaken against a background of increased competition for banks, weak profitability, and a reduced market share in commercial lending. The study recommended product and geographic deregulation, with appropriate safety-and-soundness safeguards, to ensure the viability of the banking industry.

Since then, the environment for banking has changed radically. Legislation was enacted to permit both interstate branching and combinations of banks, securities firms, and insurance companies. A generally strong economy, as well as deregulation, led to marked improvements in bank profitability and capital positions. At the

same time, however, the deregulation of products and markets intensified competition among banks and between banks and nonbank financial companies. In addition, together with improved information technology, deregulation accelerated the consolidation of the banking industry through mergers and acquisitions and set the stage for the establishment of huge banking organizations of unprecedented size and complexity.

Although the condition of the industry has greatly improved over the past decade or so, banks and the regulatory community will face significant challenges in the years ahead. Competition will continue to be intense, and few banks, if any, will be insulated from its effects. In the view of some observers, rapid consolidation of the banking industry will continue and may adversely affect the availability of credit for small businesses and local economies. Large, complex banking organizations may pose difficult supervisory issues, while

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¹ Throughout the paper, "this study" refers to the FDIC's collective project on the future of banking (FOB), consisting of the 16 papers listed in the first section of the references.

² FDIC (1987).

the burden of reporting and other regulatory requirements will fall heavily and disproportionately on small banks unless remedial action is taken. Further advances in information technology will permit the development of new products, services, and risk-management techniques but may also pose important competitive and supervisory issues. Nonbank entities will continue to offer bank-like products in competition with banks, raising anew the question of whether banks are still “special” and, more fundamentally, whether banks are sufficiently different from nonbank firms to justify the maintenance of a safety net for banks.

It is useful, therefore, to try to chart the course of the banking industry in the next five to ten years and to consider what policy issues the industry and regulators will face. The authors of this study do not pretend to be clairvoyant. They are mindful of the many financial predictions that were once offered with confidence but turned out to be wrong or premature. This study is perhaps best described as an exercise in strategic thinking. Its approach is to analyze what has happened in the recent past, consider in detail reasons for expecting recent trends to continue or to change, and draw the consequences for bank and regulatory policies. As always, uncertainties abound, and events that may now appear fairly improbable may in fact shape the future. This paper closes with a discussion of a number of such possible events.

The future-of-banking study addresses three broad questions:

1. What changes in the environment facing banking can be expected in the next five to ten years?
2. What are the prospects for different sectors of the banking industry in this anticipated environment? Because the banking industry is not monolithic and different segments of the industry have, to some degree, different opportunities and vulnerabilities, the study considers separately the prospects for large, complex banking organiza-

tions; regional and other midsize banks; community banks; and limited-purpose banks.

3. What policy issues are the industry and regulators likely to face in the years ahead? Separate consideration is given to

- *Consolidation of the banking industry:* What are the prospects for, and implications of, further consolidation of the banking industry, particularly relating to safety and soundness, market concentration, and small business credit?
- *Combinations of banking and commerce:* What are the pros and cons of permitting common ownership or control of banks and commercial enterprises? What are the options for regulating such combinations so as to protect the bank safety net and avoid conflicts of interest?
- *Large-bank supervisory issues:* What are the implications for bank supervision of the growing complexity of large banking organizations?
- *Governance issues:* Recent corporate scandals have led to efforts to hold corporate directors and managements to a higher standard. What are the likely effects on banking and what should banks do to avoid governance problems?
- *Financial services regulatory issues:* What should be done, either under existing law or through new legislation, to enhance the effectiveness of the federal financial regulatory system?
- *Bank liability structure:* What are the implications for supervision and deposit insurance of changes in the structure of bank liabilities?
- *Economic role of banks:* How does the increased role of nonbank financial institutions and markets affect the rationale for a safety net for banks?

The Environment for Banking

The future of banking will be shaped, in large part, by the environment—economic, demographic, regulatory, technological, payment-system, and competitive—in which it operates.

Economic Environment

In the decade ahead, a climate of moderate economic growth without severe or long-lasting recessions would be conducive to the strong growth and profitability of the banking industry. In such a climate, bank failures would be few in number and idiosyncratic in nature—typically caused by managerial and internal control weaknesses, excessive risk taking, or fraud, rather than by broader economic forces. Such, at least, has been the pattern of bank failures in most of the years since the inception of the FDIC, with the principal and very large exception of the 1980s and early 1990s. However, the economy is not immune to speculative bubbles like those occurring in the energy, commercial real estate, and agriculture sectors in the 1980s, which were among the important causes of the wave of bank failures during that period, or the more recent bubble in communications technology in the 1990s. Boom-and-bust conditions in markets in which banks participate could once again produce a significant number of failures caused by economic conditions, although the banking industry is stronger than it was on the eve of the 1980s, geographic diversification has reduced the vulnerability of many banks to local economic disturbances, and bank supervision has been strengthened.

Demographic Environment

Among the main demographic trends likely to affect banking in the years ahead are the aging of the population and the continued entry of immigrants.³ In the next decade or more, the baby boomers (people born during the post-World War II bulge in the birth rate) will retire or approach retirement. There are more than 80 million baby

boomers, and they account for 30 percent of the total U.S. population. Life-cycle theory and the available data suggest that they will be engaged in liquidating assets to a greater degree—and will make less use of credit—than younger age groups. Also compared with younger age groups, they will hold a greater proportion of their wealth in liquid assets, including bank deposits. At the same time, baby boomers may be less averse to risk than similar age groups that had experience with the Great Depression. Therefore, the composition of the baby boomers' wealth is likely to be affected not only by their stage in the life cycle but also by their overall motives for saving and their investment experience with equities and other market instruments. Baby boomers will live longer than the preceding generation and may find that their post-retirement incomes will be inadequate to support costs such as health care. Many, though, will inherit wealth from their parents and will need financial services for their retirement planning. Banks will therefore be able to profit by broadening their services to meet baby boomers' financial preferences.

Since 1990, the United States has attracted 9 million immigrants. Of the total U.S. population, 33 million, or 11 percent, are immigrants. Though the number of new immigrants is expected to increase, immigrants as a whole may not supply a proportional amount of funds for bank deposits because of low incomes and lack of legal documentation. In addition, immigrants often send large remittances back to their home countries. Low rates of home ownership and reliance on borrowing from informal sources such as family and friends are other factors likely to keep demand for bank credit low. Immigrants demand fewer mortgage loans because of their lower rate of home ownership and tend to make larger down payments than native-born Americans. Banks now earn service fees for transferring remittances and, in connection with this activity, may be able to provide incentives for immigrants to open

³This section is based on the FOB paper by Jiangli. Long-term reductions in population in some rural areas also have implications for banks and are discussed in the section on community banks.

bank accounts. Banks are tailoring their products to meet immigrants' unique characteristics—for example, by offering low-fee transaction accounts and flexible mortgage packages. As immigrants reside longer in the United States, their incomes will rise, more of them will buy homes, and they will generally merge into the financial mainstream.

Both baby boomers and immigrants will increase their supply of deposits to banks, but for different reasons. Baby boomers will desire to hold safe and liquid assets when they get older, whereas immigrants will likely become wealthier as they stay longer in the United States. As for the effects of aging baby boomers and immigrants on the demand for bank loans, the two groups tend to offset each other. Immigrants now demand fewer bank loans because of low incomes and a reliance on informal banking, but when they live long enough in the United States, they tend to become home buyers. In the next 10 to 20 years, however, increased loan demand from immigrants may not fully compensate for retiring baby boomers' decreased loan demand.

Regulatory Environment

As in the recent past, future deregulation of bank powers is more likely to start from developments in the marketplace or actions by individual states than from initiatives by Congress or the executive branch. However, Congress and the executive branch may be more receptive to proposals for legislation designed to protect consumers, prevent serious misconduct by bank personnel, or advance national security objectives. The provision of a bank safety net and the existence of regulatory agencies to enforce compliance make banking a politically attractive vehicle for furthering such objectives. The results have been substantial reporting and other regulatory burdens on banks. These requirements frequently involve fixed costs that tend to be proportionally heavier on small banks. Although, as noted below, we regard community banks as a viable business model, the disproportionate impact of regulatory burden on smaller banks places them at a competitive disad-

vantage. Excessive regulatory burdens may not only hurt existing banks but may also discourage new entrants, thereby depriving bank customers of the benefits of increased competition from newly established banks. This prospect highlights the importance of reducing reporting burdens wherever possible.

The FDIC established a special task force to reevaluate its examination and supervisory practices in an effort to improve operations and reduce regulatory burden without compromising safety and soundness or undermining important consumer protections. Over the last several years the FDIC has streamlined examinations and procedures with an eye toward better allocating FDIC resources to areas that could ultimately pose greater risks to the insurance funds—areas such as problem banks, large financial institutions, high-risk lending, internal controls, and fraud.⁴

The FDIC is also leading an interagency effort to identify and eliminate restrictions that are outdated, unnecessary, or unduly burdensome. This effort is pursuant to the Economic Growth and Regulatory Paperwork Reduction Act of 1996. Comments are sought from the banking industry about which regulations are the most burdensome and which regulations place the industry at a competitive disadvantage. The agencies have jointly published the first two of a series of notices soliciting comment on regulations in a number of areas and have been conducting outreach sessions with bankers, consumer groups, and community groups. Armed with input from these efforts, the agencies will conduct a comprehensive review of banking regulations and will report to Congress on their findings and on the actions they have taken, or plan to take, about the level of burden. The agencies also expect to send Congress a list of legislative areas for consideration.

⁴ Actions taken by the FDIC, as well as interagency efforts to reduce regulatory burden, were outlined in congressional testimony by the Vice Chairman of the FDIC (Reich [2004]).

Technological Environment

The banking industry is now more dependent on technology than ever before, with annual industry expenditures for technology topping an estimated \$30 billion.⁵ In recent decades, the focus of large-bank technology developments has shifted.

These decades began with a large number of mergers and acquisitions after restrictions on interstate banking and branching were lifted, and the technology component of merging two entities proved to be a challenging task for acquirers. Lessons were learned over time by institutions that experienced numerous rounds of acquisitions. By the late 1990s, Y2K concerns dominated technology planning and, to an extent, restrained the level of mergers and acquisitions. Y2K work also had the effect of benefiting banks by requiring planning for business continuity and disaster recovery. Meanwhile, the world of technology continued to change, with rapid adoption of the Internet and increases in the market capitalization of Internet-related companies. Bankers invested heavily in Internet products and services. More recently, the technology focus of banks has moved to cost cutting, consolidation, and rationalization. Large banks will continue to develop new technologies and adapt to legislative and regulatory changes, such as Basel II and Check 21. Imaging, increased bandwidth, wireless networking, and Web services are innovations likely to have an impressive effect on the use of bank technology. For large banks, security and operational resiliency remain major concerns.

Community banks also depend on technology, but more as users of proven technology than as creators or innovators. By using proven technologies as they become available, community banks now offer a wide variety of products and services, often matching large banks in the scope of their offerings to retail customers. As a result of competitive pressures, even small banks now find it mandatory to have sophisticated, well-functioning technology to support customer service, administration, and financial reporting. But managing technology is a challenge for community banks, and among FDIC-supervised banks, only slightly more than half perform core processing in-house; the

remainder outsource this function. Thus, third-party service providers play a critical role in the efficiency and security of technology operations at community banks.

Objective assessments of community bank information technology (IT) operations are available through the examination process and from a survey of FDIC IT examiners. The vast majority of FDIC-supervised banks receive sound composite IT examination ratings. Examiners report that community banks are using technology to provide customers with more and better-quality products and services. Examiners also note vulnerabilities at FDIC-supervised banks in the areas of risk assessment and audit, strategic planning, management of outsourcing, security, and personnel.

Technology will continue to be a major expense, and security will remain a crucial issue for banks of all sizes. Responding to an ever more complex technology environment will be challenging. Nonetheless, proper technology management is within the grasp of every bank and can lead to better customer service, lower operating costs, and a more efficient banking system.

Payment-System Changes

Although the much-heralded checkless society has yet to arrive, major changes are underway in retail noncash payment systems, as the use of checks as a means of payment has declined and electronic forms of payment have increased.⁶ After rising for many years, the number of checks used in retail transactions declined from 49.5 billion in 1995 to 42.5 billion in 2000—the latest year for which comparable data are available. Over the same period, the number of retail electronic payments increased from 14.6 billion to 28.9 billion.

⁵ This section is based on interviews with large-bank supervisory personnel at the Office of the Comptroller of the Currency and the Federal Reserve Board and on information received from FDIC examiners who have experience performing or reviewing information technology examinations. The results are discussed in detail in the FOB paper by Golter and Solt.

⁶ This section is based on the FOB paper by Murphy.

Although fewer checks are being written, the number is still very large in absolute terms and in comparison with the number being written in several other countries, some of which have virtually eliminated the use of checks. Therefore, efforts are being made to “electronify” checks early in the process of clearing and settlement by sending the information forward electronically; that process is expected to be faster and less expensive than current methods, which require the physical transportation of large amounts of paper.

Banks will have to adapt their product offerings and pricing as well as their back-office processing to reflect these payment-system changes. Since more electronic transactions are cheaper to process, as is the conversion or truncation (or both) of checks, banks that do not explicitly charge for transaction services on a per-item basis will see a reduction in costs. For banks that have explicit fees for each service (mainly banks that supply cash-management services), it will be necessary to ensure that the profit margins on the electronic transaction services are commensurate with those on the paper transaction services. Banks of all sizes should be able to continue to serve their customers with a mix of capabilities, including ATMs, on- and off-line debit cards, credit cards, and other services.

Bank regulators must be aware of the risk implications of the changes in payment systems and must adapt their approaches accordingly. Operational risk is obviously an important issue. In this regard, the ownership of fund transfer networks has changed dramatically: the number and proportion of networks owned and operated by nonbank entities has increased, whereas those owned by joint ventures of banks have declined. Because the operation of these networks directly affects the risk exposure of banks, the risk-management practices of the network providers may have important implications for the banking industry and the bank regulatory community.

Banks and bank regulators also need to be concerned about the market structure of the network providers, especially those for ATMs, debit cards,

and credit cards. Significant consolidation among network providers has already occurred, and any further concentration raises concerns about pricing, quality of service, and product innovation in this segment of the market—one for which bank regulators have no direct responsibility.

Competitive Environment

The shares of debt held by commercial banks and savings institutions as a percentage of the total volume of debt have declined compared with the shares held in earlier decades of the twentieth century.⁷ Some observers have interpreted this decline as a sign of competitive weakness or even obsolescence. However, this decline is partly due to the proliferation of channels of financial intermediation, which often involve the issuance of financial instruments to fund other financial instruments rather than the channeling of funds to nonfinancial sectors of the economy—households, businesses, and governments.

In this regard, the overall volume of borrowing in credit markets has apparently increased permanently. During the 1980s the volume of borrowing by nonfinancial sectors of the economy rose from 1.3 times annual GDP to nearly 1.9 times annual GDP, an increase reflecting the rising indebtedness of households and nonfinancial businesses, in tandem with deficit spending by the federal government.

The growth of debt in our economy during the 1980s was associated with a decline in the share of domestic nonfinancial borrowing that is directly funded by commercial banks (the share declined from 30 percent in 1974 to a low of 20 percent in 1993). But when debt growth leveled off in the early 1990s, commercial banks' share of this credit-market pie also leveled off, and since the early 1990s it has remained generally stable. The continued need for bank financing on the part of many borrowers reflects their inability—owing to their small size and idiosyncratic risk—

⁷Trends in the importance of banks in U.S. credit markets are discussed in the FOB paper by Samolyk.

to access financial markets directly and cost effectively.

The reduction in banks' share of the credit-market pie reflects a dramatic shift in the way loans are being financed. Specifically, asset securitization (the pooling of loans and their funding by the issuing of securities) has allowed loans that used to be funded by traditional intermediaries, including banks, to be funded in securities markets. The securitization of home mortgages and consumer credit has reduced the extent to which these types of loans are directly funded by commercial banks and has had an even more adverse effect on savings institutions.

Nonetheless, commercial banks continue to play a significant role in funding business borrowers. The average share of nonfinancial business borrowing that commercial banks hold on their balance sheets has remained relatively stable for five decades. At the same time, there has been a clear shift in how banks lend—a shift from shorter-term lending to loans secured by business real estate. This shift may reflect banks' continuing comparative advantage in real estate lending, a form of lending less well suited to the standardization necessary for asset securitization.

The savings institution share of total household, business, and government debt has also stabilized in recent years, but at levels much lower than those of earlier post–World War II decades. The reasons for the decline are the liquidation of a substantial portion of the savings and loan industry during the 1980s and early 1990s, the absorption of numerous savings institutions by commercial banks, and the rapid growth of mortgage-backed securities.

Banks' importance relative to capital markets is lower in the United States than in many other countries. However, some countries are moving closer to the U.S. model as a result of forces that have increased the efficiency of “arms-length” financial markets, including improvements in the processing of information, increases in international trade and capital flows, and political integration.⁸ Thus, the lower market share of banks

in the United States may be seen as a sign of the advanced development of capital markets and IT in the United States rather than as a sign of terminal weakness in the banking industry.

Of course, market-share data based on balance-sheet totals underestimate the continuing importance of banks in financial markets precisely because they do not include off-balance-sheet activity. Through backup lines of credit, loan origination, securitization, and other means, banks support lending by other entities and earn fee income. An alternative measure of the importance of banks in the financial system is provided by the bank share of total net income of financial sector firms, which reflects income and expense from both on- and off-balance-sheet activities. During 1992–2002 net income of publicly traded commercial banks and savings institutions accounted for an average of 44 percent of total profits of all publicly traded financial companies—about the same proportion as in 1985, before the banking crisis of the late 1980s and early 1990s.⁹ Moreover, the net income of the largest individual banks was far greater than that of the largest nonbank financial companies.¹⁰ The ability of the banking industry and the largest individual banks to earn high net income relative to other financial firms is hardly a sign of competitive weakness.

The Environment for Banking: Summary

In general, the environment for banking in the next five to ten years is likely to remain favorable. The economic environment appears conducive to good banking industry performance, assuming that recessions are mild and that we avoid speculative bubbles similar to those that contributed

⁸ Rajan and Zingales (2003).

⁹ Tabulations by the FDIC, based on data from Standard and Poor's Compustat. For other measures of banks' market share, see the FOB paper by Samolyk, and Boyd and Gertler (1994).

¹⁰ In 2002 Citicorp earned net income of \$10.7 billion from banking operations, and Bank of America Corp. earned \$9.2 billion, whereas the four largest nonbank financial companies earned net income ranging from \$4.6 billion to \$5.8 billion (tabulations by the FDIC, based on data from Standard and Poor's Compustat).

to widespread failures during the 1980s. The banking industry's market share has stabilized, according to a number of measures. Reduced use of checks and increased use of electronic payments are likely to exert downward pressure on costs of the banking system as a whole. Over time, banks will have increased opportunities to serve two growing segments of the population—retired baby boomers and immigrants.

Potential problems in the environment are likely to be associated with inadequate safeguards in the use of technology. Consolidation and increased nonbank ownership of fund transfer networks—especially networks for ATMs, debit cards, and credit cards—may expose banks to new operational risks. Outsourcing certain functions, including moving work offshore, involves political, business-continuity, and security risks. Inadequate IT staffing may make some banks vulnerable to attacks on the software they use, with customers exposed to inconvenience and banks to weakened reputations and weakened competitive positions.

For community banks, in particular, the burden of reporting and other regulatory requirements poses a significant threat to future prosperity. Efforts to address this problem are described above.

Prospects for Banking Sectors

As is well known, the U.S. banking system is characterized by large differences in the size of institutions; the system includes some of the world's largest banking organizations as well as thousands of relatively small banks. Institutions also differ in the extent to which they are affected by local rather than national economic forces and in the business strategies they have adopted to cope with their environments. Individual banks or groups of banks have, to some extent, different business opportunities, risk exposures, and future prospects, and many of these differences are associated with size. In this study, banks are divided into the following groups:

- Large, complex banking organizations—defined as the top 25 organizations in terms of assets;
- Community banks—defined as institutions with less than \$1 billion in assets;
- Regional and other midsize banks—defined as banks that fall between community banks and the top 25 (in other words, banks with assets greater than \$1 billion but less than the assets of the smallest of the top 25 organizations—currently about \$42 billion); and
- Special-purpose banks—includes credit card banks, subprime lenders, and Internet banks.

Except when specifically noted, “banks” and “banking organizations” refer to independent commercial banks and savings institutions and to the holding companies of such institutions. “Assets” when used to denote the size of different groups of institutions means the assets of commercial banks and savings institutions combined. Asset limits of size groups are adjusted for inflation as measured by the GDP price deflator.

Large, Complex Banking Organizations

Over the past 20 years the structure of the U.S. banking system has changed enormously in response to changes in the legal, regulatory, and financial landscape.¹¹ At the end of 2003, the 25 largest insured banks and savings institutions held 56 percent of total industry assets, with the 10 largest holding almost 44 percent, up from 19 percent in 1984. For the next 15 banks, the growth has been much less dramatic: the combined assets of the banks ranked 11 through 25 have risen only 2 percentage points, from about 10 percent in 1984 to 12 percent at the end of 2003.

¹¹ This section is based on the FOB paper by Reidhill, Lamm, and McGinnis. Information on individual institutions is based on publicly available data.

Why did these institutions grow to be so large? Has the elimination of restrictions on branching and ownership been the main driving force? Do larger banking organizations enjoy economies of scale? Does management simply want to control ever-larger organizations? Do investors exert pressure to increase asset size, revenues, or net income? To some extent, all of these appear to be true.

The passage of the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994 undoubtedly helped spur large banks to spread across state lines and to grow. This development helped create large, geographically diversified branch networks that stretch across large regions and even coast-to-coast. The Gramm-Leach-Bliley Financial Services and Modernization Act of 1999 (GLB) allowed the largest banking organizations to engage in a wide variety of financial services, acquiring new sources of noninterest income and further diversifying their earnings. Contributing to these developments were advances in IT that facilitated control of far-distant operations and fostered new products, services, and risk-management techniques.

As these banks have grown, have they gained efficiencies from their growth? The conclusions reached in the economic literature on bank economies of scale are mixed; some studies have found economies of scale and scope, and some have not.¹² With respect to market power, studies of mergers that resulted in high concentrations in local markets did not find significant gains to the acquiring firm. On the other hand, consolidation that leads to geographic diversification seems to be associated with increased profits and reduced risk. Some studies have also concluded that banks may seek growth in an attempt to be regarded by the market as too big to fail.¹³ According to this view, the funding costs of a bank would be lower if holders of uninsured deposits, bonds, and other credits assumed they would be protected if the bank failed.

Although the academic literature does not provide conclusive evidence that greater size leads to cost and other advantages, there appears to be

continual pressure on bank management from shareholders and market analysts to show growth in both revenue and earnings. Bigness is apparently regarded as advantageous. Nevertheless, the wave of mergers and acquisitions that occurred after enactment of the Riegle-Neal Act and GLB has probably passed. The large number of deals within the recent past partly reflects the backlog created by a restrictive legal environment; in a less-restrictive legal environment, many of the recent mergers and acquisitions would have occurred earlier and over a longer period. Although Riegle-Neal prohibits mergers when the merged bank's domestic deposits would exceed 10 percent of total domestic deposits (or 30 percent of the deposits in any state), only the Bank of America is close to the 10 percent limit (as a result of the recent merger with FleetBoston); other members of the top 25 group are much further from the limit and are not prevented from undertaking mergers by this legal provision. Further mergers among large banks may be expected in the immediate future, although not in the volume experienced after geographic and product deregulation.

Large banking organizations have widely different business strategies. Among the eight largest companies, some have extensive foreign operations, while others are essentially domestic commercial banks.¹⁴ Some have major credit card operations, and others do not. Some have large trading operations and are active in securities markets, while others do not and are not. Some focus on loans to businesses, while others have major consumer operations. Some concentrate on commercial and industrial loans, while a few are very active (or even specialize) in mortgage finance. They also

¹² These studies consider the cost structures of the bank as a whole. This is not to deny that there may be scale efficiencies in specific business lines, such as credit card operations. See the section on limited-purpose banks.

¹³ "Too big to fail" is a misnomer. The question for investors is whether unsecured and uninsured creditors of such a bank would be protected if the bank were to fail.

¹⁴ The eight largest banking organizations, in descending order of asset size as of January 2004, are Citigroup, J. P. Morgan Chase, Bank of America, Wells Fargo, Wachovia, Bank One, Washington Mutual, and FleetBoston. In the aggregate, these institutions account for 41 percent of total banking industry assets.

differ in geographic reach within the United States.

With some exceptions, the larger the institution, the more likely it is to engage in a wide range of activities. The smaller institutions are more likely to concentrate on growing their retail and consumer banking franchises, either internally or through mergers, and entering the investment banking business by purchasing smaller brokerage firms or building on a proprietary mutual fund business. At least in the near term, widespread entry into the property and casualty insurance underwriting business is unlikely. Life insurance underwriting and insurance brokerage show more promise, with less risk.

Despite the variety of business models, some of the ways in which large banks have changed are similar across all or many of them. They have increased their fee income as a percentage of total income, possibly to reduce their vulnerability to cyclical interest-rate changes. Most of them have increased income from deposit charges, and some have taken advantage of the new powers under GLB to increase trading revenues, investment banking income, and insurance commissions and fees. Much of the noninterest income from new powers is concentrated in the top two or three banks. These banks have also shifted from deposits to collateralized borrowings. Large banks also appear to have been successful in limiting their exposure to credit losses by improving their risk-management practices.

The experience of the eight largest banks during the recent economic recession has been mixed. Four of these banks had fairly consistent returns on book equity over the period, while the other four had large declines in earnings, with one bank experiencing an actual loss in 2000. In no case was the solvency of an organization threatened.

This mixed record may illustrate the advantages and disadvantages of large, complex organizations. In some cases, geographic diversification, international diversification, product diversification, and risk-management practices seem to have paid off well. Although some of the success was undoubt-

edly due to a very favorable interest-rate environment, loan losses during the period were low. In other cases, there were evident problems in managing large, complex organizations and in managing the process of acquiring and merging organizations. It appears, therefore, that the various strategies for capitalizing on size, geographic diversification, and product diversification can be successful—but that size itself does not guarantee consistent success.

It seems clear that for the immediate future, the large banks will continue to try to grow through internal growth and acquisitions. As these institutions grow and expand the breadth of their products, potential problems of managerial diseconomies and corporate governance may arise. The sheer size and complexity of today's large institutions place a heavy burden on their financial and operational risk-management systems. Undoubtedly many of these problems are being addressed. Permitted single-company exposures are reportedly being reduced at almost all large banks, and exposures are being tracked across business units. Financial risk models are being implemented in response to both the business need for better risk management and a presumption that Basel II will eventually be implemented.

What can be learned from the recent experience of the top 25 banks? The success of the best-performing organizations might argue that large organizations can be efficient and effective. The large losses sustained by the worst performers suggest that the risk of failure in these banks, although very small, is greater than zero. However, the size and diversification of these organizations help them absorb losses.

If larger and larger banks become a reality, how will the FDIC's risk profile be affected? First, if more institutions come up against the 10 percent deposit concentration limit, efforts to raise that limit may be expected over time and may raise concerns about the concentration of economic resources and power. Second, the possible failure of large banks, however unlikely, represents a risk not only to the insurance funds but also to the

banking system itself because of the large increases in deposit insurance premiums that might be required. Over the past 19 years the size of the largest banks has grown dramatically compared with the relevant deposit insurance fund. At year-end 1984 the Bank Insurance Fund (BIF) balance was \$16.3 billion, and the largest BIF-member bank was about 7 times larger than the BIF. At year-end 1996 the largest single bank was about 9 times greater than the BIF. By the end of 2003 the largest single bank was *almost 19 times* larger than the BIF (\$33.8 billion).

Basel II will effectively create a different capital standard for the largest banks. Should the deposit insurance system be changed to isolate small banks from the effects of the failure of large insured institutions? If so, how? How will the FDIC and the regulatory agencies meet the challenges of mitigating the concentration of risk created by these very large and still-growing organizations? Capital adequacy standards and vigilant supervision present the greatest promise. Optimally pricing deposit insurance, creating separate safety-net arrangements for large and small institutions are ideas that deserve discussion and research.

Regional and Other Midsize Banks

For purposes of this study, banks that have assets of more than \$1 billion but less than the assets of the smallest of the 25 largest banking organizations (currently about \$42 billion) are designated “regional and other midsize” banks.¹⁵ As a group they are heterogeneous, not only in asset size but also in geographic reach. A quarter of them are truly regional in the sense that they have a significant presence in a number of markets, while the remaining three-quarters are sizable banks concentrated in one market—either located in only one state or having more than 60 percent of their deposits in only one market (as measured by metropolitan statistical areas [MSAs]), or both. This study has divided banks in this in-between size group into two subgroups depending on the geographic concentration of their deposits: one subgroup consists of the truly regional banks, and the

other consists of the other midsize banks (i.e., those considered to be large local banks rather than regional institutions).¹⁶

In the past seven years, both subgroups have consistently outperformed community banks in terms of average return on assets (ROA) and have often outperformed the top 25 banks. During the same period the number of regional and other midsize banks increased by 13 percent. In terms of assets, however, the midsize sector lost market share between 1996 and 2003, largely because of the top 25 banks’ dramatic growth through mergers and acquisitions.

The regional and other midsize banks may be small enough to avoid any diseconomies that may be associated with managing distant facilities and heterogeneous product lines but large enough to attract qualified employees, diversify their portfolios, and take advantage of IT to offer a wide variety of services and to manage risk. Within this group, banks that are concentrated locally have had somewhat better earnings than those whose offices are dispersed. Whether locally concentrated banks will continue to outperform regionally dispersed banks is uncertain. If economic conditions should significantly worsen in some local markets, banks concentrated in these markets might be hit hard.

Despite the whole group’s strong performance, some commentators have predicted the decline or even the disappearance of these banks. This view reflects a judgment that, in order to thrive, a bank needs either the close community ties of a small bank or the geographic scope, marketing power, and product lines of a megabank.

However, it is hard to imagine that one of the best-performing banking sectors is slated for outright disappearance. Like other good performers, regional and other midsize banks have a number of practical options. They may acquire communi-

¹⁵ This section is based on the FOB paper by Gratton.

¹⁶ According to this definition, a bank would be considered a “true” regional bank if it operated in more than one state and had less than 60 percent of its deposits in one MSA.

ty banks, merge among themselves, or seek to be acquired by larger banks that remain below the 10 percent deposit concentration limit. And rapid growth and mergers among some community banks may augment the number of in-between banks. We expect the number of banks in the regional and other midsize group to remain significant.

Community Banks

Community banks (defined here as institutions with less than \$1 billion in aggregate bank and thrift assets) were not swept away by larger banks following product and geographic deregulation, as some observers had expected.¹⁷ Community banks represent about 94 percent of all banks in the United States—nearly the same as their 95 percent share in 1985, when the recent wave of consolidation began.¹⁸ The persistently large number of relatively small banks is characteristic of the U.S. banking system and reflects long-standing public policies based on concern about the concentration of economic power, the desire to maintain local ownership and control, and efforts to protect local banks from competition. In some cases, these considerations had led to a prohibition of branching; for example, in 1985 42 percent of all community banks were located in 12 states that previously had unit banking.

The picture has changed greatly as a result of the banking crisis of the 1980s and geographic deregulation. The number of community banks has declined by 47 percent since 1985, as a result both of failures (in the earlier part of this period) and (more recently and more significantly) of voluntary mergers. Moreover, the community bank shares of total banking industry assets, deposits, and offices have also declined.

Perhaps the most notable feature of the decline in the number of community banks has been its pervasiveness: the number has declined across geographic areas, across both growing and declining markets, and among community bank size groups. The number declined in rural areas, small metropolitan areas, and large metropolitan areas, and,

within the latter, in suburban as well as urban areas,¹⁹ with the pace of the declines during the period since 1985 falling within a fairly narrow range. Moreover, in areas that suffered net reductions in population (mostly rural counties), the decline in the number of community banks was comparable to the decline among community banks as a whole.²⁰

The number of community banks declined somewhat faster in formerly unit-banking states than in states that had permitted branching.²¹ This finding suggests that restrictive branching laws contributed to the establishment of some small banks that could not (or preferred not to) continue as independent entities once branching restrictions were lifted and competition increased. However, the difference in rates of decline was not very large. Among community banks of different sizes, the largest decline was among banks with less than \$100 million in assets (where diseconomies of small scale are believed to exist); however, this decline resulted not so much from more mergers or failures as from the fact that numerous small banks grew faster than the rate of inflation and “graduated” to a higher size group.

A striking difference between urban and rural areas is in the various cross-cutting forces that ended up reducing the number of community banks. Urban areas had proportionally more mergers and failures than rural areas but also more new institutions, with the result that total net

¹⁷ This section is based on the FOB paper by Critchfield, Davis, Davison, Gratton, Hanc, and Samolyk.

¹⁸ Bank size groups are adjusted for inflation so that, for community banking organizations, the number of organizations with less than \$1 billion in bank/thrift assets in 2002 is compared with the number that had less than about \$650 million in 1985.

¹⁹ The location of community banks is determined by the location of the holding company headquarters or, when there is no holding company, the location of the institution's headquarters. Division into rural, small metro, suburban, and urban areas depends on whether the bank is located in a metropolitan statistical area (MSA) and on population density.

²⁰ Although banks in counties suffering depopulation showed no greater proportional decline in number than banks in other areas, the performance of banks in counties suffering depopulation differed from that of banks in growing areas, as discussed in the FOB paper by Anderlik and Walser, and in Myers and Spong (2003).

²¹ The 12 states where unit banking existed as of the end of 1977 were Colorado, Illinois, Kansas, Minnesota, Missouri, Montana, Nebraska, North Dakota, Oklahoma, Texas, West Virginia, and Wyoming (Conference of State Bank Supervisors [1978], 95).

reductions were roughly the same in rural and urban areas. Urban areas are clearly where the action is; urban areas are central in terms of both merger activity and the establishment of de novo banks. The two types of activity are, to some extent, related; dissatisfied customers of a merged bank may be attracted to a new institution, and areas of high population density may be more attractive markets for the establishment of new banks while also containing more attractive merger targets.

The pervasiveness of consolidation among community banks casts doubt on, or provides only weak support for, some familiar explanations of the reduction in the number of community banks. The lifting of branching restrictions in states that previously prohibited branching, diseconomies of small-scale operations, and depopulation and weak local economies all have undoubtedly affected the fortunes of community banks. However, none of these factors seems to have been the main cause of the consolidation among these institutions. In time, these factors may produce further consolidation, although it is difficult to estimate the length of the lags in bank response. These lags may reflect, in part, a lack of interest on the part of potential acquirers in banks located in weak local economies as well as the ability of banks in such areas to perform at a level satisfactory to their owners. In the recent past, at least, the main impetus for consolidation seems to have been individual decisions by shareholders and managers in response to intensified competition.

As noted above, the effect of mergers and failures was dampened somewhat by the establishment of new banks, mostly in areas of high population density. About 1,250 new community banks were established between 1992 and 2003, of which about 100 have been merged and about 1,100 remain as independent organizations. Like other new and young businesses, they exhibit significant risk factors in some cases, but only 4 have failed. If real estate and other markets served by these banks do not experience serious downturns, these institutions will have an opportunity to mature and prosper.²²

As a result of both a slowdown in mergers and the continued establishment of de novos, the pace of consolidation has slowed considerably in the past few years. In the near term, some further consolidation may be expected. Low returns on equity (resulting partly from higher capital ratios) may lead to consolidation among some institutions, as stockholders seek higher returns through increased leverage at merged institutions.²³ Attracting and retaining qualified employees and management succession will pose challenges for some of these institutions. Dependence on interest income will periodically squeeze margins unless fee income is increased. Regulatory burdens may also contribute to consolidation.

With respect to earnings performance, in recent years the before-tax ROAs have been lower for community banks than for larger banks. However, this gap between community banks and larger banks is narrowed after corporate taxes are taken into account. Community banks hold a larger percentage of their assets in lower-yield, nontaxable municipal bonds. Moreover, about 2,100 community banks were organized as Sub-chapter S corporations as of March 2004 and therefore paid no federal corporate income tax if they met certain conditions. After taxes, community bank ROAs have averaged from 1.0 percent to 1.2 percent in recent years, lower than those of larger banks but a level of profitability that would have been regarded as exceptional in earlier years. As might be expected, community banks located in counties experiencing more rapid growth in either population or real personal income have experienced higher ROAs and net interest margins,

²² During the 1980s, failures were higher among new or "young" banks than among existing banks. In the early 1980s a large number of new national banks were chartered following a change in policy by the Office of the Comptroller of the Currency, a change designed partly to increase competition. At the time, banks obtaining a national charter were, by statute, automatically insured by the FDIC. In 1991, as a result of the FDIC Improvement Act, the FDIC obtained separate authority to approve insurance for national banks. See FDIC (1997), 106.

²³ Such reasoning does not apply, or applies with considerably less force, to owner-operated banks that do not rely on uninsured or unprotected sources of funds. Returns of owner-managers may be augmented by compensation received as officers of the bank, and there may be no outside shareholders to challenge the decision to remain independent.

although expense ratios are currently similar.²⁴ These results are hardly surprising; what may be surprising to some is that even in slow-growth areas, the performance of community banks can be considered “satisfactory.”²⁵

In deposit and loan markets community banks have faced strong competition, not only from within their own ranks but also from larger banks, credit unions, and nonbank competitors. The community bank share of deposits has declined in rural, small metro, suburban, and urban areas, with the largest 25 banking organizations showing a large increase in market share.²⁶ (These comparisons reflect both internal growth and mergers.) The share held by regional and other midsize banks has also declined, while that of credit unions has remained relatively stable, increasing from 8 to 9 percent since 1994. Within the credit union industry, large institutions (assets over \$100 million) have shown an increased share, while small credit unions have lost ground. Leaving aside the very largest banking organizations, credit unions have increased their market share *relative to the smaller banks*, a development that many would attribute to credit unions’ tax-exempt status and the expansion of their permissible areas of operation. Not all community banks face credit union competition of the same intensity; credit unions are concentrated in urban areas in the central and eastern states, whereas community banks are located in large numbers in rural, suburban, and urban areas.²⁷

After adjustments are made for mergers, small banks have actually shown more rapid growth since the early 1990s than the largest banks.²⁸ Small banks have paid higher rates, and charged lower fees, than large banks in order to attract deposits. They have also increased their borrowings from Federal Home Loan Banks in order to broaden their sources of funds, as core deposit growth has lagged behind demands for credit.

On the lending side, there have been declines in the community bank shares of the increasingly standardized consumer, home mortgage, and unsecured business loan markets—markets that large

lenders, using credit-scoring technologies, have penetrated on a nationwide basis. On the other hand, community banks appear to be largely holding their own in real estate lending to businesses and in farm lending. Community banks hold a disproportionately large share of small business and farm loans (real estate and operating loans).

In summary, the number of community banks has been halved since 1985, and these banks’ market share has declined relative to the largest banks’ market share. On the face of it, the declines in number and market share would seem to suggest that community banks have serious problems. A more detailed examination presents a somewhat more optimistic view. Community banks still represent 94 percent of the total number of banks, not much different from the percentage before the recent wave of consolidation began. Moreover, it is impressive that community banks have been able to register respectable earnings and growth in recent years while facing intensified competition from nonbank financial companies, as well as from other banks after the removal of the branch restrictions that had protected many community banks from competition.

The conclusion we draw is that the community bank is a viable business model. Research suggests that community banks have certain advantages as lenders to small businesses, small farmers, and other informationally opaque borrowers; these advantages are their ability to assess the risks of borrowers who lack long credit histories, their

²⁴ From 1992 to 2001 community banks located in counties experiencing population declines recorded ROAs ranging from 1.0 percent to 1.2 percent—not much lower than the ROAs of banks located in counties experiencing population growth.

²⁵ Myers and Spong (2003) reached a similar conclusion.

²⁶ Credit union offices and deposits are classified geographically according to the location of the organization’s headquarters. For the large majority of credit unions this probably is acceptable, although for large credit unions—such as those serving military personnel—this may distort data on the location of credit union resources.

²⁷ Eighty percent of credit unions are located in MSAs, compared with 54 percent of community bank offices.

²⁸ Bassett and Brady (2001) reached a similar conclusion. It should be noted that the more rapid percentage growth rates of small banks may partly reflect the fact that the internal growth rates of very large banks may be more limited by the size of markets and the marginal cost of increases in funding.

ability to use “soft” data (such as borrower reputations) effectively in risk assessment, and their ability to operate effectively in situations where the proximity of decision makers to customers is important.²⁹ The proposition that community banks have informational advantages in lending to small business is supported by research suggesting that small banks have higher risk-adjusted returns on business loans than large banks. The willingness of private investors to risk their own money to establish new banks is a powerful market test of the viability of small banks, at least in areas of population density. Moreover, a concentration of de novos in areas where large and distant banks have taken over local institutions suggests, as well, that many customers may be dissatisfied with the more impersonal approach of large banks. Although consumer attitudes may change and larger banks may seek to emulate the personal-service approach of smaller institutions, community banks should continue to be important in the banking industry for the foreseeable future.

Limited-Purpose Banks

Limited-purpose banks are institutions that specialize in a relatively narrow business line. The limited-purpose banks examined in this study are credit card banks, subprime lenders, and Internet-primary banks.³⁰ Numerically these institutions make up a small share of the banking industry. Yet their unique production functions and product mixes warrant attention.

Although the diversification of risks is widely regarded as desirable, some institutions have chosen to specialize. Focusing on a limited set of activities allows them to develop expertise quickly and become efficient producers. Moreover, technological innovations in the financial services industry, which lead to gains in productivity and economies of scale, may also have promoted specialization.

The credit card banks provide their customers with both convenience and liquidity by offering a product that can be used as a payment device and

as an open-end revolving credit. Credit card loans pose unique risks to these lenders, however. In addition to being unsecured, credit card loans do not have a fixed duration, a lack that complicates the measurement and management of interest-rate risk. Moreover, the mass marketing of credit cards may lead to problems of adverse selection, and small average balances on individual accounts may make collection efforts cost ineffective. Despite such risks, credit card banks have managed to offset the effects of potentially greater volatility and risk in income: their average ROAs are considerably higher than those of the industry as a whole. Their high profitability results from high interest rates on credit card loans, securitization, fee income, successful use of technology, and the benefits of scale economies in credit card operations. It is reasonable to expect that credit card banks will continue to prosper. Credit card banks have been undergoing a process of consolidation, and whether further consolidation may be expected depends heavily on whether they have exhausted the benefits of scale economies.

In this study, “subprime lenders” refers to insured institutions that extend credit to borrowers who may have had more limited borrowing opportunities because of their poor or weakened credit histories. Not only can these lenders increase business volume by serving a new customer base, but they can also be profitable by pricing these loans accurately to compensate for greater risk. Although subprime lenders earn interest income higher than the industry average, their lending activity involves greater risk and losses. Moreover, increased scrutiny from regulators on issues such

²⁹The extensive literature on the economic role of community banks is discussed in the FOB paper by Critchfield et al.

³⁰This section is based on the FOB paper by Yom. Credit card banks are defined as institutions that have more than 50 percent of total assets in loans and credit card asset-backed securities (ABS) and have more than 50 percent of total loans and credit card ABS in credit card loans and credit card ABS. Subprime lenders are institutions with more than 25 percent of tier 1 capital in subprime loans. Internet banks' primary contact with customers is the Internet. Data used in this study are based on 37 credit card banks, 120 subprime banks, and 17 Internet banks.

as capital adequacy and predatory lending practices may have effectively eliminated the advantage the insured institutions once enjoyed relative to other financial firms operating in the subprime lending field. In response, subprime lending has tailed off recently, and some participants have withdrawn from the market. On the basis of the evidence to date, it is reasonable to expect bank participation in subprime lending to stay at reduced levels, if it does not decline further.

Internet-primary banks are institutions that deliver banking services mainly on-line. By taking advantage of the Internet distribution channel, these institutions offer convenience to their customers. It was once thought that eliminating physical branches and employing fewer employees would enable Internet banks to provide banking services at lower cost, but in reality, Internet banks underperform brick-and-mortar banks. This may reflect limited consumer demand for Internet banking services. These institutions are also at a competitive disadvantage relative to brick-and-mortar banks in lending to small businesses because they lack the means of building long-term relationships with borrowers. The evidence to date indicates that, as a business model, Internet banks have apparently only a modest chance of success, given present customer attitudes and the present state of technology.

Although limited-purpose banks have compiled a mixed record, their activities can be effectively undertaken by larger, more diversified institutions. A number of credit card banks are subsidiaries of large banking companies. On-line banking is offered by numerous institutions that also offer more traditional forms of access. And with appropriate underwriting and capital support, subprime lending can be a useful component of a more diversified portfolio.

Prospects for Banking Sectors: Summary

Individual banks and groups of banks differ greatly in size, strategy, and operating characteristics. They also share some attributes. Operating in a generally favorable economic environment, banks

have responded to intensified competition and the expanded opportunities offered by sweeping legislative and regulatory change. With some exceptions, they have performed at levels of profitability that would have been regarded as extraordinary in earlier years. Assuming effective macroeconomic and regulatory policies, each of the main banking industry sectors—community banks, regional and other midsize banks, and large, complex banking organizations—should prosper in the years immediately ahead.

Public Policy Issues

Although the banking industry is likely to continue to be healthy, ongoing trends raise a number of public policy issues, mainly related to the increased size and complexity of banking organizations. Chief among the issues that policy makers need to consider are the safety and soundness of banking in an industry dominated by megabanks, and concerns related to bank customers and markets.

The emergence of megabanks has raised the possibility, however remote, that failures could deplete the deposit insurance funds, require large premium increases that place a heavy burden on the remaining banks, disrupt financial markets, and undermine public confidence. Financial and technological risks arise partly from the problems of monitoring and controlling multiple business lines, geographically dispersed operations, and complex corporate structures. Furthermore, the diversification of large banks into new financial areas exposes these institutions to new reputational risks. The involvement of large financial holding companies in recent corporate scandals illustrates this exposure.

The growing importance of large, complex banks also raises issues relating to concentration and competition in individual markets and the availability of credit for borrowers and local markets that were traditionally served by local banks.

The FDIC's approach to analyzing the effects of large banks in those areas and formulating recom-

mendations for possible action rests on three principles:

Banking should evolve primarily in response to the consumer and the marketplace rather than in response to regulation. The strong performance record compiled by the banking industry in recent years amply confirms what banking can achieve when it is allowed to respond to market forces. There are, of course, situations when government action is required to make markets work better. One example is the establishment of deposit insurance and of the bank safety net generally, which has contributed to the prevention of the extreme instability that characterized financial markets during much of the early history of the United States. Legislation and regulation to prevent anticompetitive practices are another example. In both cases, government action was taken to ensure that markets operate safely, fairly, and competitively.

Risks posed by large, complex banks need to be addressed through effective prudential regulation and supervision. Requiring banks to maintain adequate capital is central to an effective regulatory regime. Effective examination, supervision, and enforcement are equally important. Furthermore, regulation and supervision should be backed by market discipline exerted by holders of unprotected bank securities; regulation and supervision should also be backed by sound governance arrangements adopted by the banks themselves. As suggested above, the potential usefulness of a two-tier, large bank/small bank supervisory system needs to be considered.

To help ensure the effectiveness of prudential regulation and supervision, the structure of the bank regulatory system should be reevaluated. In the fragmented bank regulatory system of the United States, the FDIC as the deposit insurance agency has no direct supervisory responsibility for the

major risks to which it is exposed. At the same time, state and federal primary regulatory agencies that are funded by examination fees are increasingly exposed to financial strains arising from the consolidation of the industry. Within present law, or with minimum legislative change, it may be possible to coordinate better the activities of the various banking agencies, reduce the overall cost of regulation and supervision, and help all bank safety-net agencies discharge their responsibilities effectively.

The discussion that follows is based on these principles. It focuses on major public policy issues arising mainly from the consolidation of the banking industry and the consequent emergence of very large and complex banking organizations. The areas covered are the effects of further consolidation, combinations of banking and commerce, large-bank supervisory issues, governance issues, financial service regulatory issues, bank liability structure, and the economic role of banks.

Effects of Consolidation: Safety and Soundness, Competition, and Small Business Credit

After decades of relative stability, the number of banks in the United States has dropped by about one-half from the level of the mid-1980s.³¹ More recently, the pace of consolidation has slackened. Although a resumption of the headlong pace that followed geographic deregulation seems unlikely, further mergers and acquisitions can be expected in the period immediately ahead. As noted above, investors, market analysts, and managers appear to be strongly in favor of mergers as a means of achieving revenue and earnings growth, even though academic studies do not provide conclusive evidence that greater efficiency will be achieved. Some of the anticipated advantages of earlier mergers and acquisitions have failed to materialize, although it is difficult to say how the

³¹ This section is based partly on the FOB paper by Critchfield and Jones.

merger partners would have fared if they had not combined.

Yet we can also expect the number of banks to remain higher than most recent projections by other analysts.³² In the absence of a new shock to the industry, it seems likely that the U.S. banking industry will retain a structure characterized by the existence of several thousand small institutions, a less-numerous group of regional and other midsize banks, and a handful of extremely large banking organizations. It seems reasonable, also, to expect that an eventual balance may develop between the number of new-bank startups and charter losses through mergers and acquisitions—with little net change in the number of banking organizations nationwide.

The public policy issues raised by consolidation concern safety and soundness, market concentration and competition, and small business credit.

The effect of consolidation on safety and soundness. The failure of one of the largest U.S. banks is generally regarded as a low-probability event. Very large banks have greater opportunities to diversify, although the resulting reduction in risk may be offset by increased risk taking to enhance profits and by problems in monitoring and controlling increasingly complex and diverse operations.

The much greater size of today's megabanks, compared with their past counterparts, tends to increase the prospect that the failure of such a bank—although unlikely—would seriously affect the banking and financial systems. Depending on the condition of the industry and the general economy, systemic risk could arise from the failure of a bank that is a major player in certain business lines, including payments processing, international operations, derivatives, and major market-clearing functions. If it is concluded that the least-cost resolution of such a bank represents an unacceptable risk to the financial system and if, consequently, the bank regulators act to protect unsecured and uninsured liability holders, the additional cost will be covered by special assessments. These will be based essentially on assets

rather than deposits and will be borne more heavily by the largest institutions.³³

Current law contains certain provisions to deal with the special issues posed by size. Among these are the assessment provision of the systemic-risk exception for large-bank failures, the authority for the FDIC to create different premium systems for large and small institutions, and the authority for bank regulators to require more capital based on risk.

Although various options are available, the most direct way to deal with the size of the nation's largest banking organizations is to ensure that they hold sufficient capital to provide a cushion to absorb potential losses. Regulators can accomplish this by establishing minimum regulatory capital requirements in addition to requirements based on the banks' internal risk estimates (as contemplated by Basel II).

Effect of consolidation on market concentration and competition. As a result of the concentration of banking resources, some large banks may be in a position to exert their market power to raise prices of bank services in some markets. Even with the consolidation of the past 15 to 20 years, however, the banking industry is less concentrated than either its nearest competitors among financial industries—the securities and the insurance industries—or many nonfinancial industries. Banking is also less concentrated in the United States than in other developed countries. Moreover, the 10 percent domestic deposit limit inhibits the creation of a banking monopoly through nationwide mergers and acquisitions. Although some large banks may have more influence on the prices of banking services in particular markets than they once had, sizable increases in prices will invite entry by a variety of bank and nonbank firms. Among those entering these markets will be newly established institutions. The

³² See the FOB paper by Critchfield and Jones.

³³ Current law requires that special assessments in systemic-risk resolutions be based on assets less tangible equity and subordinated debt, whereas regular assessments are based on domestic deposits. Large banks tend to fund assets with nondeposit liabilities and foreign deposits to a greater extent than small banks.

entry of new banks is encouraged by the existence of deposit insurance and would be further encouraged if the reporting and other regulatory requirements that currently place heavy burdens on small banks were reduced.

Taking all these factors into account, we foresee that competitive forces are likely to continue dominating banking markets for the foreseeable future.

Effect of consolidation on small business credit. Concern has been expressed about the effect of banking consolidation on the availability of credit for small businesses and small farms.³⁴ This concern arises because community banks devote proportionally more of their resources to lending to these borrowers than large banks do. Lending to small business has often been “reputational” in nature, requiring the local expertise that is both characteristic of community banks and more favorable to some small business borrowers, such as new or young firms with limited credit histories. Large banks, on the other hand, are likely to focus more on large borrowers and use credit-scoring and other standardized lending methods in underwriting loans.

On the basis of the available evidence, the effect of consolidation on small business credit appears to be complex and dependent on numerous factors. For example, it has been argued that as banks get larger, they are better able to diversify their portfolios and therefore increase their lending to all borrowers, including small businesses. New credit-scoring models used by large banks may identify borrowers who were previously not able to obtain credit from small banks. Moreover, whether small business lending increases or decreases may depend on whether the acquiring bank already regards small business lending as an important business line. The effect of consolidation on small business credit availability also depends on whether there are other lenders in the market that can offset a merger-related reduction in lending. These effects seem to differ between rural and urban markets and between already concentrated and more competitive markets.

The effect of consolidation on small business lending will continue to be the subject of research. Although the outcome of such research cannot be predicted in detail, one important consideration is the possibility that consolidation may create opportunities for the remaining community banks. Any reduction in small business lending by large banks should invite increased lending by community banks, while also encouraging the formation of new banks to serve the needs of these borrowers. The presence of a substantial community bank sector and the prospect of new market entrants are potentially important safeguards against the possibility that bank consolidation will make small business credit less available.

Combinations of Banking and Commerce

As is well known, banking consolidation has been accompanied by affiliations of banks and other financial service firms. GLB permitted combinations of commercial banks, securities firms, and insurance companies. Looking ahead, one can expect market forces to push in the direction of more mixing of banking and commerce. The underlying policy issues are whether permitting affiliations among banks and commercial entities serves the public interest and, if such combinations are to occur, what is the appropriate regulatory framework for them.³⁵

With respect to the first question, there are two dominant views as to the desirability of maintaining a separation between banking and commerce. Proponents of one view argue that the failure to maintain a line of separation—especially in terms of ownership and control of banking organizations—would have potentially serious consequences, ranging from conflicts of interest to an unwarranted expansion of the financial safety net.

³⁴ Evidence on the effect of consolidation on small business credit is discussed in Avery and Samolyk (2003).

³⁵ The section on combinations of banking and commerce is based on the FOB paper by Blair.

Proponents of the other view argue that, if adequate safeguards are in place, the benefits from affiliations between banking and commerce can be realized without jeopardy to the federal safety net. Among these safeguards are requirements affecting bank capital and the enforcement of firewalls to protect the corporate separateness of the bank.

With respect to the appropriate regulatory framework, the Federal Reserve Board maintains that supervision of the insured bank's parent and affiliated companies is necessary if the associated risks are to be understood and controlled. The FDIC has long argued that national and state-chartered banks, regardless of size or holding company affiliation, should be able to choose the ownership structure that best suits their business needs if adequate protections are present. Thus, at the heart of the debate is the question of whether the public interest requires federal regulatory oversight of the entire banking organization or just of the bank.

Although the current prohibitions on corporate ownership of banks are sometimes defended on the grounds that banking and commerce have always been separate, the history of U.S. banking reveals no evidence of a long-term separation. Certainly the activities permitted to banks have always been subject to prohibitions, but the prohibitions on affiliations with commercial firms that are currently in effect stem from the Bank Holding Company Act of 1956 and its amendments. Despite these regulations and prohibitions, however, extensive links between banking and commerce have existed and still exist. And the market pressure for more business combinations between banks and commercial firms can be expected to continue. Moreover, the potential risks of allowing banking and commerce to mix—conflicts of interest, concentration of economic power, and expansion of the safety net—can be contained through the use of adequate safeguards and firewalls. Thus, these risks do not appear to justify a separation of banking and commerce.

Does the mixing of banking and commerce constitute good public policy? The evidence suggests

that the answer is a qualified yes: with adequate safeguards in place, the careful mixing of banking and commerce can yield benefits without excessive risk. The issue facing policy makers is how these combinations of banking and commerce will be regulated. Specifically, will increasing amounts of commercial activity be subject to umbrella supervision, or will the insured entity be the focus of supervision? Regulators and policy makers should consider what additional powers, if any, are needed for regulators to be able to effectively ensure the corporate separateness of the insured entity, while also ensuring that banks can choose the corporate structure that meets their business needs.

Large-Bank Supervisory Issues

Large, complex banking organizations pose unique challenges to regulators.³⁶ Traditional methods of examining banks were suited for smaller institutions, and as financial institutions became larger and increasingly complex, bank regulation and supervision had to adapt. The regulatory and supervisory issues raised by the growth of these banking organizations may be considered in the context of the New Basel Capital Accord, or Basel II. As is well known, the new accord rests on three pillars:

Pillar 1: Minimum Capital Requirements

Pillar 2: Supervisory Review Process

Pillar 3: Market Discipline.

Pillar 1 (capital requirements). On June 26 2004, the Basel Committee on Banking Supervision released the framework for the new Basel capital accord. It outlines the minimum requirements for credit, market, and operational risk. The target for implementation of the new accord was year-end 2006, with the most advanced approach available for implementation by year-end 2007. The proposed accord includes two primary changes to the current capital standards. First, it modifies the approach to credit risk; second, it includes explicit capital requirements for opera-

³⁶This section is based on the FOB paper by Bennett and Nuxoll.

tional risk. Most U.S. banks will continue to use the existing risk-based capital rules, but all very large, internationally active banks will be required to adopt the new capital standards and to use the Advanced Internal Ratings-Based (AIRB) approach to credit risk. Under the AIRB approach, the probability of default, loss given default, and exposure at default will be estimated internally by the banks. With respect to operational risk, the new accord proposes that banks using the AIRB approach will also estimate operational risk internally.

As a member of the Basel Committee, the FDIC has three basic goals for Basel II: (1) capital regulations should preserve and maintain minimum capital requirements; (2) the standards should be designed so that they may be implemented and supervised effectively in the real world; and (3) any new standards should not produce substantial adverse unintended consequences. Among such unintended consequences is the possibility that smaller banks will be adversely affected compared with large banks. As noted above, the FDIC also believes that a minimum regulatory capital requirement should be adopted in addition to the requirements based on the banks' internal estimates as contemplated by Basel II. This belief is consistent with the FDIC's principle that a strong capital base not only is necessary for a safe and sound banking industry but also can equip the industry to weather downturns in the economy or the onset of unanticipated events.

Pillar 2 (supervisory review). The supervision of large banks is challenging because of the complexity of these institutions. Four sources of complexity are size, geographic span, business mix, and nontraditional activities. Given the sheer volume of transactions and types of assets, it is difficult to gather, aggregate, and summarize information in a manner that is meaningful for risk management. The wide geographic span of these institutions, including both domestic and foreign operations, may obscure correlations among exposures. More sophisticated products and a wider range of business activities also complicate supervision. As major business units are acquired or

sold, the risk profile of the organizations may change considerably. Supervisors will be strongly challenged to develop the expertise necessary for monitoring the activities of large, complex banking organizations, as well as to avoid extending the safety net to nondeposit products.

Pillar 3 (market discipline). Investors in the various securities issued by banks have interests similar to those of supervisors. This similarity of incentives has led to a number of suggestions that supervisors rely on market discipline for information about and control of the riskiness of banks. As also discussed in a later section, there are two critical questions about market discipline. First, do investors know what the bank is doing? Second, can investors control what the bank is doing? Various views have been expressed about whether banks are opaque to the investor, and recent corporate scandals provide grounds for skepticism as to shareholders' ability to control management. The effectiveness of market discipline is likely to remain a subject of further research.

Governance Issues

Failures of corporate governance can cause enormous financial losses, not only to individual corporations and their stockholders but also to society as a whole.³⁷ One widely quoted estimate of the cost of U.S. corporate governance failures is \$40 billion a year, or the equivalent of a \$10 a barrel increase in the price of oil.³⁸ Enron shareholders alone lost \$63 billion in Enron's failure. Recent corporate governance scandals have resulted in new legislative, regulatory, and judicial initiatives to counteract perceived corporate governance failings.

Because of their special and important role in society, banks need to be particularly careful about conflicts of interest, or the appearance of

³⁷ The section on governance issues is based on the FOB paper by Craig.

³⁸ Litan (2002).

them, so as to maintain public confidence. As a result of earlier banking legislation, current bank corporate governance standards are higher than the standards for nonbank enterprises, and most banks to which the Sarbanes-Oxley Act of 2002 applies have little trouble meeting that act's requirements.³⁹ In fact, many of the provisions of this legislation are derived from bank governance standards; this law introduces nonbanking businesses to standards that banks have been observing for years.

However, the combination of the Sarbanes-Oxley legislation and new stock exchange rules, recent SEC actions and recent court decisions, a new activism on the part of blockholders, and heightened public scrutiny of business behavior has produced a changed corporate governance environment, one that continues to evolve. The major changes in this environment that will affect banks are changing norms of board independence, increased shareholder involvement, and changing and uncertain standards of board accountability. In particular, bank interlocking directorships may run up against the changing norms for board independence. In addition, public dismay over excessive executive compensation is likely to stimulate shareholder scrutiny of boards' compensation policies—and likely to increase the pressure on some boards.

Banks, like other businesses, must be prepared to meet these evolving standards of corporate governance. The most effective way to avoid corporate governance problems is to select a knowledgeable, engaged, and independent board of directors. However, increased commitments of time by board members, increased liability issues, an emphasis on financial expertise, and the trend toward more independent boards are likely to make it more difficult for banks, and other businesses, to recruit board members. Some observers suggest that banks and other businesses will need to focus on recruiting people who have traditionally not been members of boards in large numbers—women and both younger and older members: for example, more division directors rather than sitting CEOs, and more retired people

who have the time and expertise to devote to board membership. In this demanding and changing corporate governance environment, banks and other businesses may need to expand their vision of what constitutes a qualified board member.

Financial Services Regulatory Issues

In the 20 years since the last major study of the federal financial regulatory system,⁴⁰ the financial system has continued to evolve and become more complex. Yet, its regulatory system remains rooted in the reforms of the 1930s. Regulation and supervision of large, multi-product, internationally active financial organizations that span numerous federal financial regulatory agencies pose challenges for a system designed largely to regulate smaller, distinct, locally based organizations. Although changes have been made—especially over the past decade—to improve the regulation and supervision of these new financial conglomerates, it is time to take a hard look at the current federal financial regulatory structure.⁴¹

As the financial services industry grows larger and more complex, the question is increasingly raised as to whether our fragmented, piecemeal system of regulation is up to the task. Since the mid-1980s a number of countries have examined their financial regulatory structures and concluded that changes needed to be made. Internationally, the trend has been to consolidate all—or most—financial services regulation within one agency and to move that function outside the central bank.

³⁹ The Sarbanes-Oxley Act applies to publicly held institutions—institutions that issue securities registered with the SEC or with a federal financial regulatory agency. In addition, nonpublic banking institutions with more than \$500 million in assets are required to comply with the SEC's definition of auditor independence.

⁴⁰ See *The Report of the Task Group on Regulation of Financial Services* (1984).

⁴¹ This section is based on the FOB paper by Kushmeider.

Reform of the U.S. financial regulatory structure raises complex issues regarding deposit insurance, the role of the central bank, and the dual banking system. Although many observers would argue that in the absence of a crisis, regulatory restructuring is not a topic that will generate much political interest in the United States, there are issues that will affect how the financial regulatory system is organized and operates regardless of whether full-scale restructuring is desired. Among these issues are funding for the Office of the Comptroller of the Currency and the Office of Thrift Supervision, federal preemption, the resolution of issues that cross functional regulators, and umbrella supervision for all financial conglomerates that own an insured depository institution.⁴²

The options outlined in the paper on which this section is based represent possible ways in which reform or restructuring of the federal financial regulatory system could occur. They focus on the least-intrusive, most easily accomplished reforms (those that regulators could undertake themselves or that require little legislative change) to a full-scale restructuring of the federal financial regulatory system. There are valid arguments for taking either approach or even for finding some middle ground, such as a thorough restructuring of the bank regulatory system. Within each option there is room for debate over how regulation might be structured—for example, what entities might be included. The paper is designed to provide background regarding issues that will influence the debate over regulatory restructuring and to provoke thought and discussion about the design of the U.S. federal financial regulatory system.

Bank Liability Structure

Growth in core deposits (total deposits less time deposits in denominations of more than \$100,000) has failed to keep pace with the corresponding growth in bank assets.⁴³ There may be many reasons, either singly or in some combination, for this phenomenon. The supply of core

deposits may be growing at a slower rate than bank assets, banks may be increasingly using alternative funding sources that have lower costs, and some alternative sources may offer risk reducing features. As all of these explanations are likely to be true, the mix between core deposits and alternative funding sources will continue to change. This prospect suggests continued reliance on wholesale funding sources (such as Federal Home Loan Bank advances and brokered deposits) and efforts to expand other nondeposit sources of funds.

These changes in liability structure raise several issues for banking regulators. The one that has received most attention recently is market discipline—particularly for large, complex banking organizations. The research to date shows that unprotected investors monitor bank performance and respond to changes in risk exposure. Supervisors play an important role in ensuring that markets have accurate data on banks, since troubled banks otherwise may overstate capital. The evidence is weaker on the ability of markets to encourage banks to reduce their risk exposure when trouble arises. And for the very largest banks, market discipline may be diminished by the perceptions of market participants that such banks are too big to fail—that is, the perception that uninsured depositors and other creditors would be protected if the institution failed. In the future, more emphasis should be put on disclosing information to the markets as well as on increasing the use of market data to inform and enhance the supervisory process.

Another issue raised by banks' heavier reliance on wholesale funding sources and rate-sensitive deposits for funding is liquidity risk exposure, which has increased. Regulators have responded by updating their examiner guidance on liquidity risk. It may also be worthwhile to seek better ways

⁴² The last issue has implications for the operation of U.S. financial conglomerates in Europe, where they must meet a requirement for consolidated supervision.

⁴³ This section is based on the FOB paper by Bradley and Shibut.

to measure liquidity risk and better ways to handle the operational challenges associated with liquidity failures.

A third issue concerns the assessment base, and a fourth concerns depositor preference. To the extent that asset growth is funded by nondeposit liabilities, the exposure of the FDIC tends to increase without any increase in the assessment base on which premiums are calculated. (The assessment base is essentially the amount of domestic deposits after certain adjustments.) In the past, various proposals were advanced to expand the assessment base. And changes in the liability structure have highlighted the importance of domestic depositor preference when banks fail. Some observers have questioned the cost savings attributed to the present priority provision and have pointed to the provision's potential effects if a multinational banking organization were to fail. In light of changes in the structure of bank liabilities, it may be useful to consider the advisability of revising the assessment base to ensure that premiums are properly aligned with the risks to which the FDIC is exposed, and the advisability of reviewing the effects of the present system of domestic depositor preference.

The Economic Role of Banks

Historically, banks have been regarded as a special class of intermediary because they perform four unique functions: (1) they issue transaction accounts that have universal acceptability and are available at par on demand, (2) they fund idiosyncratic (and illiquid) loans with liquid liabilities, (3) they serve as backup sources of liquidity, and (4) they play a key role in the transmission of monetary policy.⁴⁴ Consequently, policy makers have maintained a government safety net that protects and regulates the banking industry to ensure that it operates with minimal disruption. Yet, over the past quarter of a century, revolutionary advances in IT and telecommunications have combined with the economic and political forces of globalization and deregulation to fundamentally alter the operations of financial intermediaries (both bank and nonbank) and the markets in

which they operate. One result of these changes is that financial markets are much more complete, efficient, and competitive today than they were 25 years ago. This development has led some observers to argue that banks are no longer unique among financial institutions and therefore do not merit the current level of government protection or regulation.

This study concludes, however, that banks have not lost their importance as financial intermediaries and that they have in fact evolved to meet the challenges and demands of the new world of finance. Banks, for example, are still at the center of the payments system. Indeed, virtually every financial transaction that involves a net transfer of wealth is still eventually settled through the banking system. Banks also continue to play an important role in the transmission of monetary policy. And despite signs of disintermediation and what some see as a decline in the relative importance of banks, banks continue to serve as the primary sources of credit to important segments of the economy (such as small businesses and small farms).

Moreover, as the capital markets have become more developed, banks have evolved to provide important behind-the-scenes support to much of the intermediation activity that occurs elsewhere. For example, almost all commercial paper issues are backed by bank-issued stand-by letters of credit that enhance the paper's credit rating and increase its liquidity. In securitizations, banks are involved in originations, servicing, and monitoring and in the provision of credit enhancements. In this respect, banks remain an important player in the intermediation process even though they are no longer the primary lender or the direct source of the loaned funds. Finally and perhaps most importantly, as has been demonstrated repeatedly during a number of financial panics and crises in the United States over the last three decades, banks play an essential role as emergency sources of liquidity to the rest of the financial sys-

⁴⁴ This section is based on the FOB paper by Jones.

tem and to the broader economy as well. Indeed, several studies have shown that banks may in fact have a comparative advantage in providing liquidity on demand.

In conclusion, ample evidence is available to support the position that banks (and the business of banking) are not fading away. Rather, in the more complex, sophisticated, and volatile financial world of the twenty-first century, banks' importance may actually be growing.

Concluding Comments

This study views banking as a strong, competitive industry that continues to serve useful economic purposes. Within the banking industry, we conclude that each of the three main sectors—community banks, regional and other midsize banks, and the largest banking organizations—has favorable prospects for the years immediately ahead, even though the number of institutions is likely to decline further. What could materially diminish these relatively favorable prospects?

With respect to community banks, a number of competitive and regulatory developments could diminish their market role and viability. One possibility is that credit-scoring and other financial technology used by large banks and nonbank financial companies could advance to the point that it would supplant the relationship lending practiced by community banks in financing local credit needs, including those of small businesses and small farms. And large banks might adopt organizational structures more conducive to reputational lending—for example, by giving branch managers more authority. The consequences might be analogous to the results in home mortgage lending, where a nationwide market has much diminished the role once played by local portfolio lenders. Given the heterogeneous nature of small business loans and the organizational problems of controlling the activities of far-flung branch systems, this result does not seem likely in the time frame of this study—five to ten years—but it cannot be ruled out completely or indefinitely.

The burden of reporting and other regulatory requirements could also threaten the prospects for community banks. Although the banking industry as a whole is a politically attractive vehicle for implementing various nonbanking political and social programs, the fixed costs of such requirements fall particularly heavily on smaller banks. The resulting regulatory burden could have effects analogous to those of earlier regulations that weakened the ability of banks to compete with credit unions and other nonbank institutions not subject to similar burdens.

Community banks that lack adequate IT staffs are also exposed to the possibility of attacks on the software products they use. In addition to the direct losses they might suffer, the inconvenience to their customers and the damage to their reputations could be a serious competitive disadvantage.

For large banks, the principal issues are the risks associated with size and diversity—the very features that are these banks' main strengths. Problems identifying and mitigating correlated risks, reputational risks arising from potential conflicts of interest and lapses in governance, and operational risks associated with IT systems are among the most prominent of the risks faced by large banks.

For all banks, the possibility of economic bubbles in markets where banks participate, like the bubbles in energy, agriculture, and real estate markets during the 1980s, cannot be entirely discounted. This is particularly so as economic and financial decision making related to banking is increasingly in the hands of those who have experienced nothing but profits.

We consider these and similar possibilities to be low-probability, high-impact events within the five- to ten-year horizon of this study. In many cases these possibilities are being addressed by bank management and bank supervisory agencies. Nevertheless, it is important to keep them in mind as a cautionary accompaniment to the relatively favorable picture of banking painted in this study.

The Future of Banking

At the same time, important policy issues will continue to command the attention of bankers and bank regulators. The consolidation of the banking industry highlights the challenges of supervising large, complex banking organizations. The possibility of large-bank failures poses risks not only to the deposit insurance funds but also to the banking system itself. Market forces are likely to push for more business combinations of banks and commercial firms, raising again the issue of how best to regulate such combinations.

The existing regulatory structure appears to be increasingly out of alignment with the rapidly changing financial products and markets. The nature of the safety net itself may need to be reexamined to ensure that it effectively accommodates an industry characterized by a few megabanks alongside thousands of community banks. These difficult issues are likely to be prominent in discussions of the future of banking in the years ahead.

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The Future of Banking in America

The Evolving Role of Commercial Banks in U.S. Credit Markets

by Katherine Samolyk*

SUMMARY

How important a role do commercial banks play in funding nonfinancial borrowing? Ten years after the end of the industry's most significant crisis since the Great Depression, does banking remain a major player in financing the nation's economic activity? This paper examines the evolving role that commercial banks play in U.S. credit markets.

The available data reveal several consistent patterns over the past two decades. First, there has been a permanent increase in the overall borrowing capacity in credit markets—in other words, an increase in the credit market pie associated with the functioning of the economy. This increase was associated with a decline in the share of domestic nonfinancial borrowing that is directly funded by commercial banks. When debt growth leveled off in the early 1990s, so did commercial banks' share of this credit-market pie. Banks' smaller share of the credit-market pie reflects a dramatic shift in the way loans to households and businesses are being financed. Specifically, asset

securitization (the pooling of loans and their funding by the issue of securities) has allowed loans that used to be funded by traditional intermediaries, including banks, to be funded in securities markets.

The data also reveal, however, that commercial banks still play a significant role in funding business borrowers: we estimate that the share of nonfinancial business borrowing that commercial banks fund on their balance sheets has not declined notably in five decades. Nevertheless, there has been a clear shift in how banks lend—a shift from shorter-term lending not secured by real estate to loans collateralized by business real estate. This shift may reflect banks' continuing comparative advantage in real estate lending, a form of lending less well suited to the standardization necessary for asset securitization.

With respect to borrowing by households, in contrast, we find that the securitization of home mortgages and—more recently—of consumer credit has reduced the extent to which these types of loans are directly funded by commercial banks (and savings institutions). This finding is consistent with the broadening of household-sector credit markets over time; longer-term increas-

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es in borrowing by households have generally not been associated with greater intermediation through banks. The securitization trend, however, has had a more severe effect on savings institutions than on commercial banks.

At the same time, the commoditization of credit markets—that is, the standardization, unbundling, and repackaging of payments and risks associated with credit flows—makes it harder to measure the importance of banks as well as other intermediaries in providing credit-related services. Balance-sheet data on who is funding loans can be a poor proxy for who is providing the financial services associated with the credit flows. Commercial banks, particularly larger institutions, provide significant services in originating, servicing, and enhancing the liquidity and quality of credit that is ultimately funded elsewhere. Hence, market-share measures based on balance-sheet data are likely to understate the importance of banks to a greater extent than even a decade ago. The provision of financial services is, however, reflected in bank earnings. And indeed, when one looks at income-based measures of market share, one does not see any evidence of a secular decline in the importance of commercial banking.

Thus, the conclusion of this study is that although the role of commercial banks in U.S. credit markets has certainly evolved, banks remain a critical part of the modern flow of funds that has broadened the availability of credit in the U.S. economy.

Introduction

Banks have historically been viewed as playing a special role in financial markets for two reasons. One is that they perform a critical role in facilitating payments.¹ The other is that they have long played an important, although arguably less exclusive, role in channeling credit to households and businesses. Commercial banks, as well as other intermediaries, provide services in screening and monitoring borrowers; and by developing expertise as well as diversifying across many borrowers, banks reduce the costs of supplying credit.

Thus, in their role as lenders, banks are often not merely buying someone's debt; rather, they are providing significant financial services associated with extending credit to their customers.² And to the extent that investors want to hold bank liabilities, banks can fund borrowers directly.

In the early 1990s, as the U.S. banking industry emerged from its most significant crisis since the Great Depression, policy makers were asking whether the importance of banks in financing economic activity had become permanently diminished.³ Now, ten years later, the share of domestic debt funded on commercial-bank balance sheets stands at just over 20 percent, down from 30 percent three decades ago. Commercial bank loans now account for only 60 percent of short-term borrowing by nonfinancial businesses, compared with 75 percent in the mid-1970s.⁴

Even now, therefore, when profitability and other measures of performance indicate that banking has rebounded from the crisis, the role of banks in U.S. credit markets remains under scrutiny. Other types of financial intermediaries and financial instruments appear to have become more important in channeling funds to businesses and households. Stories about competition from other segments of the financial-services industry continue to be reported in the popular press. For

¹ Banks issue liquid deposit accounts that can be easily used to make payments; banks also make the payments. The special liquidity of bank liabilities and the extent to which they serve as a means of payment are reflected in the fact that deposit liabilities are included in various measures of the money supply. Seminal works discussing the special role of money and banks include Gurley and Shaw (1960), Tobin (1963), Fama (1980), and Diamond and Dybvig (1983).

² Two frequently cited papers that analyze the importance of banks as lenders are Diamond (1984) and Fama (1985). Of course, banks can and do hold credit-market instruments issued by others—including securities issued by the U.S. government and government agencies—although in some sense this involves less of a provision of banking services per se. When a bank invests depositors' funds in corporate or government securities, it is not providing the same banking services as when it originates a loan. Rather, the bank is simply buying securities that were issued in (and could easily be resold in) direct capital markets. Mutual funds, as well as individual investors, can do the very same thing.

³ Indeed, one decade ago, the title of the May 1994 Federal Reserve Bank of Chicago Conference on Bank Structure and Competition was "The Declining [?] Role of Banking."

⁴ These market-share measures are the author's estimates based on Federal Reserve Flow of Funds Account data and are described in more detail below.

example, according to a fairly recent report in the *Wall Street Journal*,

The financial services arm of General Electric Co. [GE Capital] illustrates how nontraditional lenders are taking over from banks as suppliers of credit to big slices of the U.S. economy. . . . Twenty years ago, banks and thrifts supplied 40% of the economy's credit. . . . Today it is down to 19%. Housing financiers Fannie Mae and Freddie Mac own about as many residential mortgages as all commercial banks combined.⁵

This paper assesses the evolving role of commercial banks in U.S. credit markets during the past decade. We use available data to quantify the importance of banks as credit providers—that is, their “market share”—taking a historical perspective in assessing credit-market trends. Not surprisingly, we find that the importance of banks depends on the markets one chooses to consider and on how one measures banking services. However, some consistent patterns emerge. From a historical perspective, we now see that the debt buildup of the 1980s was actually a permanent increase in the volume of debt associated with economic activity in the United States. In other words, the credit-market pie to be divided up among financial-service providers is now substantially larger than it was 20 years ago. And although overall the provision of credit by banks has kept pace with the growth of the economy, the capacity of the broader financial sector has grown by much more. Accordingly, the share of our economy's debt that commercial banks fund directly has fallen relative to the growth of the credit-market pie, reaching its low point in 1993 and then stabilizing.

An important dimension of these trends that is not always emphasized is the dramatic change in the way credit flows in our economy are being funded. Traditionally, intermediaries funded portfolios of loans (and bonds) by issuing very different types of liabilities (mainly deposits and insurance and pension liabilities) to investors. But the growth of credit-market activity in our

economy during the past two decades has been associated with the rise of intermediation in the form of asset securitization, referring to the pooling of loans and their funding by the issue of securities. Asset securitization reflects a fundamental transformation of loan markets, particularly those where households borrow.

Home-mortgage and consumer-credit markets have become commoditized, in the sense that these loan products have become more standardized commodities, allowing the attendant credit-related services to be unbundled, repackaged, and provided by a variety of financial-service providers. Moreover, standardization extends beyond the terms of the loan contracts to the underwriting and pricing process, in which characteristics of the borrower are increasingly linked to the use of statistical models in extending and pricing credit.

The commoditization of credit often generates more layers of intermediation between investors and the borrowers who ultimately receive the funds. Intermediation funded by issues of securities is often “re-intermediated” (for example, through mutual funds, insurance companies, or pension funds). The layering makes it harder to quantify the importance of banks (as well as other intermediaries) in channeling credit from savers to borrowers because it makes it more difficult to identify who is ultimately funding certain types of loans. And quantifying the value-added of the additional layers of intermediation is difficult as well.

Nonetheless, according to some fairly standard measures, we find that commercial banks still play a significant role in channeling credit. With respect to business lending, we find that not only are banks important for small business borrowers, but they also remain remarkably important for all business borrowers: we estimate that the share of nonfinancial-sector business borrowing that commercial banks fund directly has not declined notably in five decades. There has, however, been a dramatic shift in how banks lend, a shift from shorter-term lending not secured by real estate to loans collateralized by business real

⁵ Ip (2002).

estate. This shift may reflect banks' continuing comparative advantage in real estate lending—a form of lending less well suited to the standardization necessary for asset securitization.

With respect to borrowing by households, we find that the securitization of home mortgages and—more recently—of consumer credit has reduced the extent to which these types of loans are directly funded by commercial banks (and savings institutions). This finding is consistent with the broadening of household-sector credit markets over time; longer-term increases in the debt capacity of the household sector have not tended to be associated with greater intermediation through banks. The securitization trend, however, has had a more severe effect on savings institutions than on commercial banks.

The evolution of U.S. credit markets and the changing role of commercial banks suggest that on-balance-sheet market-share measures underestimate the importance of banks to a greater extent than even a decade ago. Commercial banks, particularly larger institutions, often provide important credit-related services to borrowers that are ultimately funded elsewhere, but the provision of these services is reflected in bank earnings. Indeed, when one looks at income-based measures of bank market share, one does not see evidence of a secular decline in commercial banking. Thus, although the importance of banks depends on how one defines banking, from a variety of perspectives the commercial banking industry remains far from extinct as a force in credit markets.

The next five sections of the paper discuss the changing nature of credit-market flows and the implications of the changes for using balance-sheet data to measure bank market share; an overview of the historical trends that culminated in the apparent decline of commercial banking during the 1980s and early 1990s; what researchers had to say about this apparent decline; credit-market trends from the early 1990s to the present; and alternatives to balance-sheet-based measures of bank market share. A final section

summarizes our findings and their implications for the future role of commercial banks in U.S. credit markets.

Credit Market Concepts and Measurements

To examine trends in the role of commercial banks in U.S. credit markets, much of this paper uses 50 years of quarterly data from the Federal Reserve Board's Flow of Funds Accounts (FFA). These accounts provide a detailed and comprehensive picture of quarterly credit flows and balance-sheet outstandings across various sectors of the U.S. economy since the early 1950s.⁶ They include a wealth of detail on specific types of financial institutions and financial instruments; hence, they allow one to study the evolution of the financial-services industry over time. However, with these data, one's findings depend on the choice of what to measure. Hence, we begin by providing a conceptual framework for thinking about how to measure the role of commercial banks in U.S. credit markets.

Standard academic textbooks on banking often include a diagram showing how credit markets traditionally worked—that is, how funds from primary investors (those having accumulated wealth, i.e., savers, lenders) are channeled to primary borrowers (those who need external finance to fund their expenditures).⁷ As figure 1 indicates, primary borrowers include households seeking mortgage or consumer loans; federal, state, and local governments financing their outstanding debt; and nonfinancial businesses borrowing to finance their business activities (larger publicly traded corporations also obtain external finance in equity markets). These borrowers are classified in the FFA as nonfinancial sectors. Primary investors technically consist of the same groups, but it is ultimately private individuals—that is, the house-

⁶ The Flow of Funds Accounts (FFA), the only truly comprehensive data on broad U.S. financial flows, use a wide range of data sources to produce a consistent set of quarterly estimates of financial flows and balance-sheet stocks for various sectors of the U.S. economy. See Teplin (2001).

⁷ For example, see Mishkin (2003).

hold sector—that accumulate wealth (save) and need to invest it.

The financial sector, which facilitates external finance, tends to be conceptually divided into “direct credit markets,” where investors directly buy and hold securities issued by businesses or governments, and “indirect credit markets,” where intermediaries pool the funds of many investors to fund a pool of borrowers (see figure 1). Direct finance involves a brokerage function but does not require intermediation per se (for example, when an investor buys a U.S. Treasury security, even from a bank, the transaction does not involve intermediation). In contrast, a key feature of indirect finance is that it involves the funding of financial assets by issuing to investors “indirect” claims on these assets. These indirect claims can have very different characteristics (in terms of promised payments, liquidity, and default risks) from the assets that they are funding. The process by which a pool of financial assets can be funded by issuing claims having different payment streams is referred to as asset transformation (Gurley and Shaw [1956]; Tobin [1963]).

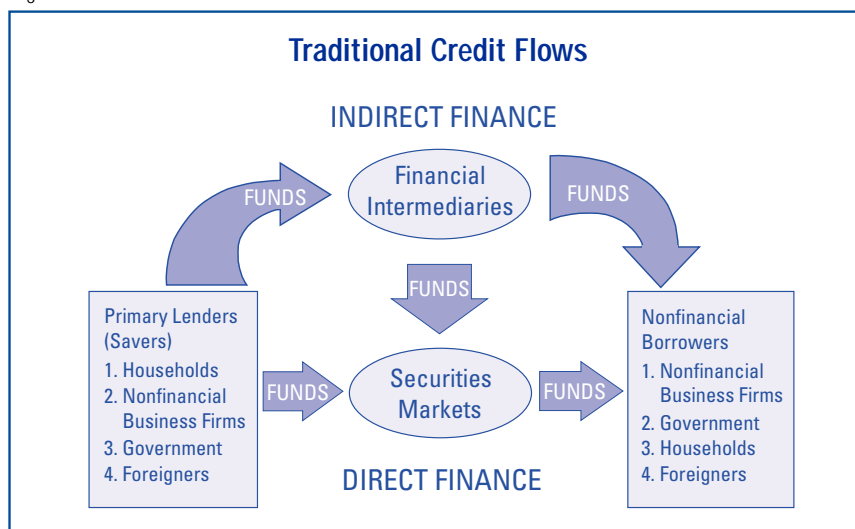
The nature of credit markets 50 years ago helps to explain some important conventions in the FFA. Specifically, the accounts were designed to measure the flow of credit to nonfinancial-sector borrowers and the flow’s link to economic activity.

To this end, the FFA defined the set of credit-market instruments to include the types of claims that nonfinancial-sector borrowers use to obtain financing in formal credit markets. These include loans from intermediaries as well as bonds and short-term paper issued in securities markets.⁸ The traditional indirect liabilities issued by intermediaries (deposits, and claims on insurance and pension funds) are not credit-market instruments because nonfinancial borrowers do not issue these types of claims. As we discuss throughout this study, financial intermediaries can, and increasingly do, raise funds by issuing credit-market debt—most often securities—in their role as financial middlemen. In the latter case, credit-market debt issued by the financial sector is used to fund other credit-market debt on the intermediaries’ balance sheets.

The distinction between total debt and nonfinancial-sector debt was not as important 50 years ago. As summarized in table 1, credit markets were somewhat simpler then: commercial banks funded

⁸ The FFA define credit-market debt to include corporate and foreign bonds, U.S. government securities, tax-exempt debt and securities, residential and business mortgages, consumer credit, bank loans not elsewhere classified, open-market paper (commercial paper and banker’s acceptances), loans to businesses from nonbank financial intermediaries, loans from the U.S. government or sponsored credit agencies, foreign loans to U.S. nonbank borrowers, and customer liabilities on acceptances. Credit-market debt does not include security credit, trade credit, and other miscellaneous financial claims.

Figure 1



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their lending by issuing checking and savings accounts; savings institutions were largely home mortgage lenders that issued saving accounts; insurance companies issued insurance policies and defined-benefit pension-plan contracts, funding future payments on these contracts by investing the premiums in securities and commercial mortgages. The financial sector did not raise funds by issuing credit-market debt to a great extent; in the early 1950s, only 2.5 percent of total credit-market debt was issued by financial-sector firms.

In that world, intermediation between a borrower and a lender generally involved one middleman and tended to involve a high degree of asset transformation. Notably, commercial banks funded relatively illiquid, unmarketable loans by issuing extremely liquid demandable deposits. To a large extent, the high degree of asset transformation reflected the relatively high costs of processing and tracking information about financial transactions.

Asset securitization as a funding mode did not begin until the 1970s, when federally sponsored

agencies began to pool home mortgages and issue mortgage-backed securities. Asset securitization by the private sector did not become significant until the mid-1980s. And although mutual funds have a 60-year history, until the 1980s they accounted for only small shares of the financial assets held by investors. Until then, investors who wanted to hold stocks and bonds tended to hold them directly.

A prominent theme of this paper is that advances in the application of information technologies in the financial-services industry have dramatically changed both the nature of the asset transformation taking place in U.S. credit markets and the types of indirect liabilities that are being used to fund nonfinancial borrowers. In recent decades, the volume of credit-market debt—specifically, marketable securities—issued by financial firms has grown dramatically. Currently, a third of total outstanding credit-market debt is now issued by financial intermediaries (see figure 7), and asset securitization accounts for a large share of this debt. Thus, as lower costs make it increasingly feasible to standardize, unbundle, and repackage

Table 1

Credit Markets in the 1950s		
Sector	Primary assets held	Financial source of funding
INDIRECT FINANCE		
Commercial banks	U.S. Treasury securities Nonmortgage business loans (C&I, Ag) Business mortgages Home mortgages Consumer credit	Zero-interest bearing checking accounts Passbook savings accounts
Savings institutions	U.S. Treasury securities Home mortgages Consumer credit	Passbook savings accounts
Finance companies	Non-mortgage business loans Consumer loans	Bank loans Corporate bonds and paper
Insurance companies Pension funds	U.S. Treasury securities Corporate bonds State and local government securities	Contingent claims of policy holders Defined benefit pension claims
DIRECT FINANCE		
Nonfinancial holders	Corporate bonds and paper U.S. Treasury securities State and local government securities	

credit flows and risks, loans that used to be funded by traditional lenders are increasingly being funded in securities markets. Moreover, the asset-backed securities are often bought by other intermediaries to be held in their portfolios. Thus, unlike the traditional flows of credit as diagrammed in figure 1, credit flows to nonfinancial borrowers in U.S. credit markets increasingly involve more complicated layers of intermediation between nonfinancial “savers” and nonfinancial “borrowers” (figure 2). When financial intermediaries hold the claims issued by other financial intermediaries, an extra layer of intermediation is created. For example, when a mutual-fund portfolio includes commercial paper or bonds issued by a finance company or asset-backed securities issued to fund consumer loans, there are two layers of financial intermediation between the consumer who is borrowing and the mutual-fund investor.⁹ It is certainly possible for there to be more than two layers of intermediation.

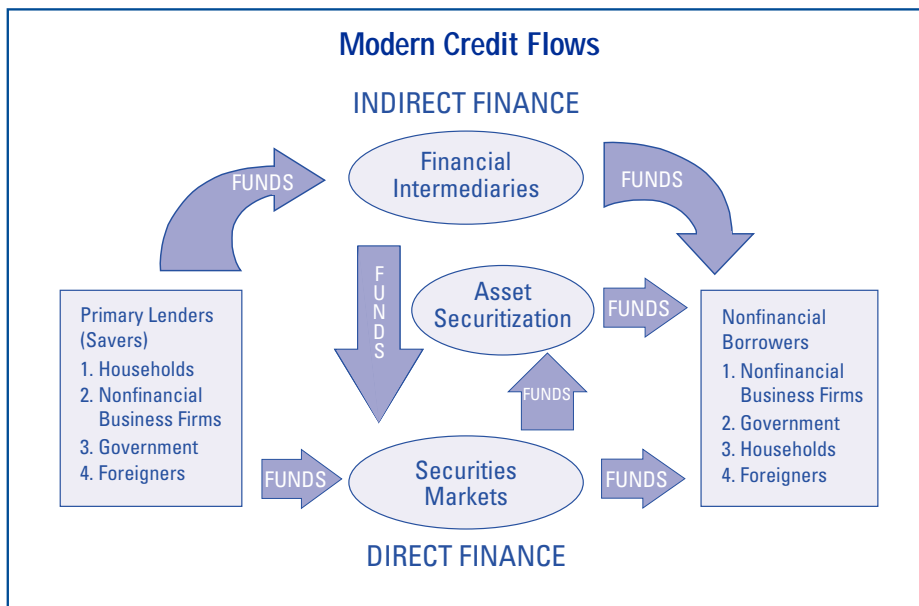
The increasing complexity of credit-market flows raises methodological issues about how to measure bank market share. One very basic issue is simply that looking at total credit-market debt increasingly overstates the amount of borrowing associated with economic activity because a growing share of this total debt comprises claims issued by financial intermediaries just to fund other debt.

In this regard, the focus on nonfinancial borrowing is useful because it allows us to characterize the role of banks in facilitating the flow of credit to the economy and to avoid double-counting debt issued purely in the context of intermediation. But even with this focus, the growing issuance of securities by financial firms has made measurement issues more prominent: source data for the FFA do not generally allow one to ascertain the extent to which corporate bonds or commercial paper are issued by nonfinancial firms as opposed to financial firms. Thus, in measuring funds advanced to nonfinancial businesses by

⁹ Here it is useful to remember that traditional financial-intermediary liabilities in the form of deposits, mutual-fund shares, and accrual of pension and insur-

ance fund reserves are not counted as credit-market debt; hence, they do not contribute to the double counting of debt.

Figure 2



banks, mutual funds, and other holders of corporate debt, we estimate the shares that are nonfinancial issues.¹⁰

Post-War U.S. Credit-Market Trends through the Early 1990s

To understand the dramatic transformation of U.S. credit markets, it is necessary to look at historical trends leading up to the banking-sector problems of the 1980s and early 1990s and the apparent decline in the importance of commercial banks as credit providers.

From the 1950s through the early 1980s, domestic nonfinancial borrowing (by households, nonfinancial businesses, and governments) grew roughly at the same rate as economic activity (measured in terms of economic output—Gross Domestic Product, or GDP). Indeed, the ratio of debt owed by domestic nonfinancial sectors to GDP was remarkably stable—so stable that it became a “stylized fact” used by economists in analyzing macroeconomic issues such as the effects of federal deficits (Friedman [1978], Friedman [1980]).¹¹ But although total nonfinancial debt grew roughly at the same pace as overall economic activity, borrowing by particular nonfinancial sectors did not grow at the same rate: the share of borrowing by households and nonfinancial businesses grew faster as the share of debt owed by the federal government (accumulated during WWII) declined.

During this time, the number of commercial banks in the United States was growing; thus, the industry continued to be made up of a large number of banks that tended to be very geographically localized (partly because of branching restric-

tions). Banks also faced public policies that restricted entry, oversaw mergers, and regulated permissible activities.¹² On the liability side, commercial banks were limited in terms of the types of liabilities they could issue and the rates they could pay depositors. They were generally relegated to the business of making (primarily) business loans and providing transaction accounts (or close substitutes) in fairly localized areas. They were also an important funding source for the federal government. Thus, for investment banking and insurance services, individuals and corporations had to go to other financial-service providers. The phenomenon of the bank holding company was a response to restrictions on the scale and scope of banking. A larger banking organization could be formed if banks were held as affiliates, and if nonbank financial firms were held as affiliates, the holding company could expand the scope of its activities to encompass certain permissible lines of financial services. Of course, as holding companies evolved, they too fell under regulatory scrutiny.¹³

The interplay that always exists among policy, regulation, and financial-market trends was evident during this three-decade period, particularly with respect to interest rates on deposit accounts. Rates on these accounts were regulated, but in 1962 the marketable large certificate of deposit (CD) was created to circumvent interest-rate ceilings and enable banks to pay market rates to attract funds. On the asset side of the balance

¹⁰ So, for example, when looking at the commercial banking sector to measure the share of nonfinancial-sector debt that it is funding on the balance sheet, we estimate the share of the banking sector's holdings of commercial paper that are nonfinancial issues. Specifically, we use the share of outstanding commercial paper issued by domestic nonfinancial corporations as an estimate of the share of commercial banking's holdings that consist of nonfinancial issues. The same method is used to estimate holdings of nonfinancial corporate bonds.

¹¹ For an analysis of debt and money growth in the U.S. prior to 1950, see Gurley and Shaw (1957).

¹² Permissible activities were severely curtailed because of the bank failures of the 1930s, but the decentralization of the industry stems more broadly from a historical distrust of both centralized political control and concentrated market power. The dual banking system allowed banks to choose whether to be chartered by state agencies or by the Comptroller of the Currency (the choice of charter determined who would regulate a bank). Interstate banking was prohibited by the McFadden Act, and states themselves regulated intrastate branching. The Glass-Steagall Act prohibited banks from engaging in investment banking activities. For a discussion see Wheelock (1993).

¹³ The Bank Holding Company Act of 1956 made all multibank holding companies subject to regulation by the Federal Reserve Board and prohibited further interstate holding company acquisitions. In 1970, amendments to this act reined in the permissible activities of one-bank holding companies, which had proliferated as a means of circumventing regulations imposed by the 1956 act. One effect of these amendments was to remove any disincentives for organizations to acquire multiple bank affiliates (albeit within the home state), which they did. For a provocative assessment of the 1970 holding company amendments as well as a lively overview of post-war U.S. banking history, see Chase (1994).

sheet, after credit crunches in the late 1960s threatened the availability of bank credit to commercial firms, the commercial-paper market became considerably more active (Judd [1979]); in effect, banks were making fewer loans to prime corporate clients.¹⁴

Through the mid-1970s, commercial banks continued to be special both in their role as lenders and as a transmission mechanism for the implementation of monetary policy (Friedman [1981], Fama [1980], Wojnilower [1980]). Of all the financial intermediaries issuing claims to raise funds from investors, commercial banks were the only ones allowed to issue demand deposits that could be used as a direct means of payment, although demand deposits could pay no explicit interest.¹⁵ Meanwhile, for most businesses, the costs of direct finance—that is, the raising of money by issuing and placing bonds or commercial paper—were prohibitive enough that their most attractive source of funds remained commercial banks. And of course commercial banks, as well as savings institutions, were afforded federal deposit insurance. Hence, despite regulatory restrictions, periodic credit crunches, and economic downturns, the U.S. commercial banking industry performed quite well in the three decades following WWII. And although commercial banks' share of nonfinancial-sector debt dipped slightly as the war-related federal debt was drawn down,¹⁶ it rebounded as borrowing by households and businesses increased during the 1960s and early 1970s (see figure 3).

¹⁴ In the mid-1960s the term *credit crunch* was coined to refer to periods when nominal interest rates rose above regulatory ceilings and banks faced disintermediation as depositors withdrew funds to earn higher returns available in direct credit markets. For discussions, see Burger (1969) and Wojnilower (1980).

¹⁵ The other direct means of payment was cash held by the public. Savings institutions issued passbook savings accounts, which paid interest but the rates they could pay were subject to ceilings (and after 1962, savings institutions also issued CDs). Commercial banks, too, could issue passbook savings accounts, which were subject to Regulation Q interest-rate ceilings. Although savings institutions could issue close substitutes for money (passbook savings accounts with liberal withdrawal terms), these institutions had to maintain a high ratio of residential mortgage lending to total lending in order to qualify as a thrift institution. Meeting the qualified-thrift-lender test allowed a savings institution to borrow at Federal Home Loan Banks, which were an important source of funding during credit crunches.

¹⁶ Commercial banks held large amounts of government debt in their portfolios in the post-WWII years.

With the mid-1970s came a severe recession paired with high inflation; however, relatively few banks failed. The number of commercial banks (and banking organizations) was still increasing, although at a slower pace than banking assets. Thus, although there were more banks, banks were also, on average, getting larger as the industry established more branches (Savage [1982], Rhoades [1985], Amel and Jacowski [1989]). Banks were also becoming increasingly “complex” in terms of their off-balance-sheet activities (such as issuing standby letters of credit that promise to pay in the event of nonpayment of a third party), which caught the attention of policy makers and researchers at the time because of their implications for bank safety and soundness (Lloyd-Davies [1979]; Wolkowitz et al. [1979]; Goldberg and Lloyd-Davies [1985]; Benveniste and Berger [1986]).

At the end of the 1970s, the pace of financial-market change escalated significantly (Simpson [1988]; Berger, Kashyap, and Scalise [1995]). High nominal interest rates, ceilings on the interest that could be paid on deposits, and better information processing made the formation of money-market mutual funds a cost-effective proposition (Mack [1993]).¹⁷ These funds added to the competition associated with the creation of NOW (Negotiable Order of Withdrawal) accounts by savings institutions in the mid-1970s.

Ultimately, deregulation was implemented in the 1980s to allow banks to compete more effectively: interest-rate ceilings were raised (and were later eliminated), and commercial banks (and thrifts) were allowed to offer a wider range of deposit accounts to attract depositors. But in the meantime, evolving financial technologies were permanently altering the way financial markets channeled capital to investment opportunities in the U.S. economy. Technical innovations in information processing reduced the costs associat-

¹⁷ These funds—which held very safe, liquid, money-market assets; maintained par value for their shares; and allowed some transaction privileges—became a popular alternative to bank deposits. They lack deposit insurance but also carry fewer regulatory costs.

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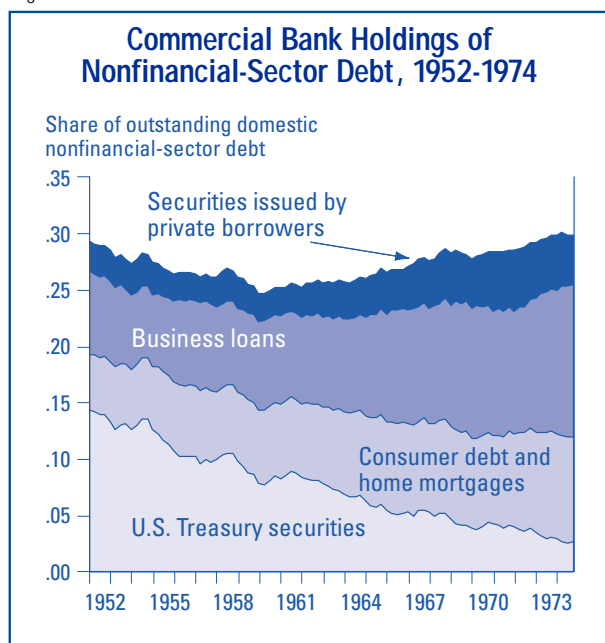
ed with financial transactions, and the result was a proliferation of new products and new providers of financial services, as well as the growth of existing ones. In particular, asset securitization became an increasingly important means of funding loans that had been traditionally funded by banks.¹⁸

As noted above, the origins of asset securitization can be traced to the pooling and funding of mortgages by the government-sponsored agencies involved in the secondary mortgage market. But by the late 1980s, securitizations of loans by private asset-backed-securities (ABS) issuers had become a viable means of funding other types of loans, such as consumer loans.

On the liability side, financial-sector development in the 1980s also increased the competition that banks faced (Simpson [1988]). Depository-institution deregulation allowed savings institutions to issue the same types of deposits as banks. But more significantly, a growing mutual-fund industry in tandem with the regulatory shift

¹⁸ Early articles assessing this phenomenon include Pavel (1986), Cummings (1987), and Carlstrom and Samolyk (1993).

Figure 3



toward defined-contribution pension plans served to channel the funds of smaller investors into direct debt (and equity) markets. Not surprisingly, it has been argued that the mutual-fund industry helped to reduce the role of depositories in credit markets (see Mack [1993] and Fortune [1997], for example).

The evolution of financial-market technologies on both sides of the balance sheet contributed to a dramatic increase in credit flows to nonfinancial businesses and households, even while the federal government was running large deficits (figure 4). After three decades of relative stability, nonfinancial-sector borrowing increased sharply as a ratio to GDP, from about 1.3 in 1981 to more than 1.8 by 1989. Financial intermediation—including a growing volume of securitized assets—increased in tandem with the economy's appetite for debt. From the perspective of researchers and policy makers at the time, the debt buildup was of great concern, particularly the question of whether it was a debt bubble that was going to burst in an economically detrimental fashion (Federal Reserve Bank of Kansas City [1986]).¹⁹ In addition, the transformation of the asset menu available to investors through banks and other intermediaries disrupted the historical relationships between monetary aggregates and nominal output that the Federal Reserve Board used in conducting monetary policy.²⁰

Commercial banks, once the dominant type of financial intermediary, did not appear to share in the proliferation of financial-sector activity during the 1980s. The national expansion was accompanied by regional economic downturns (related to troubled industries, including oil and farming) severe enough to take down local banks (FDIC [1997]). By the early 1990s the condition of the industry was marked by crisis, failures, and consolidation; this was an industry under siege by

¹⁹ In 1986, the annual symposium sponsored by the Federal Reserve Bank of Kansas City was entitled "Debt, Financial Stability, and Public Policy." Policy research at this time also focused on the growth of borrowing by both nonfinancial businesses and households. For example see Pearce (1985), Faust (1990), Altig, Byrne, and Samolyk (1992), and Carlson (1993).

²⁰ For discussions, see Carlson and Samolyk (1992); Duca (1992); Orphanides, Reid, and Small (1994); and Friedman (1993).

competitors. Banking-sector problems continued as real-estate markets collapsed on both coasts, taking their toll on exposed institutions. And even as the industry returned to a healthier state, the consolidation trend did not appear to be abating.²¹

In addition, the importance of commercial banks measured in terms of credit flows seemed to be declining. Between 1974 and 1994, the share of domestic nonfinancial-sector debt that was advanced by U.S. commercial banks declined from 30 percent to just over 20 percent (see figure 5). Savings institutions—most like banks in terms of their funding (deposits), regulations, and decentralized industry structure—faced similar issues and appeared to be faring even worse.

²¹ By year-end 1994, the number of commercial banks had declined from a 1984 post-war high of over 15,100 to roughly 10,500, and average bank size had risen from roughly \$250 million to \$360 million in inflation-adjusted 1996 dollars. (The number of savings institutions—savings banks and savings & loan associations—was also declining, from more than 3,600 in 1985 to just over 2,100 in 1994.) In addition to merging charters, more institutions were becoming affiliates of bank holding companies. Thus, if the bank holding company is considered the relevant measure of an individual banking organization, the number of firms in the industry declined even more. By year-end 1992, 71.7 percent of domestic commercial banks were affiliates of bank holding companies. For discussions, see Savage (1993), Samolyk (1994a), Holland et al. (1996), and Rhoades (1996).

The Declining Role of Banks?

A host of studies assessing the evolving role of banking were published in the wake of the banking crisis of the 1980s and early 1990s. These papers were written in the context of what had become a decade-long consolidation trend, an even longer-term decline in bank market-share measures, and concerns about a credit or capital crunch.²² Not surprisingly, opinions about the “declining” role of commercial banking differed.

One view was that changes in the financial sector—evidenced by the increasing competition from nonbank financial-service firms—reflected a decreasing need for banks. From this perspective, consolidation could be viewed a response to excess capacity in the banking industry.²³ Others argued that the evidence did not support either the popular claims that large banking firms were more efficient than smaller firms or the notion that the industry was consolidating to eliminate excess capacity. Rather it was suggested that pub-

²² As noted in above, concerns about disruptions to the traditional linkages between standard monetary aggregates and output also led to much research focusing on the implication for monetary policy. Also see Higgins (1992).
²³ For examples, see Kaufman (1993) and Gorton and Rosen (1995).

Figure 4

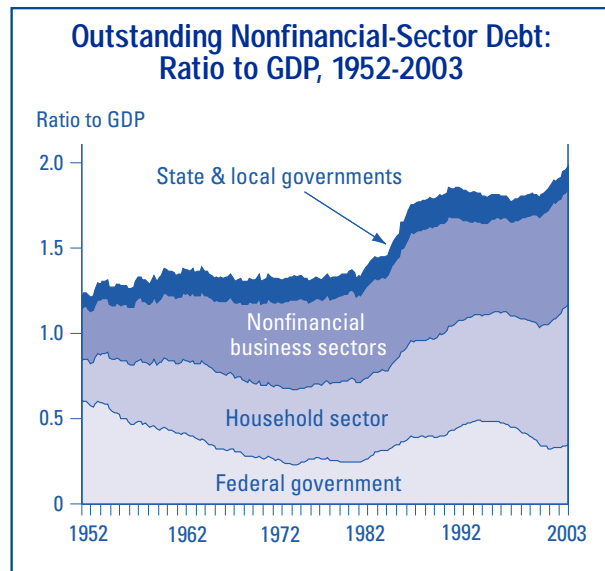
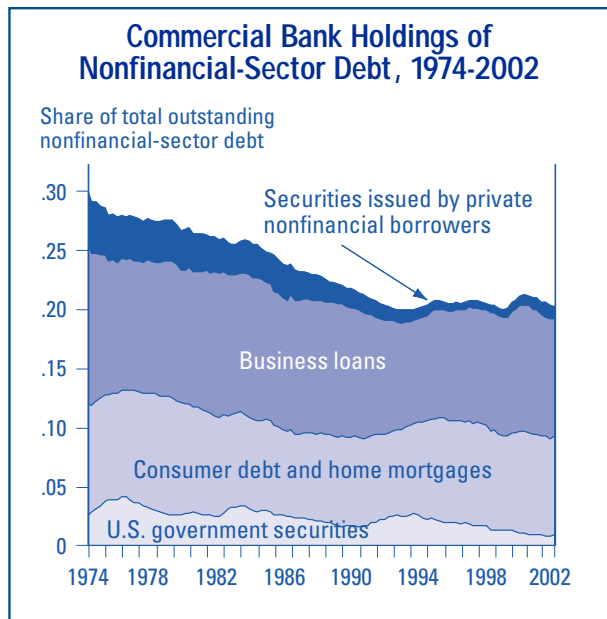


Figure 5



lic policies rather than performance gains were encouraging banks to merge.²⁴ More sanguine observers argued that banking was a battered but viable industry that needed industry consolidation and regulatory reform if it was to adapt to the evolving financial environment. In this environment, such observers argued, larger banks with broader banking powers would be able to compete by providing more services at lower costs and by spreading the costs of new banking technologies over more customers. In addition, as banks became larger and expanded geographically, the geographic scope of their activities would make them less vulnerable to the localized economic problems that had plagued banks during the 1980s and early 1990s.²⁵

Others research argued that when bank balance-sheet data were looked at in isolation, they understated the share of financial services provided by banks in the broader financial sector. Boyd and Gertler (1994b) conducted perhaps the most extensive examination in this regard, documenting a host of alternatives to standard measures of balance-sheet market share. These alternatives quantified activity in the banking sector relative to activity in the broader financial sector or in the entire economy. The term “activity” is purposely general because Boyd and Gertler quantified banking-sector activity (and the activity of other financial-service providers) in numerous ways; they used measures that adjusted credit flows to reflect off-balance-sheet activities as well as measures of profitability, employment, and compensation.

Boyd and Gertler argued that a careful reading of the evidence did not support the view that banking was in decline. Although on-balance-sheet assets held by commercial banks had declined as a

share of total assets held by intermediaries, they noted that this measure ignored the substantial growth in banks’ off-balance-sheet activities, in offshore lending by foreign banks, and in the size of the financial-intermediation sector. They found that when measures of bank assets were adjusted for these considerations, the measures showed no clear evidence of long-term decline. Neither did an alternative “value-added” measure, constructed with data from the national income accounts. As Boyd and Gertler concluded, “At most, banking may have suffered a slight loss of market share lately. But this loss is a temporary response to a series of adverse shocks rather than the start of a permanent decline.” Thus, by defining banking more broadly to include financial services that do not appear on bank balance sheets, the data did not indicate an industry in decline.

Finally, others argued that banks were still important to certain borrowers—particularly households and businesses that continued to rely on banks for credit.²⁶ Samolyk (1994b) analyzed bank market share from this perspective, distinguishing between bank lending and other asset holdings (such as securities holdings) and arguing that lending involves more intermediation services than holding securities does. Using FFA data to look at the markets where households and businesses borrow, that study found shifts in how banks were funding private borrowers, but the overall decline in market share was less than might have been expected. As business lenders, banks were facing increased competition from finance companies and direct credit markets;²⁷ the broadening of the commercial-paper market

²⁴ For examples, see Boyd and Graham (1991) and Boyd and Gertler (1994a). These studies suggest that the formation of very large institutions reflected regulatory incentives rather than attempts to become more efficient.

²⁵ For example, see Wheelock (1993). Generally, more sanguine analysts argued that institutions had to be larger to meet the competition for traditional bank services, to develop new products, and to diversify geographically. Samolyk (1994a) presented evidence that regional disparities in economic conditions did indeed explain much of the poor performance of banks (including large banks) during the 1980s and early 1990s.

²⁶ Small businesses and households have traditionally relied on financial intermediaries (particularly banks) for credit because of these borrowers’ small financial size and the information-intensive nature of the task of assessing their creditworthiness.

²⁷ Finance companies, which faced less regulation of the geographic scale and scope of their activities, had gained significant ground during the 1980s and early 1990s. Some finance companies are captive funding vehicles for large conglomerates (e.g., GMAC Finance), whereas others are independent firms that extend credit to a particular sector. Some are subsidiaries of bank holding companies and, as such, allow the holding companies to broaden the scale or scope of their activities and avoid banking regulations. Within their respective specialized lending areas, finance companies diversify across many borrowers and develop expertise in transforming the risks associated with their particular types of loans. By so doing, they reduce overall portfolio risks and

provided an alternative to banks as a funding source. However, as of the early 1990s, the securitization of business loans had not really taken hold yet, and the share of business mortgages funded by banks was actually increasing. Meanwhile, the share of home mortgages and consumer credit that banks were funding was similar to the share they had funded in the early 1960s. Moreover, although asset securitization was becoming a more dominant way to fund household-sector borrowing, during the 1980s asset-backed lending grew more at the expense of savings institutions and finance companies than of commercial banks.

During the 1990s, survey data obtained from households and businesses also became important sources of information about the markets in which banks competed as lenders. These data were particularly useful because they yielded disaggregated pictures of the financial services used by households and by businesses. For example, data from the triennial Survey of Consumer Finances (SCF) were used to study the nature of rising household-sector debt ratios during the 1980s and early 1990s.²⁸ Kennickell, Starr-McCluer, and Sunden (1997) found little evidence of a serious rise in debt payment problems even though more families had debt, and more of it.²⁹ On the other side of the household balance sheet, the share of families who owned equities, and the amount of their holdings, were also rising. The FFA data, too, indicated rising debt burdens and equity holdings in the household sector, but the SCF data were important because they

the risk-adjusted costs of funding their activities. In addition, the evolution of the commercial-paper market has been viewed as contributing to the success of those finance companies that shifted to commercial paper as a dominant funding source rather than borrowing from banks (D'Arista and Schlesinger [1994]).

²⁸ The SCF has been gathering data on balance sheets and the use of financial institutions by U.S. households since 1983. For example, see Avery and Kennickell (1993) and Kennickell and Starr-McCluer (1996). The most direct precursors of the SCF were the 1962 Survey of Financial Characteristics of Consumers and the 1963 Survey of Changes in Family Finances. For a discussion of survey evidence regarding small business financing trends from the early National Survey of Small Business Finances see Cole and Wolken (1993).

²⁹ This paper uses data from the 1995, 1992, and 1989 SCFs to examine changes in the balance sheets and income of U.S. families and in the kinds of institutions where households obtained their financial services. Also see Avery and Kennickell (1993) for trends in the SCF data between 1983 and 1986.

indicated that aggregate increases were associated with the use of these financial instruments by a broader range of households (as opposed to increased usage by previously active households).³⁰

Another interesting vein of research during the 1990s examined whether the services provided by banks—such as lending—are different from those provided by other financial-service firms in ways that do not appear on a balance sheet. Using data on individual loans, Carey, Post, and Sharpe (1996) compared corporate lending by banks with corporate lending by finance companies.³¹

Although their evidence suggested that both of these intermediaries were special in solving informational problems, the two types of institutions did not make the same types of loans. Although banks and finance companies competed across the spectrum of borrower risk, finance companies tended to serve observably riskier borrowers, especially highly leveraged ones.

Passmore and Laderman (1998) investigated whether there were differences between savings associations and commercial banks that would result in reduced lending to traditional mortgage borrowers if the savings-association charter were eliminated. Their empirical tests did not indicate significant differences between savings associations and commercial banks, suggesting that elimination of the savings-association charter would not impair home mortgage credit availability.

A final vein of research that gained prominence in the 1990s examined whether the consolidation of the banking industry into large organizations adversely affected the availability of credit to

³⁰ The FFA and the SCF do not always paint the same picture of household-sector balance sheets. Avery and Kennickell (1991) and Antoniewicz (1996) show that although some asset and liability categories in the SCF and the FFA are quite close, measures of liabilities tend to match up better than asset categories.

³¹ Although commercial banks have long been viewed as competing with savings institutions and credit unions for deposit funding, finance companies represent competition on the asset side of the balance sheet, for they have a long history of lending to businesses and households (although they do not fund their portfolios by issuing deposits).

small businesses.³² This literature did not directly yield evidence about bank market share vis-à-vis the nonbank competition, but it raised the important question (somewhat overlooked in many bank market-share analyses) of whether banks might be willingly reducing the services they supplied to certain customers, such as small-business borrowers. If they were (or are), one would hope that other financial-service suppliers would step forward to meet the credit needs of these customers.

This discussion of some of the research of the 1990s indicates that by looking at particular markets where banks are thought to play a special role for lenders as well as by looking beyond the extent to which banks are funding loans on their balance sheets, researchers were able to find evidence that the decline in the share of total nonfinancial-sector debt funded by banks could be misrepresenting the importance of banks in U.S. credit markets. The next two sections examine more recent credit-market trends from both of these perspectives to better illuminate the evolving role of banks in the twenty-first century.

Recent Credit-Market Trends: Who Is Funding Whom?

There is no doubt that the share of nonfinancial-sector debt directly funded by commercial banks declined during the 1980s. More than a decade after that decline, it has become clear that the debt buildup of the 1980s was actually a secular increase in the volume of nonfinancial borrowing associated with economic activity in the U.S. economy, which can be thought of as a permanent increase in the economy's financial capacity

³² After bank data on small loans to businesses and farms were first reported, in 1993, numerous studies looked at the importance of large banks compared with small banks as small-business lenders, and at the implications of industry consolidation for the provision of small-business loans by banks. The findings of studies using data for the mid-1990s suggested that net consolidation activity among larger institutions tended to result in declines in small-business lending as a share of bank assets, whereas mergers among smaller or more focused banks increased the banks' small-business loan shares. Samolyk (1997) and Berger and Udell (1998) discussed some of the small-business loan studies done in the mid-1990s.

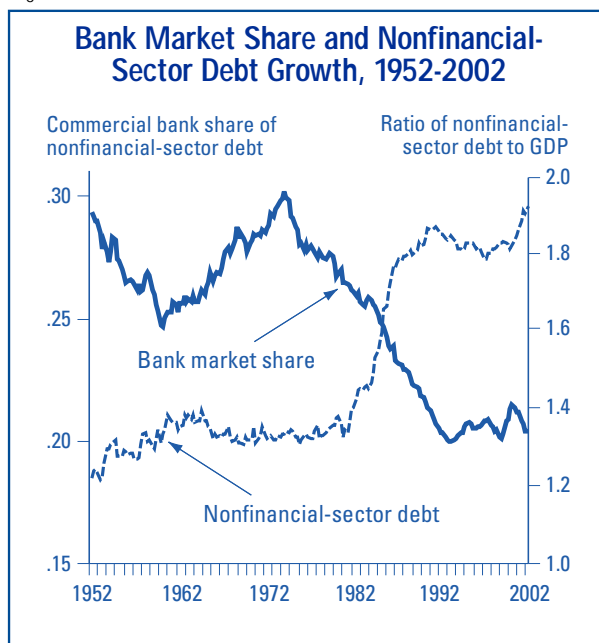
(figure 6). Moreover, this increase in financial capacity was not associated with intermediation funded by banks; hence, banks' share of the pie had declined. However, as the debt capacity of the economy's nonfinancial sector stabilized in the 1990s, so did the market share of commercial banks. During the past decade, the banking sector has rebounded to record profits, and although consolidation has continued, it is occurring in the context of a healthy industry.³³ Here we look at how the players and the instruments used to fund nonfinancial borrowers in U.S. credit markets have evolved during the past decade.

Changed Players and Funding Instruments

The types of credit market instruments (loans and securities) issued by nonfinancial borrowers to obtain funds in formal credit markets have not changed as much as the types of instruments used to fund these credit flows (table 2). Households still obtain credit primarily in the form of home

³³ Consolidation has been related to the relaxation of geographic banking restrictions that limited the extent to which banks could expand their geographic reach (Samolyk and Morgan [forthcoming]).

Figure 6



mortgages and consumer loans (although the former now include home equity lines of credit, which were an innovation of the 1980s). But now asset-backed securities—issued by both private asset-backed-securities (ABS) issuers and federally related mortgage pools—have become an important funding mode. And although non-financial businesses still obtain credit primarily in the form of (a) loans collateralized by business real estate (business mortgages), (b) other (non-mortgage) loans from intermediaries, and (c) corporate securities, business loans are also being securitized, and larger amounts of corporate securities are funded by the issuance of mutual-fund shares. The appendix discusses changes in the composition of investors’ portfolios and the way in which these changes relate to changes in the funding of credit-market debt.

All of these changes are reflected in the growing extent to which the commoditization of credit markets has allowed borrowing by businesses and households to be funded in direct credit markets by securities issues.³⁴ Roughly one-third of total outstanding credit-market debt is now issued by the financial sector to fund other credit-market debt (figure 7). And whereas during the 1980s the growth of securitization largely reflected mortgage funding through federally related mortgage pools, during the past decade, securitization by private ABS issuers has expanded rapidly. FFA data estimate that now almost half of outstanding

³⁴ Debt issued by government-sponsored enterprises (for example, by Federal Home Loan Banks and the Farm Credit System and to fund the on-balance-sheet lending of Fannie Mae and Freddie Mac) has also increased, but (as we discuss below) much of it funds financial sectors, mainly commercial banks and other depository institutions.

Table 2

Credit Markets circa 2000		
Sector	Primary assets held	Financial source of funding
INDIRECT FINANCE		
Commercial banks	U.S. Treasury securities; Other securities (includes asset-backed); Nonmortgage business loans (C&I, Ag); Business mortgages; Home mortgages Consumer credit	Interest-bearing checking accounts Passbook savings accounts MMF accounts; Nondeposit borrowing
Savings institutions	U.S. Treasury securities Other securities (includes asset-backed) Home mortgages Consumer credit	Interest-bearing checking accounts Passbook savings accounts MMF accounts; Nondeposit borrowing
Finance companies	Non-mortgage business loans Consumer loans	Bank loans Commercial paper and Corporate bonds
Insurance companies Pension funds	Corporate bonds State and local government securities	Contingent liabilities to claims holders Defined benefit pension claims
Federally related mortgage pools; ABS issuers	Home mortgages; Consumer credit Business mortgages; Nonmortgage business loans	U.S. agency securities (mortgage pools) Commercial paper and corporate bonds
Money market mutual funds; Mutual funds	U.S. Treasury securities Agency securities (includes asset-backed) Corporate bonds and commercial paper	Mutual fund shares
DIRECT FINANCE		
Sector	Financial assets	Financial liabilities
Investors	Corporate bonds and paper U.S. government and agency securities State and local government securities	

corporate bonds have been issued by financial firms that fund other credit-market debt, with private ABS issuers accounting for a fourth of the corporate bond market (figure 8). The commercial-paper market has always been dominated by financial-sector issues;³⁵ during the past decade, however, private ABS issuers have become the dominant issuers of commercial paper. More than half of outstanding commercial paper (roughly two-thirds of financial issues) is now funding securitized pools of loans—including loans originated by banks (figure 9).

So who is funding whom? The funding of loans through private securities markets and the additional layers involved in modern credit flows have made it more difficult for researchers to track the flow of funds between primary lenders and primary borrowers. However, we use the FFA to examine the extent to which loans to nonfinancial businesses and households are being directly

³⁵ Finance companies have long used commercial paper as a source of financing, and banks began tapping this market for funds to offset disintermediation during periods when market rates rose above the deposit-rate ceilings.

funded by commercial banks and other intermediaries.

Nonfinancial Business-Sector Credit

Borrowing by nonfinancial businesses can be divided into three “markets,” each of which has historically accounted for roughly a third of outstanding nonfinancial-sector business debt: corporate bonds, shorter-term nonmortgage loans and commercial paper, and loans secured by business real estate (business mortgages). Commercial banks have tended to hold only small amounts of corporate bonds, so here we focus on banks’ role in funding shorter-term nonmortgage business borrowing and business mortgages.

Shorter-term business borrowing (depicted in figure 10) is a very heterogeneous credit market. It includes all nonmortgage loans to nonfinancial businesses—from vehicle or equipment loans to business credit lines. It also includes the very liquid commercial-paper issues that fund only the largest corporations. Trends in the composition of shorter-term business borrowing are also most often cited as evidence of the declining impor-

Figure 7

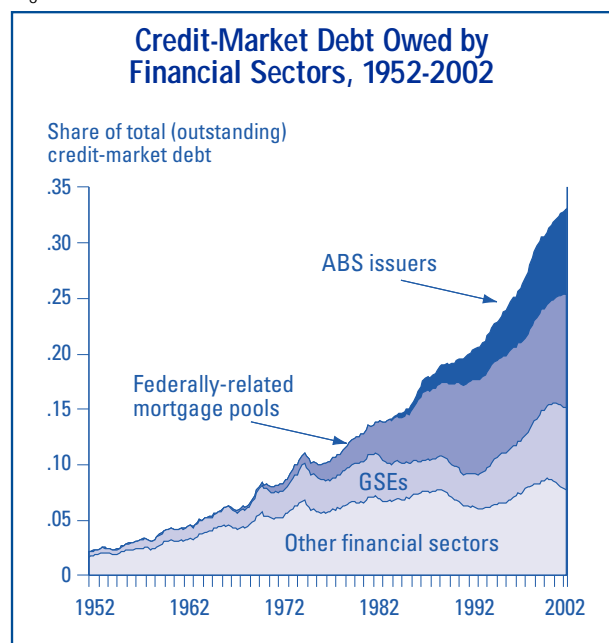
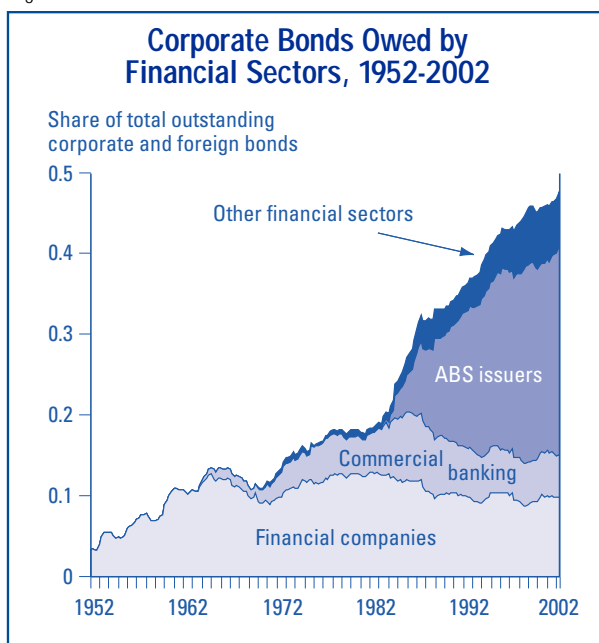


Figure 8



tance of commercial banking (for example, by Herring and Santomero [2000]). The share of shorter-term nonfinancial-sector business credit funded directly by banks declined from more than 75 percent in the early 1970s to just over 50 percent in the early 1990s (it has stabilized during the past decade). Meanwhile the share funded by finance companies has steadily increased, now accounting for 20 percent of shorter-term nonfinancial business-sector credit. ABS issuers have made inroads in funding nonmortgage business loans, although they still account for only 6 percent of this market. Interestingly, commercial paper, one of the widely cited alternatives to bank borrowing, accounts only for roughly 7 percent of this short-term business credit market.

Trends in the business mortgage market—defined to include loans secured by business real estate, including commercial, multifamily residential, and agricultural properties—are depicted in figure 11. Commercial banks now directly fund more than a third of outstanding business mortgages, up from 20 percent two decades ago (and that was before the banking crisis). Private ABS issuers, which did not exist 20 years ago, are now the second-leading business-mortgage funding mode,

accounting for 15 percent of the market.³⁶ Meanwhile, direct funding by life insurance companies and savings institutions has declined significantly.³⁷

Figure 12 depicts commercial bank holdings of the three types of business borrowing (combined) as a share of total outstanding nonfinancial business-sector debt.³⁸ The figure also relates this ratio to the growth of nonfinancial business borrowing over time (measured relative to GDP). As the figure indicates, we estimate that commercial banks fund roughly a third of nonfinancial business-sector debt. And somewhat surprisingly—given discussions about the declining importance

³⁶ The genesis of markets where business loans can be securitized has been linked to the Resolution Trust Corporation's activity in disposing of assets in the wake of savings institution problems.

³⁷ Insurance companies now hold roughly 12 percent of business mortgages, compared with 22 percent 20 years ago and 29 percent 50 years ago. Savings institutions hold less than 8 percent, compared with 22 percent 20 years ago and a peak of 27 percent in the 1970s. The share of business mortgage loans funded directly by nonfinancial borrowers has also declined.

³⁸ Nonfinancial business-sector debt held by commercial banks is estimated to equal the sum of business mortgage loans, bank loans not elsewhere classified, liabilities on banker's acceptances, and the estimated holdings by commercial banks of nonfinancial-sector issues of commercial paper and corporate bonds.

Figure 9

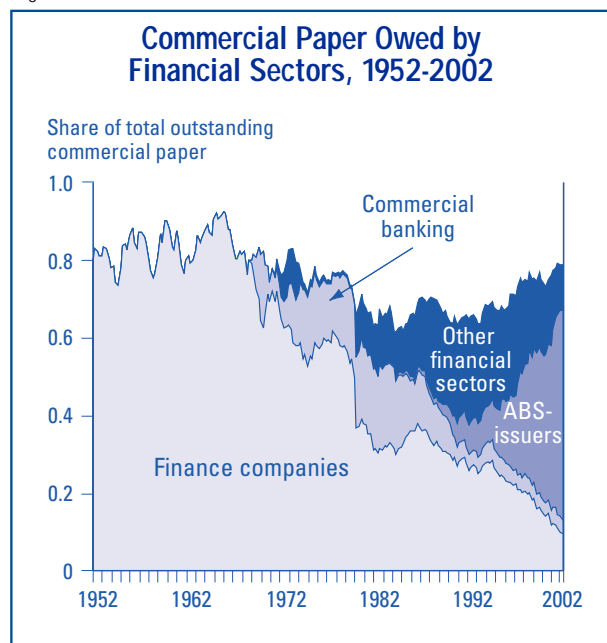
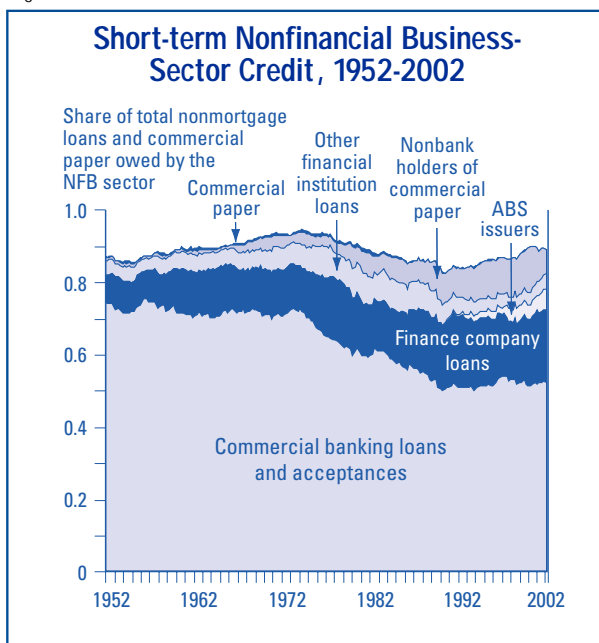


Figure 10



The Future of Banking

of banking for U.S. businesses—this market share has not exhibited a downward trend during the past several decades. But what we do find is a notable shift in the type of business loans being extended by banks, from shorter-term nonmortgage business loans to loan collateralized by business real estate. Thus if one looks only at nonmortgage bank lending, one sees a decline in bank market share, seemingly related to the growth of nonfinancial business-sector debt. However, looking only at this decline is to ignore the other markets where banks fund nonfinancial-business borrowers.

These business-sector trends are broadly consistent with more recent evidence offered in the Federal Reserve Board's Report to the Congress on the Availability of Credit to Small Businesses (2002).³⁹ This report analyzes small-business financing trends using a wide range of data sources and concludes that the patterns of credit use evident in small-business survey data do not indicate a decline in the importance of commercial banks (see also Bitler, Robb, and Wolken [2001]). Commercial banks remain the leading source of credit to small businesses that borrow and the most common source of credit products of

all types.⁴⁰ The report also discusses trends in asset securitization but notes that the securitization of small-business loans has been modest, and it appears unlikely that the securitization of small-business loans will increase significantly in the near term. Thus far, the data do not indicate that asset securitization has yet to become a dominant funding mode for businesses, undoubtedly because business lending is less conducive to standardization than other types of lending.

Household-Sector Credit

Home-mortgage debt has long been the primary type of borrowing for households, and its share of total household-sector debt has risen since the elimination in 1986 of tax deductions for interest paid on nonmortgage credit.⁴¹ By the early 1990s the secondary mortgage market had already made

³⁹ This report, produced every five years pursuant to section 2227 of the Economic Growth and Regulatory Paperwork Reduction Act of 1996, can be found on the Internet at www.federalreserve.gov/boarddocs/rptcongress/sbfreport2002.pdf.

⁴⁰ The Survey of Small Business Finances (SSBF) asks respondents to discuss specific types of loans, including vehicle loans, equipment loans, lines of credit, leases, and mortgages.

⁴¹ See Canner, Durkin, and Luckett (1998).

Figure 11

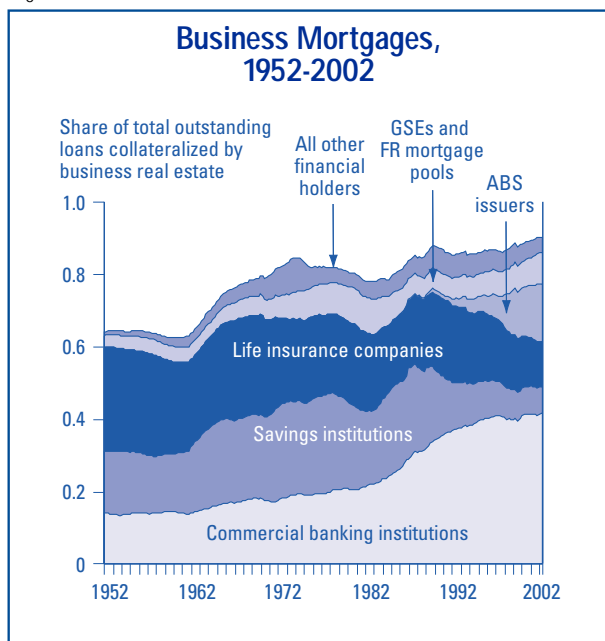
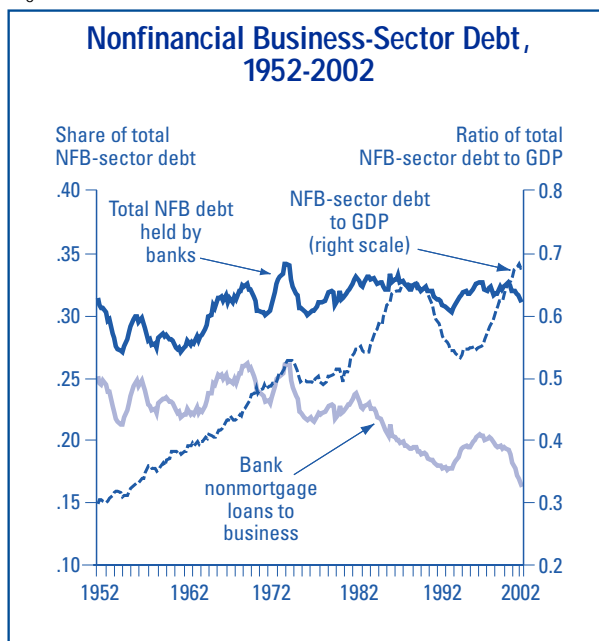


Figure 12



enormous inroads into the funding of home mortgages, and the past decade has seen further increases in the market share held by federally related mortgage pools, government-sponsored enterprises (GSEs), and private issuers of asset-backed securities (see figure 13). GSEs and federally related mortgage pools now fund close to half of outstanding home-mortgage debt, up from 35 percent a decade ago and from a mere 10 percent in 1983. Commercial banks' holdings of home-mortgage debt have been remarkably stable, roughly equal (at 18 percent now) to the level they were 20 years ago. Clearly, this is the market that manifests the rise and fall of savings institutions, whose share of the home-mortgage market has declined from more than 50 percent 20 years ago to only 13 percent today. Some of this decline in market share (and the stability of commercial banking's share) reflects the absorption of savings institutions into the commercial-banking sector through mergers and charter conversions. Life insurance companies, which had significant home-mortgage holdings in the 1950s and 1960s, directly fund almost no home mortgages today.⁴²

⁴² Home-mortgage lending has always been mainly funded by financial intermediaries, and the share of such lending held by financial firms now stands at a 50-year high of 96 percent.

Of course, commercial banks, savings institutions, and insurance companies can—and do—fund the home-mortgage market indirectly when they invest in the securities issued in the context of secondary market activity. However, we net these indirect holdings out of our market-share measures to avoid overstating the flow of credit to home-mortgage borrowers.

In terms of consumer credit, commercial banking's share of funding has not been so stable (figure 14). From the 1950s through the 1970s, an “institutionalization” of the consumer-credit market took place, referring to the increasing extent to which consumer credit was funded through intermediaries (depository institutions and finance companies) rather than directly by nonfinancial corporations (e.g., manufacturing and retail firms). In its infancy, asset securitization by private ABS issuers represented a shift—rather than an increase—in the intermediation of consumer credit. In the late 1980s and early 1990s, the shift came at the expense of savings institutions and finance companies rather than commercial banks or credit unions. Indeed, as recently as 1994, close to half of outstanding consumer credit was directly funded by commercial banks, and

Figure 13

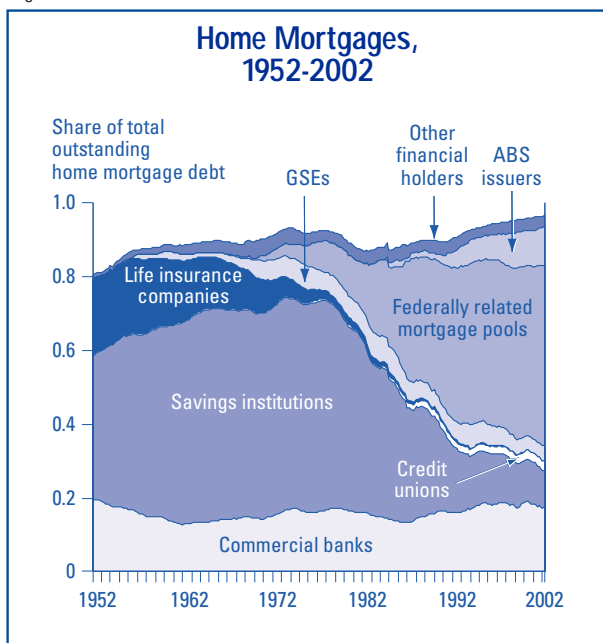
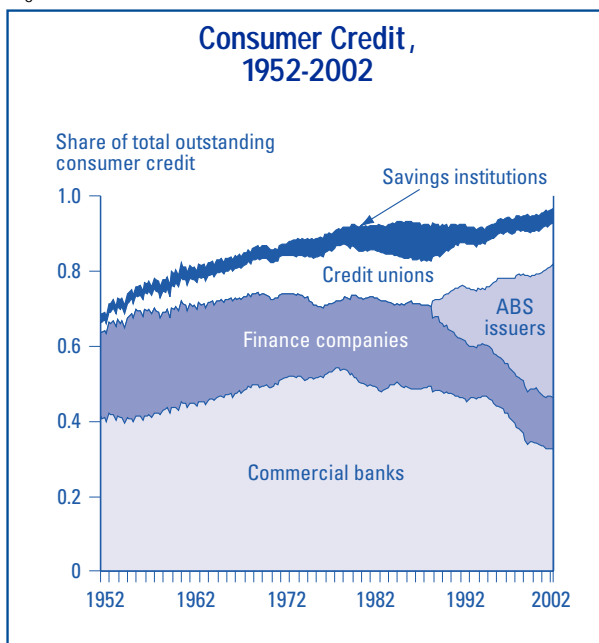


Figure 14



analysts speculated about the long-run role of asset securitization as a funding mode for consumer credit. A decade later, the speculations are answered. The funding of consumer credit through financial intermediation stands at an all-time high of 97 percent, and securitized pools now finance a third of outstanding consumer credit. Commercial bank holdings of consumer credit have declined to roughly a third of the market. Finance companies, savings institutions, and credit unions account for the remainder. In the evolving consumer-credit market, credit unions appear to have fared the best among traditional intermediaries in terms of maintaining market share.

What then do the FFA data indicate about trends in the overall importance of commercial banks in household-sector credit markets? Figure 15 relates commercial banking's market share of home-mortgage and consumer debt to the overall growth of these types of credit markets (the latter measured relative to GDP). Five decades of FFA data indicate that commercial banking's share of home-mortgage and consumer credit has tended to trend downward when borrowing capacity in these markets has been expanding (again, measured relative to GDP). Thus (as with broader

nonfinancial-sector debt) although commercial bank funding of home mortgages and consumer credit has grown, the overall flow of credit to households through these markets has expanded by much more.

And Banks' Competition?

Our analysis of the markets where households and businesses borrow does not seem to validate the dire predictions suggested by some analyses. Although we certainly find that commercial banks' on-balance-sheet market share is lower than it was 20 years ago, the decline we are measuring in the role of banks seems to be smaller than the declines advanced by others. Here we reconcile our findings with the findings of those who suggest a more serious decline in the importance of banks; we then look at the competition faced by commercial banks.

We find less in the way of a decline than other researchers for two reasons. First, when we examine the role of commercial banks in channeling credit to nonfinancial-sector borrowers, we net out credit-market debt issued to fund more debt. Netting out financial-sector debt (figure 16) yields generally stable market shares since the

Figure 15

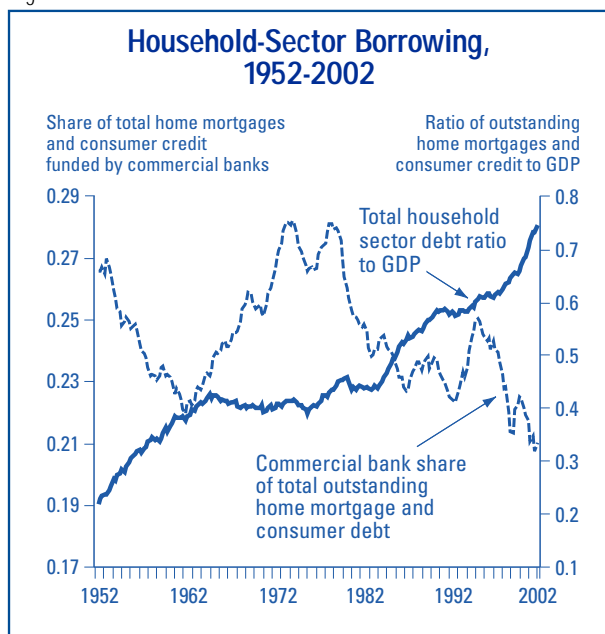
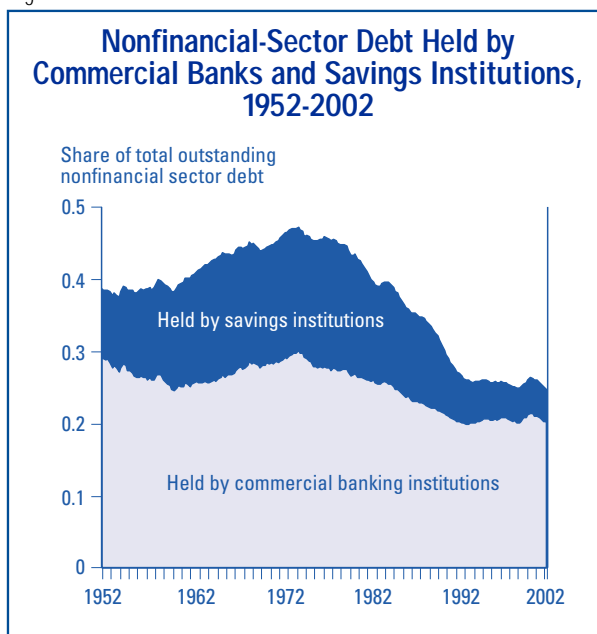


Figure 16



early 1990s, while market-share measures that are based on total debt show further declines through 2002 (figure 17).⁴³ This indicates that the growing volume of credit-market debt being issued by financial firms does not entirely reflect funds being issued to displace lending by other financial-sector players. Indeed as we shall see, some financial-sector issues of credit-market debt (notably those of Federal Home Loan Banks) are channeled as sources of funding to other financial firms—including banks.

A second reason we find less of a decline in banks' market share than other researchers do is that we focus on commercial banking rather than on banking in the sense of all depository institutions. Savings institutions historically have been quite different from commercial banks and certainly have had distinctly different experiences in the nation's evolving financial environment.⁴⁴

What, then, can we say about the overall market-share trends for the competition? Figure 18 illustrates the share of nonfinancial-sector debt directly funded by sectors commonly viewed as the strongest competition for banks in the new financial world.⁴⁵ Finance companies, GSEs, and

asset-backed-securities issuers largely fund their intermediation by issuing securities in direct credit markets. Mutual funds issue mutual-fund shares that may be held directly by individuals or indirectly as assets by defined-contribution pension plans. The picture displays some intriguing results.

Not so surprisingly, we find that significant competition has indeed come from asset securitization, both federally related and private. The evolution of home-mortgage financing in the direction of securitization suggests that large segments of the mortgage market are better suited to funding by the issue of long-term debt. Certainly this funding mode reduces the interest-rate risks

⁴³ Netting out holdings of financial-sector debt for commercial banking and other financial sectors reported in the FFA requires detailed analysis of each sector's financial asset holdings. When detail is not reported in the FFA, specifically for corporate bonds and commercial-paper holdings, we estimate holdings of nonfinancial-sector issues using patterns evident for these markets in the FFA.

⁴⁴ This is particularly true now that asset securitization has become the dominant funding mode for home mortgages—traditionally the primary asset held by savings institutions.

⁴⁵ For some of these sectors, the flow of funds allows one to directly identify holdings of nonfinancial sector debt. For others, such as the sectors that hold corporate bonds and commercial paper, we used the patterns evident in these markets to impute holdings owed by nonfinancial borrowers.

Figure 17

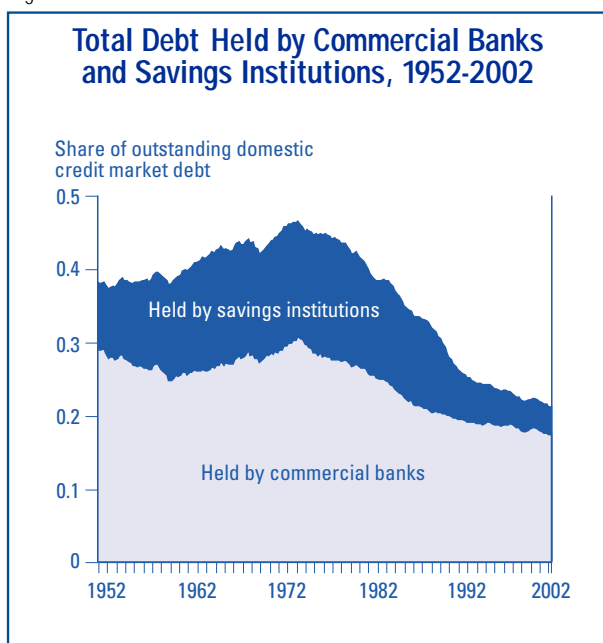
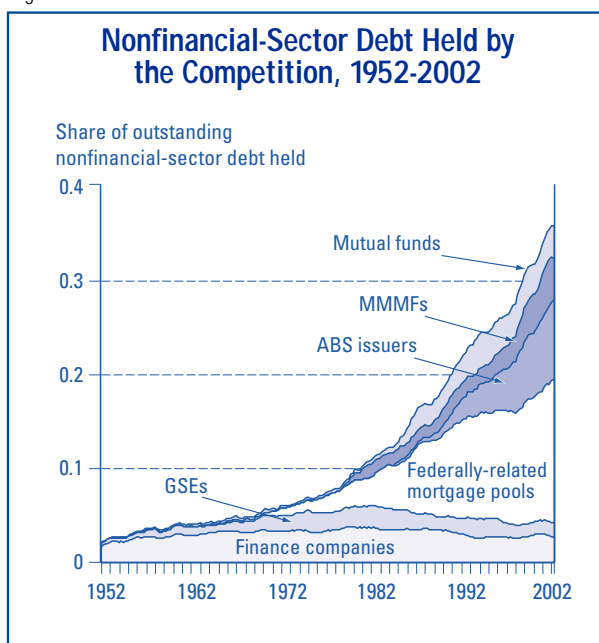


Figure 18



associated with funding long-term mortgages by issuing deposits. As we argue in the appendix, mortgage securitization is better suited to attracting long-term investment funds associated with the accumulation of pension wealth. At the same time, the evolution of home-mortgage funding has basically reduced the role of S&Ls (and insurance companies) in funding home mortgages.

A somewhat more curious source of competition for commercial banking appears to be securitization by private ABS issuers. This mode of funding has affected the nonmortgage markets where households and businesses borrow—most particularly, consumer-credit markets. However, as we discuss in the next section, there is some question as to whether ABS issuers are competitors of banks or merely an alternative mode of funding for banks (particularly large ones).

A third sector that is growing its market share as a funder of the nonfinancial sector is the mutual-fund industry. Of course, since mutual funds hold securities rather than loans, their growth represents less direct competition than the growth of federally related mortgage pools and ABS issuers for the types of lending that make banks special—loans to households and businesses. Indeed, as we show in the appendix, the growth of mutual funds reflects a shift on the part of investors from holding securities directly toward holding them through mutual funds to achieve diversification of risks.

In recent decades two other sectors—ones that are often brought up in discussions of the growing competition faced by banks—have not measurably increased the share of nonfinancial-sector debt they fund. These sectors are finance companies and GSEs. Finance companies may also be securitizing some of the more standardized types of loans they make to households and businesses. GSEs' share of *total* credit-market debt has risen (see figure 7), but as noted earlier, much of this debt funds intermediaries—including commercial banks and savings institutions—rather than nonfinancial borrowers.

Alternative Measures of Bank Market Share

As discussed above, a decade ago, differences in what constitutes banking services led to different assessments of the prospect for banks. Researchers who tended to define banking services in terms of what one sees on bank balance sheets (deposit taking, lending, and investments in securities) tended to be more pessimistic about the future of banking.⁴⁶ Alternatively, researchers who tended to look beyond traditional banking activities—at an extreme, broadly defining banking as including the “measuring, managing, and accepting of risk”—argued that banks were not becoming less important.⁴⁷ From the latter perspective, new services provided by banks—whether the selling of mutual-fund shares to investors or the origination, sale, and servicing of loans funded by securitizations—are merely banking in different forms.

In this section we broaden our perspective and ask how else we might measure the importance of banks in the U.S. financial sector. The growth in our economy's debt capacity that has been funded through direct credit markets rather than through traditional intermediation does not mean that intermediaries—particularly banks—do not provide important services that facilitate funding in securities markets. Here, therefore, we revisit the notion that looking beyond what is measured on bank balance sheets may yield a different view of the evolving role of commercial banks in facilitating credit flows.

⁴⁶ An example of a relatively recent paper arguing that banks have become less special is Herring and Santomero (2000). These authors document the decline in banks' funding of credit-card receivables, the rise in banks' share of mortgages that are securitized, and the erosion of banks' share of the short-term commercial lending market. They also argue that banks are losing ground on the liability side of their balance sheets, as demographic trends and technological advances on the payments side make mutual funds an increasingly attractive alternative to bank deposits.

⁴⁷ This phrase was used by Greenspan (1994) in addressing the conference where Boyd and Gertler presented their work on alternative measures of bank market share.

As credit-related services have become unbundled, layers of transactions have been added to the intermediation process, and each layer (albeit just a piece of the overall services associated with a given flow of funds) adds value. Banks now provide services in originating, servicing, or enhancing the creditworthiness of credit flows that end up being funded elsewhere. But even though the asset is not booked on a bank's balance sheet, the provision of any and all credit-related services should be reflected in the income of the providers. Accordingly, here we examine income-related measures of bank activity, which should reflect the flow of services provided over time (since income is generated by the production of goods and services in our economy). We examine data on income and profitability. We also look at estimates of output, employment, and annual compensation in the banking sector compared with other sectors in the economy.

Income and Profitability

The unbundling of credit-related services (as well as the concomitant provision of off-balance-sheet financial services that generate income) suggests that income-based measures of market share may in fact be superior to balance-sheet-based constructs. Ideally one would like to measure the income flows associated with the provision of particular types of services (origination, servicing, packaging and funding, credit enhancing) in particular types of credit markets (the home-mortgage, consumer-credit, or business-credit markets). Unfortunately, comprehensive income-based equivalents of the FFA do not exist. Hence we must piece together evidence about banks' provision of credit-related services both on and off their balance sheets and must infer the meaning of such evidence for the evolving importance of commercial banking in the U.S. financial sector.

In both household- and business-sector credit markets, the off-balance-sheet roles of commercial banks are increasingly important. In home-mortgage and consumer-credit markets, bank off-balance-sheet activities tend to be related to the

loan-securitization process. More than half of home mortgages and an increasing share of consumer debt are funded through asset-backed securities, and commercial banks (particularly large ones) play growing off-balance-sheet roles in these markets.

The Survey of Consumer Finances (SCF)—which tends to indicate where households obtain credit, not necessarily where the credit is funded—does not indicate a decline in the share of debt that households reported *obtaining* from commercial banks since 1989 (table 3).⁴⁸ This contrasts with the market-share trends in *funding* we found using FFA data.

⁴⁸ The SCF data do indicate a dramatic decline in the volume of household credit obtained from savings institutions. Ascorbi and Kennickell (2003) report trends evident from the 2001 SCF.

Table 3

The Survey of Consumer Finances Public Data					
Percentage of debt of all families, distributed by type of lending institution					
1989, 1992, 1995, 1998, and 2001 surveys					
Type of institution	1989	1992	1995	1998	2001
Commercial bank	28.1	33.1	35.0	32.8	34.1
Savings and loan or savings bank	26.0	16.9	10.8	9.7	6.2
Credit union	3.8	4.0	4.5	4.2	5.5
Finance or loan company	3.7	3.2	3.2	4.1	4.3
Brokerage	2.5	3.2	1.9	3.8	3.1
Mortgage or real estate lender	20.8	27.2	32.7	35.5	37.9
Individual lender	7.8	4.3	5.1	3.4	2.0
Other nonfinancial	1.6	1.6	0.8	1.4	1.4
Government	2.0	1.9	1.2	0.6	1.1
Credit card and store card	2.8	3.3	3.9	3.9	3.7
Pension account	0.1	0.1	0.2	0.4	0.3
Other	0.9	1.1	0.7	0.3	0.4
TOTAL*	100.0	100.0	100.0	100.0	100.0

*Note: Totals may not sum to 100 due to rounding.
Source: Federal Reserve Board.

In terms of consumer credit, the participation of commercial banks (particularly large ones) in the securitization process tends to involve more than loan origination. For credit-card securitizations, large commercial banks originate, service, and monitor the accounts. Thus, they have the relationship with the borrower. Through a legally separate special-purpose-entity they channel their receivables into a package that can be funded by investors—including mutual and pension funds—that are willing to hold asset-backed securities. The originating institution manages the assets being securitized to maintain the credit quality of the pool and often holds a tranche to further enhance the pool's quality. Finally, the bank that is sponsoring the pool generally receives any residual income earned on these assets in the pool, beyond what is promised to the investors buying the ABS-issuer's securities. What credit-related services is the bank not performing in this process? One could, therefore, argue that credit-card securitizations should be included dollar for dollar when the share of commercial banks in consumer-credit markets is measured, since this process is effectively a means of funding the loans by the issuance of secured debt (rather than deposits).

As for business credit markets, although securitization plays less of a role than it does in household-sector credit markets, commercial banks have long played a role in providing the liquidity and credit facilities that support the placement of debt in direct credit markets—including debt issued by financial firms. This activity was highlighted by researchers a decade ago.⁴⁹ Thus income for services not reflected on banks' balance sheets extends beyond income connected with loans sold into securitized loan pools.

Noninterest income as a share of earnings has received considerable attention from analysts during the past two decades, for the share of net operating revenue from noninterest income has more than doubled since 1980 (figure 19). Until recently, however, it has been difficult to identify the extent to which the growth in noninterest income has been related to such off-balance-sheet activities as asset securitization. Before 2001,

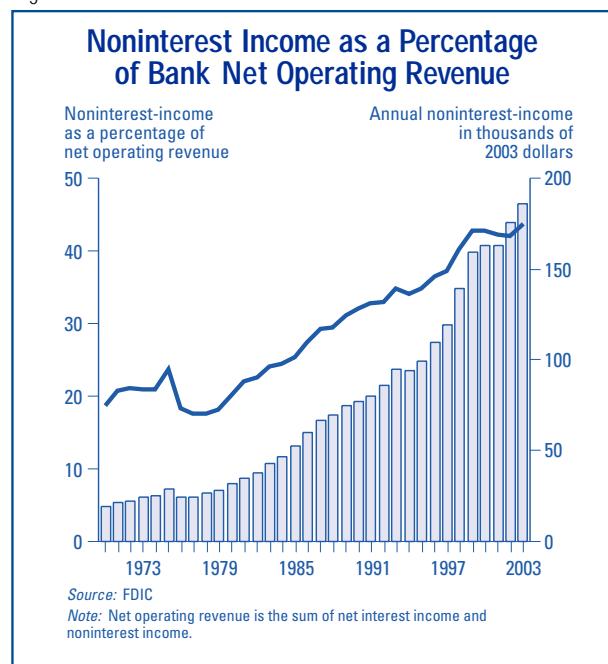
bank Call Reports asked for detail only on three categories of income: service charges on deposit accounts, fiduciary (trust) income, and revenues from trading operations. All other noninterest income was reported in two residual categories: Other Fee Income and All Other Noninterest Income. Thus, although the relative growth of bank noninterest income was driven by these two residual categories, it was impossible to discern the nature of the activities associated with this growth in income. Since the beginning of 2001, however, commercial banks (and savings institutions) have reported greater detail about noninterest income.⁵⁰

As summarized in table 4, these relatively new data indicate some interesting facts about the noninterest revenue and the nature of bank off-

⁴⁹ Boyd and Gertler (1994b); D'Arista and Schlesinger (1994); Avery and Berger (1991a), and (1991b).

⁵⁰ As reported by Waldrop (2002), "The new report format introduced in the first quarter of 2001 still includes fiduciary income, deposit service charges, and trading revenues, but it now also breaks out income from investment banking services, revenues from venture capital investments, servicing fees, income from asset securitization activities, insurance commissions and fees, and proceeds from sales of loans, other real estate, and other assets."

Figure 19



balance-sheet activities.⁵¹ About 34 percent of noninterest income comes from what can be thought of as traditional banking activities. The traditional sources include deposit account fees, trust activities, and asset sales not associated with securitization. The large number of institutions reporting and the relatively low concentrations of income earned by the five largest income earners in these categories suggest that these sources of income are used fairly broadly.

Roughly 15 percent of noninterest income in 2001 came from sources formerly associated with nonbank firms. The activities not generally thought of as traditional banking include trading, investment banking (fees and commissions from investment banking, advisory, brokerage, and underwriting services), and insurance services. Of these, income from trading activities is con-

centrated among a relatively small number of institutions, but a wide range of banks earn at least some income by providing investment banking and insurance services.

In terms of noninterest income associated with the commoditization of credit, about 18 percent of noninterest income reported by banks in 2001 reflected fees for servicing assets funded elsewhere and securitization income (net gains on sales of securitized assets plus nonservicing fees). As Waldrop (2002) pointed out, “The data show that securitization income (net gains on sales of securitized assets plus non-servicing fees), at \$16.4 bil-

⁵¹ Table 4, based on data reported by Waldrop (2002), shows the amount of noninterest income in each component category, as well as the number of banks reporting non-zero amounts in each category. It also shows the share of income in each category represented by the combined totals of the five largest amounts reported, to indicate how highly concentrated each underlying activity was within the banking industry during 2001.

Table 4

Noninterest Income of Insured Commercial Banks, 2001 (Amounts in \$ Thousands)				
Noninterest Income Category	Full Year Amount	Percent of Total	No. of Banks Reporting	Combined Share of 5 Largest Reported Amounts
Traditional sources of bank noninterest income				
Net gains/losses on sales of other assets ¹	2,249,208	1.40	2,321	84.60%
Net gains/losses on loan sales	4,642,565	3.00	1,739	47.50%
Income from fiduciary (trust) activities	20,751,226	13.20	1,668	39.40%
Service charge on deposit accounts	26,472,609	16.80	7,909	33.90%
Trading, investment banking, and insurance				
Trading revenues	12,524,834	8.00	175	82.60%
Investment banking and other fees	9,096,981	5.80	2,178	55.80%
Venture capital revenue	-740,222	-0.50	61	N/M
Insurance commissions and fees	2,874,938	1.80	4,063	38.40%
Servicing and securitizing loans				
Servicing fees	11,568,730	7.40	1,626	41.50%
Securitization income	16,349,975	10.40	100	64.00%
Not identified				
Other noninterest income	51,335,770	32.70	7,983	21.20%
Total noninterest income	157,171,912		8,050	
<i>Source: Bank Call Reports (FDIC Research Information System).</i>				
¹ Excludes gains/losses on sales of OREO, which accounted for negligible amount of income in 2001.				

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lion for the year, represented the largest amount of any of the new categories. The next-highest category was servicing fees, at \$11.6 billion.”

Also included in the residual category of “All Other Noninterest income” is income from unconsolidated subsidiaries, data processing services, ATM usage fees charged to depositors from other institutions, and income from other services (notably the provision of liquidity and credit facilities). This residual category is still the largest component of total noninterest income. At \$51.3 billion in 2001, it represented 33 percent of commercial banks’ noninterest income.

Income is obviously closely related to profitability, and in this regard banking has been holding its own. The data on profits, like the data presented below on output, employment, and compensation, are from the Bureau of Economic Analysis (BEA), which constructs estimates of these measures for broad sectors of the U.S. economy, including financial sectors. One limitation of the BEA data series is that the classification of “credit agencies” was changed in 1987. Through 1987, commercial banking was specifically broken out as a component of credit agencies; other lenders (such as savings institutions and finance companies) were aggregated simply as “other credit agencies.” With the elimination of many of the differences between commercial banks and savings institutions, industrial classifications for credit agencies were redefined as “depository institutions” and “other credit agencies.” Thus, we cannot directly observe what is happening to commercial banking’s share of economic activity, but we can draw some inferences based on what we observe for all depository institutions and on the relative shrinkage of the savings institution industry since 1987. A second limitation of these data is that they do not contain the same level of detail as the FFA. Hence we cannot look at trends for banking vis-à-vis particular types of other financial-service providers.

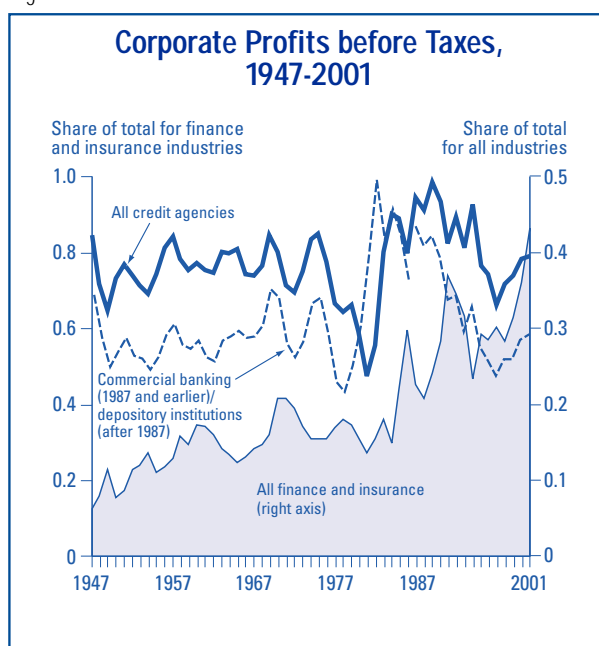
Corporate profits for finance and insurance industries have been rising as a share of total corporate profits, particularly since the mid-1980s. Although the data after 1987 are for all deposito-

ry institutions, the broad trends do not suggest an industry in decline (see figure 20). While banks were returning to record-setting earnings in the 1990s, so were other financial-service providers (hence the decline in depository institutions’ share of finance and insurance corporate profits), but the profitability of the banking sector has outpaced that of other financial sectors during the past few years.

To deal with the lack of detail in the BEA data on the performance of other financial-service providers, FDIC analysts have compiled and tracked profitability data available for publicly traded U.S. financial corporations. Because large conglomerates are involved, classifying financial enterprises into a single financial-service category is not always easy. In addition, like the BEA data, this information classifies banking to include both commercial banks and savings institutions. These estimates yield some very interesting patterns (figure 21).

First, the category of credit providers accounts for roughly three-fourths of the net income of financial corporations. And although this finding no doubt reflects declines in stock market valuations, this share of profits is comparable to the share in

Figure 20



1984—before the growth of U.S. financial capacity and the attendant decline in the share of non-financial-sector debt directly funded by banks. Second, profitability reflects the amount of intermediation services provided, not just the volume of funds brokered to investors. From this perspective, it is not surprising that government-sponsored enterprises have a relatively small share of profits compared with the volume of credit they channel, both directly and through asset securitization. Finally and most pertinent to the point of this paper, the banking industry (here, however, defined to include savings institutions as well as commercial banks) appears to have maintained its market share quite well in terms of profitability, rebounding from the problems encountered during the 1980s and early 1990s.

Output, Employment, and Compensation

The other economic-activity-based measures of bank market share that may tell us something about the importance of commercial banking in U.S. credit markets include output, employment, and compensation. These are useful because they indicate the resources allocated to the provision of services by banks compared with the resources

used in the production of goods and services by other sectors.

Figure 22 illustrates the contribution of the finance and insurance industries to GDP (it also illustrates credit agencies' share of the total output of the finance and insurance sectors). Consistent with the growth of credit-market debt in the U.S. economy, financial-service firms account for a growing share of aggregate output (except for an increase during the debt buildup of the 1980s, credit agencies' share of financial- and insurance-sector output has been remarkably stable). During the past decade, the estimated output of depository institutions has been growing more slowly than the estimated output of other credit providers (i.e., depository institutions' share of the GDP of finance and insurance industries has been declining), but this trend may reflect the continuing contraction of the savings-institution industry.

Figure 23 depicts employment trends measured in terms of full-time-equivalent (FTE) employment. Until the mid-1980s, employment in the finance and insurance industries grew as a share of total employment in the U.S. economy; since then, employment growth in finance and insurance industries has lagged employment growth in other

Figure 21

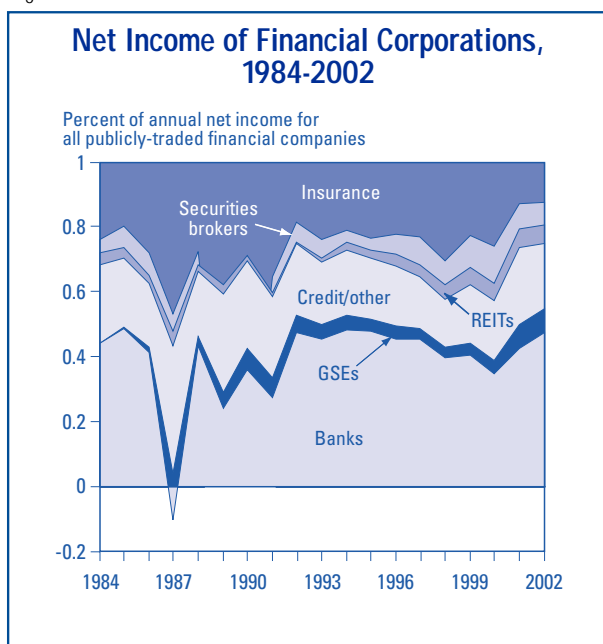
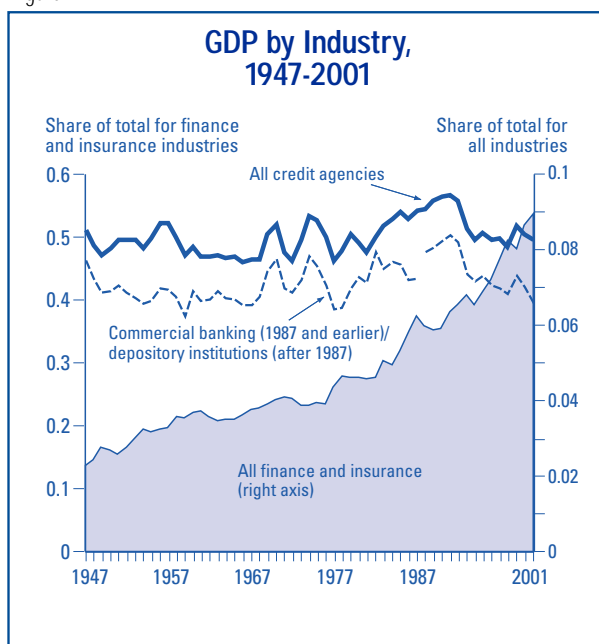


Figure 22



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industries. This pattern probably reflects the application of computer technologies in financial-service industries, technologies that have increased the productivity per worker and therefore reduced the person hours needed to produce a given level of financial services. Commercial banking is an important driver in these trends. Until the 1980s, commercial banking's share of total employment in our economy was rising (as was employment by other credit agencies, which included savings institutions). The share of total employment in commercial banking flattened out in the early 1980s, when the use of ATMs became widespread, and the data for all depository institutions indicate a long-term decline in these institutions' FTE employment share during the past 15 years. Although employment growth for insurance industries has also been slowing, banking's

declining share of FTE employment has been more pronounced.

Similarly, data on total compensation (see figure 24) indicate that although compensation in the finance and insurance industries has been steadily increasing as a share of total compensation paid in the U.S. economy, this increase has not been fueled by the growth of compensation in the banking sector. Since 1987, compensation paid by depository institutions has declined as a share of the total financial-sector pie. Nevertheless, because both employment and compensation trends reflect dramatic changes in the technologies used to deliver financial services, they are likely to overstate declines in the contribution of credit providers to economic activity.

Figure 23

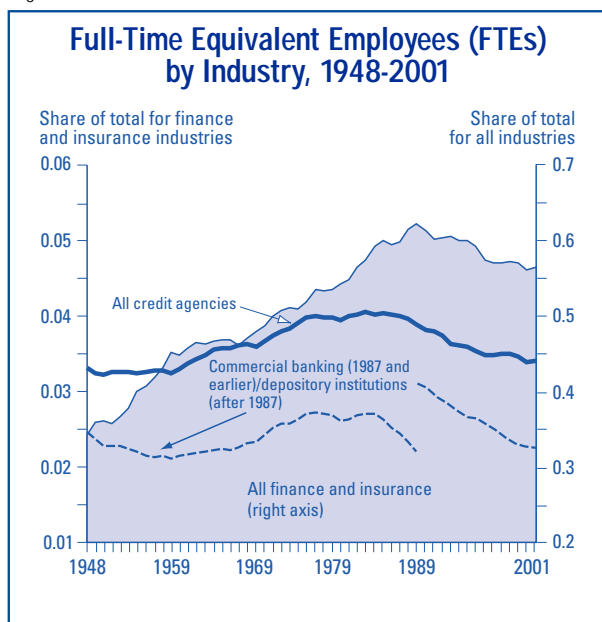
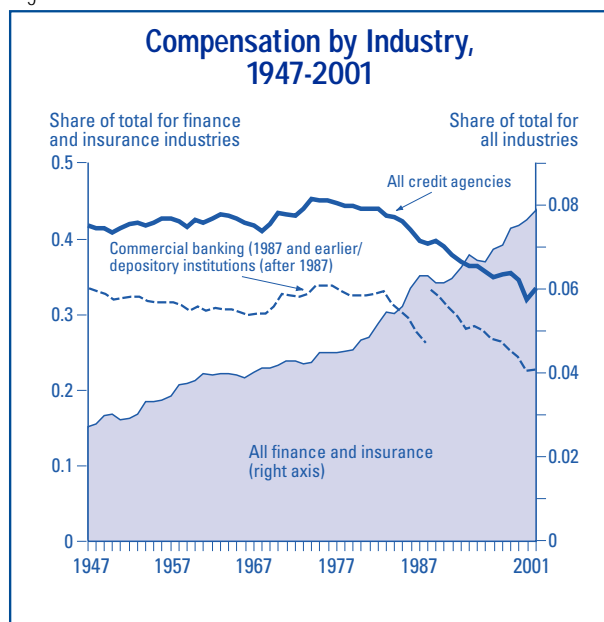


Figure 24



Conclusions

This paper assesses concerns that banks are becoming less important in U.S. credit markets, using available data to quantify the importance of commercial banks as credit providers—to quantify their “market share.” Certainly as the debt capacity of the U.S. economy expanded in the 1980s, the share of nonfinancial-sector debt that was directly funded by banks declined. This decline was associated with a dramatic increase in the extent to which lending to households and businesses became securitized—that is, standardized, pooled, and funded by the issue of securities. The shift away from traditional intermediation towards asset securitization reflects not only changing credit technologies but also the activity of government-sponsored enterprises. The shift towards funding credit through securities markets also reflects fundamental changes in how individuals accumulate assets, due to changes in technology, pension regulations, and demographics.

Long-term instruments such as home mortgages are arguably better suited to securitization as a funding mode because of the maturity mismatch inherent in depository institution funding. However, it is harder to make the same case for the private securitization of some other types of loans—for example, credit card receivables. Nevertheless, banks play a prominent role in this type of securitization activity, so this may be a way for banks to fund loans effectively by issuing secured debt while they continue to be involved in all other aspects of the provision of credit (including the relationship with the customer and the responsibility for maintaining the quality of the pool of loans being funded). This alternative funding mode has allowed banks to make more loans than they would have been able to if they had relied on deposits alone as a funding source.

Thus, although commercial banking’s on-balance-sheet activity has declined as a piece of the credit-market pie, the industry’s off-balance-sheet activities are a growing source of income. Hence the ultimate finding of this study must be that banking is evolving but does not appear to be

declining. Even according to some fairly traditional measures, the commercial banking industry remains remarkably important in funding credit flows in the United States—especially credit flows to nonfinancial businesses.

What, then, can we say about the future of banking? Although the extent to which commercial banks directly fund nonfinancial sectors in our economy has been stable since 1993, such stability does not preclude future declines. Future increases in the economy’s debt capacity are not likely to take the traditional form of intermediation. Thus, it will continue to be important for researchers to study the evolving roles banks play in our financial sector, the risks these roles pose for the industry, and the implications of these evolving roles for broader financial stability. For example, policy makers very much need evidence about the risks inherent in the unbundling and repackaging of credit and about the implications of these risks.

The secular shift by banks toward funding business lending that is collateralized by real estate represents a shift to a type of lending that has been associated with localized banking-sector problems. This association is likely to be most problematic for community banks, which are more geographically focused in their activities, than for larger banking companies operating a wide range of profit centers over broader geographic areas. In general, off-balance-sheet activities imply an ever more critical role for large banking organizations.

The services that commercial banks provide in enhancing the liquidity and credit quality of claims funded elsewhere undoubtedly reflect the industry’s unique status in our financial sector. The role of banks in making credit marketable indicates that commercial banking remains a critical force in the modern flow of funds that has contributed to the broader availability of credit in the U.S. economy.

APPENDIX: Investor Portfolio Trends

On the asset side of nonfinancial-sector balance sheets there have also been fundamental changes in the way individuals hold financial assets, particularly as changes in pension regulations and the availability of mutual funds took hold during the 1980s. In addition, changes in mechanisms used to conduct transactions and make payments over the past several decades appear to have reduced the extent to which individuals have to hold liquid assets as a share of their financial portfolios for transactions purposes.⁵² Here we discuss the extent to which these trends have made it easier for the growing volume of securities issued by financial-sector firms to be absorbed.

The growth of the mutual-fund industry can be thought of as a commoditization of investment opportunities in direct credit (and equity) markets. By pooling many securities, a mutual fund can reduce idiosyncratic risks and generate more-predictable risk, return, and liquidity, compared with any given securities in the pool. Thus by choosing particular types of securities, mutual funds can target particular characteristics for investors in terms of risk, return, and even the social or ecological consciousness of the underlying firms. Not only do personal investors hold these funds, but institutional investors—particularly life insurance and pension funds—also hold mutual-fund shares indirectly for their claimants.

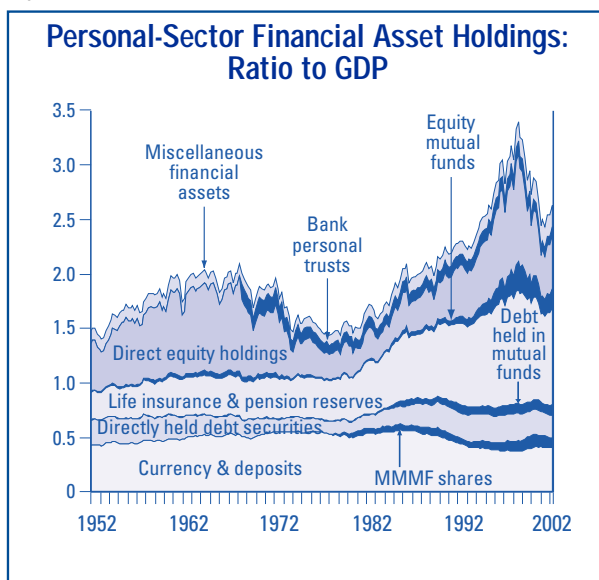
Figure A.1 illustrates trends in the financial assets held by the personal sector. Because of inherently different risks and returns, we distinguish between holdings of debt and holdings of equity mutual funds by the personal-sector portfolio. The resulting picture shows a dramatic increase in individu-

⁵² For example, the increased use of credit cards allow individuals to actually pay for the transaction made during a month at a single point in time. Thus, individuals can transfer funds to their transactions accounts when they need to pay their credit card bills. At other points in times they may hold relatively little “money.” Payment system changes are discussed in *The Effect on U.S. Banking of Payment System Changes* by Neil B. Murphy of Virginia Commonwealth University, which follows this article.

als’ accumulation of financial assets, an increase associated with the growth of pension wealth and increases in equities values (until the past few years, at least). The extent to which individuals’ direct holding of mutual funds has facilitated the absorption of credit-market debt has been surprisingly modest. And although money-market mutual funds (MMMFs) have certainly displaced deposits somewhat, the overall level of transactions accounts held by individuals (defined in the Federal Reserve Board of Governor’s Survey of Consumer Finances to include bank accounts and nonbank transactions accounts, such as MMMFs) as a share of GDP has remained fairly stable over time. However deposits are now a smaller share of the total portfolio of financial assets held by individuals than thirty years ago. The growth of insurance and pension reserves as a component of personal financial-asset holdings has been the most prominent trend during the past few decades.

In the early 1950s, roughly half of the personal sector’s financial portfolio consisted of claims on traditional intermediaries, that is, life insurance companies, pension funds, and depository institutions (figure A.2). And as noted, these intermediaries mainly held debt issued by nonfi-

Figure A.1



financial-sector borrowers; thus, intermediation tended to involve a single layer: indirect liabilities held by individuals were used mainly to fund non-financial borrowers directly.⁵³ The other half of the personal-sector portfolio was in the form of directly held securities (i.e., stocks and bonds). Importantly, equities tended to be held directly by individuals—most likely individuals with greater financial resources.

The next few decades saw a shift in the personal-sector portfolio toward the indirect liabilities issued by intermediaries, including commercial banks and savings institutions. By the mid-1970s, direct holdings of securities had fallen to around a third of the personal sector's portfolio (we include custodial bank personal trusts, first reported in the FFA in 1969, in this share). Mutual funds still accounted for only 1 percent of the personal sector's portfolio, and money-market mutual funds did not yet exist. Traditional intermediation had increased its share of the personal-sector portfolio to almost 60 percent (figure A.3), and the market share allocated to deposits (and currency) peaked at this time at 35 percent. However, an interesting trend was under way as pension and insurance sectors were increasing their holdings of equities (not depicted in the figures). Thus, the decline

in direct equities held by individuals was offset by increases in equity investments by these intermediaries.⁵⁴

In recent decades, trends evident in the 1970s have taken off. As the size of the personal sector's financial portfolio grew, so did the issue of securities by financial intermediaries. Thus even though the share of bonds and equities directly held by individuals remain close to 30 percent, it is now much more likely that holdings of securities are funding financial intermediation. Importantly, this is also true of mutual fund holdings (including MMMFs) and claims on pension and insurance sectors, which now account for half of the personal-sector portfolio. (See figure A.4).

The bottom line is that households have shifted from holding securities directly to investing in intermediaries that invest in securities (and in

⁵³ As noted, the share of total credit market debt issued by financial firms was quite small, and insurance and pension funds didn't hold that much in the way of equities fifty years ago (only around five percent of their portfolios were in corporate equities).

⁵⁴ Credit-market debt issuance by financial intermediaries had also risen to 10 percent of total outstanding credit-market debt; hence it is important to point out that securities directly held by individuals were issued by financial firms as well as nonfinancial firms.

Figure A.2

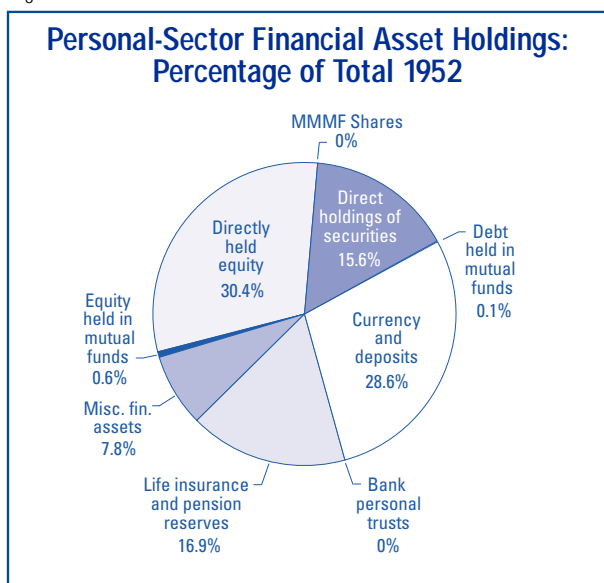
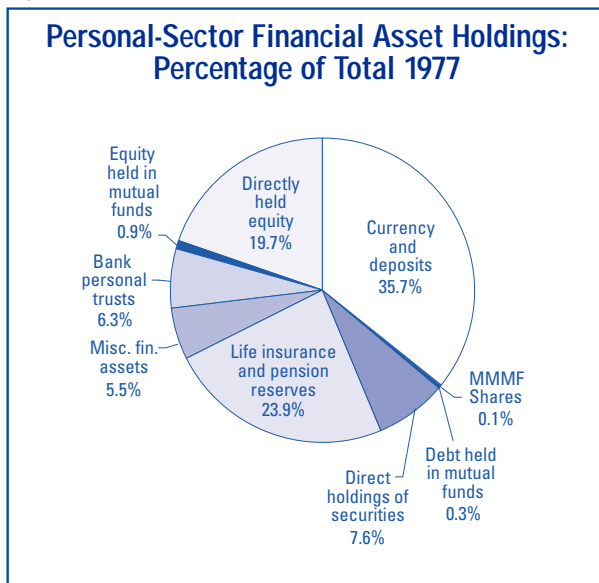


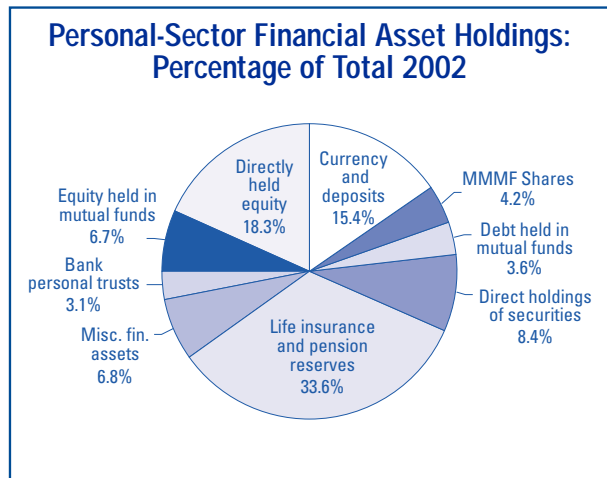
Figure A.3



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mutual-fund shares) that fund financial intermediaries as well as nonfinancial borrowers. And whereas it used to be mainly wealthier households that held securities, mutual funds and pension plans have broadened the access of the average household's access to direct credit and equities markets. Thus personal portfolio trends have facilitated the absorption of the greater amount of debt being issued by direct credit markets—including debt issued by financial sectors—including ABS-issuers and federally-related mortgage pools.

Figure A.4



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The Future of Banking in America

The Effect on U.S. Banking of Payment System Changes

by Neil B. Murphy*

Introduction

It is now three decades since the dawn of the “checkless, cashless society” was proclaimed. Cash is still in use, although much of it is outside the United States, and many checks are still being written. It is tempting to dismiss the predictions of those days as being misguided and of no major consequence for the structure and financial health of the banking industry in the United States. However, major changes in the U.S. payment system as a whole are underway. These changes will have an effect on costs, profitability, mix of business, and delivery systems that must be considered in an assessment of the future of banking in the United States.

It is traditional for a payment system to be the primary concern of the central bank.¹ This tradition is related to the central bank’s responsibility for monetary policy. After all, the central bank creates a nation’s money supply, and the payment system influences the velocity of that money and its utility when households, businesses, and governmental units make payments. Thus, the focus of the central bank’s concern is the efficiency of the payment system and the avoidance of any systemic risk arising from its operations. Moreover,

the central bank is concerned with mitigating any moral hazard that may occur because of such activities as discount window lending and the supplying of intraday credit (daylight overdrafts) to participants in the central bank’s large-value funds transfer service (Fedwire). Indeed, central bankers have been meeting for some time to deal with these problems. The Committee on Payment and Settlement Systems (CPSS) is composed of central bankers from the G-10 countries and is housed at the Bank for International Settlements in Basle, Switzerland. The CPSS has issued many influential reports concerning these issues and recently published a set of “best practices” for systemically important payment systems.² The CPSS has also published reports that discuss the role of the central bank in retail payment systems.³

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¹ The payment system as a whole comprises a number of component payment systems; thus the word “system” is used in this paper sometimes to refer to the overall system and sometimes to refer to the individual components.

² See CPSS (2001).

³ See CPSS (2000, 2003).

The focus of this paper is on the changes underway that influence the health of the banking industry in the United States. At the outset, it should be noted that the United States is somewhat of an outlier among developed nations when it comes to the nature of its payment systems:

- The use of the check as a means of payment is far greater in the United States than in any other country, even though the number of checks has actually declined in recent years and the share of checks in total noncash payments has been declining for some time.
- In the United States, the central bank (the Federal Reserve System) owns and operates substantial segments of the payment system. In most countries, the central bank supervises but does not operate the retail payment system.

Furthermore, the focus of this paper is on payment systems other than the large-value payment systems. At the heart of every nation with highly developed financial markets is a real-time gross settlement system (RTGS) that is operated by the central bank. In such a system, funds are wired by banks on behalf of their customers to other banks. The banks actually transfer funds from and to their accounts on the books of the central bank. In the United States, the RTGS is Fedwire, which is owned and operated by the Federal Reserve System. The *gross* feature of the system refers to the fact that each transaction is settled separately. An alternative that requires less liquidity for the banks involved is a netting system in which payments to and from banks accumulate and only the *net* difference is transferred. What that means is that, on receipt of the funds, the recipient bank and its customer do not have access to those funds until the accumulated inflows and outflows are netted and settled. The *real-time* feature of the system means that the funds received are available at exactly the time when they arrive. There is no wait for accumulated inflows and outflows to largely offset each other, with only a smaller net amount transferred. More funds are transferred by Fedwire and the Clearing House Interbank Payment System

(CHIPS), a private sector large-value payment system, than by any other payment method. However, the number of transactions is small, and most of the activity is confined to a small number of money-center banks.⁴ This is not meant to downplay the importance of these systems, but the proper focus for them has been the risk management associated with either intraday loans (daylight overdrafts) or the potential systemic effect of unwinding payments in a multilateral netting system when one of its participants is unable to settle its obligation. These systems are highly automated and will probably not change too much in the future in response to forces of technology or shifts in consumer preferences.

However, there are changes underway in the United States in noncash retail payment systems other than the large-value payment systems that will affect the future of the banking industry. These include a diminution in the number of checks written and increases in electronic forms of payment. Moreover, even though fewer checks are being written, the number is still very large in absolute terms and in comparison with the number in most other countries. Therefore, efforts are underway to “electronify” the checks early in the process of clearing and settlement, sending the information contained on the check forward electronically. This is expected to be cheaper and faster than current methods, in which large numbers of pieces of paper are transported around the country.

Some Basic Characteristics of Payment Services and Banking

All noncash methods of payment involve interbank transfers of funds. Hence, many basic product lines in banking are tied to the various

⁴ For a discussion of wholesale payment systems in general, see Folkerts-Landau (1997); and for a discussion of risk management for Fedwire, see Coleman (2002). The CPSS best practices, or “core principles,” are appropriately applied to “systemically important payment systems,” and Fedwire is certainly such a system. Recently the Federal Reserve published a “Self Assessment of Compliance with the Core Principles for Systemically Important Payment Systems” (2001).

systems by which balances are transferred from one bank to another on behalf of customers. These products involve either a direct charge to a customer's demand deposit account as a result of a transfer, or a payment on behalf of a customer—a loan to the customer that will be satisfied at a future date. In most of the payment systems, it is efficient to have a network that includes all bank participants. Thus, all products tied to an interbank transfer network involve the following:

- The paying customer
- The bank at which the paying customer has an account
- The receiving customer
- The bank at which the receiving customer has an account (which may not be the same as the customer's bank)
- An operator of a network in which many banks may participate.

The notion of a network gives rise to the concept of *network externalities*. That is, a product or service tied to a network has value that is enhanced by its link to other users. This is especially true for communication systems, and it can be argued that payment systems are really forms of communication systems.⁵ Consider the value of a telephone that is not connected to any other callers. Clearly, the value of the telephone and a contract to use it to communicate depends on the use of the same product and service by large numbers of other users. This gives rise to a situation in which there is a potential trade-off between efforts to achieve universality of use to maximize these externalities and the concern about limiting competition and innovation. It also raises the issue of who owns and operates the network.

Interbank payments, when there is not an instantaneous transfer of funds as there is in a cash transaction, involve some risks. In a cash transaction, clearing and settlement of the payment occur immediately. For most interbank payment systems, there is a delay between the time a payment is initially cleared and the time the participants settle all claims among themselves. All

participants must be able to meet their net settlement obligations to the network. If one participant cannot settle, many other transactions are at risk. In some cases, there is also some counterparty risk in that a customer may not have sufficient funds to honor a payment instrument that is presented through a network. This is especially true for debit transfer transactions.

There are two basic types of interbank transfers: credit transfers and debit transfers. In a *debit transfer*, a payer sends a payment instrument, usually a check, to a payee. The payee then deposits the check in its bank, which collects the check through the interbank payment system. Hence, the payee has a provisional credit to its account, contingent on the payment instrument's being honored upon presentment. The risk is that the payer (the counterparty) does not have sufficient funds to honor the check. Only when the payment instrument clears is the payee free from the counterparty risk.⁶ In a *credit transfer*, the payer notifies its bank to transfer funds to the account of the payee in the payee's bank. Thus, the recipient of the communication, the payee's bank, does not need to worry about counterparty risk. Either the payer has sufficient funds to make the transfer, or the payer's bank advances sufficient funds to make the transfer.⁷ Note that counterparty risk involves payers and payees, whereas settlement risk involves banks in the interbank funds transfer system. For debit transfer systems, both counterparty and settlement risk exist. For credit transfer systems, only settlement risk exists.⁸

⁵ For an extensive discussion of the network characteristics of payment systems, see Lacker and Weinberg (1998).

⁶ Not all debit transfers are checks, for debit transfers occur in the Automated Clearing House (ACH) system in the United States. That is, a payer authorizes a payee to transfer funds through the ACH system by having the payee's bank present an electronic debit through the ACH and deduct funds from the account of the payer in the payer's bank. There is still counterparty risk in that the payer must have sufficient funds.

⁷ Whether something is called a credit transfer or a debit transfer depends on the action of the receiving financial institution. If the receiving financial institution debits the payer's account, it is a debit transfer. If the receiving financial institution credits the payee's account, it is a credit transfer. It should be noted that *only* credit transfers occur on the large-value RTGS payment systems.

⁸ The exception to this, of course, is the RTGS large-value payment systems in which settlement occurs instantaneously. However, if the central bank advances funds to participants during the day (daylight overdraft), that

If a payment system may be viewed as a communications network, all participants must have clear agreements as to their duties and obligations related to their participation. This is reflected in law, in regulations, and in contractual agreements among the various parties to the network. In the United States, there are a number of different legal and regulatory arrangements for the different networks, and there are also situations in which different transactions in the same network have different legal and regulatory arrangements. Moreover, there are differences among the networks as to exactly who owns and operates the network.

Payment Systems in the United States

In the United States, there are a number of different payment networks that have evolved over time. These include the following:

- The system of check payments—a debit transfer system—which is presently paper based and the networks for which they are operated by both the banking community and the Federal Reserve System.
- The automated clearing house (ACH) system, which is an electronic batch-processing system in which most of the processing is done by Federal Reserve Banks. Transactions can be either debit or credit transfers.
- The debit and credit card systems, whose networks either have evolved from automated teller machine (ATM) networks or are owned and operated by a few major card organizations, primarily VISA and MasterCard.

The common element in all these systems is the communications link between banks in which information regarding payments and customer accounts is transmitted from one bank to another, with appropriate adjustment to customer account balances. In most cases, the customer account is a demand deposit account that is adjusted (debited for the payer, and credited for the payee). However, there are also cases in which funds are advanced through the system on behalf of the

payer, to be credited to the payee's demand deposit account. In such cases, the bank has a receivable from the payer to be settled later according to the credit agreement between the payer and the bank. This describes a credit card transaction.⁹

The Check System

The check system is the oldest interbank payment system in the United States. It evolved in the second half of the nineteenth century as banks in the United States switched from note issue to deposit banking as a result of a 10 percent tax on notes.¹⁰ Indeed, two of the reasons for the establishment of the Federal Reserve System were to implement a nationwide check-clearing system (since U.S. banking laws precluded any bank from having a national network of branches) and to eliminate the practice of nonpar banking (the bank on which a check was drawn might not honor the full value of the check when it was presented for payment).¹¹

The legal framework for the check system comprises both state and federal laws and regulations. The Uniform Commercial Code (UCC) represents an agreement among the states to adopt similar laws in the area of commerce. Within that code are several parts that deal with payments and settlement: Article 3 (negotiable instruments), Article 4 (bank deposits and collections), and Article 4a (fund transfers, including wholesale ACH credit transfers). In addition, Congress passed the Expedited Funds Availability Act of 1987 (EFAA), which gave the Federal Reserve System the responsibility of implement-

transaction involves some credit risk if the bank to which credit has been advanced cannot bring its account back to zero at the end of the settlement period.

⁹ There may be some debate as to whether a credit card transaction and the credit card networks constitute a payment system, since the payer's demand deposit account is not debited as a result of the transaction. However, payment does occur over an interbank network, and the Committee on Payment and Settlement Systems, the ultimate arbiter of things related to payment systems, includes credit card transactions in its data on different countries' payment systems in its "Red Book."

¹⁰ See Friedman and Schwartz (1963).

¹¹ See Weinberg and Lacker (1998).

ing improvements in the check collection system. When the Federal Reserve acts on that authority, federal law supersedes state law. The Federal Reserve has several regulations that affect check collection: Regulation CC and Regulation J both affect the processing of collections and returns through the Federal Reserve System. On October 28, 2003, Congress passed and the president signed the Check Truncation Act of 2003, which paves the way for electronic presentment and collection of checks.¹²

Within that legal framework, the check collection system does not function through a single channel. When a payee receives a check, he or she deposits it in a bank. That bank then has a number of choices available to collect the check:

- It is possible that the payer and payee do business with the same bank. In that case, balances are shifted on the books of that bank, and there are no interbank transactions. This is known as an “on-us” transaction, in which there is no delay in settlement. Also, the processing costs are lower. The consolidation of the banking industry has increased the probability that any given check will result in an on-us transaction.¹³
- The bank of first deposit may decide to present the check directly to the bank on which the check is drawn. This occurs in situations where two banks are in close proximity and have a lot of bilateral transactions. This is known as a “direct send.”
- The bank of first deposit may present the check to a local clearing house, an arrangement whereby a number of banks agree to meet for the purpose of presenting checks to each other and settling the net differences at the end of an agreed-upon period.
- The bank of first deposit may avail itself of the services of another bank—a correspondent bank—to collect the check on its behalf.
- The bank of first deposit may deposit the check with its local Federal Reserve Bank, which will then collect the check from the bank on which it is drawn.

In 1980, the Depository Institutions Deregulation and Monetary Control Act (DIDMCA) required that the Federal Reserve charge for its clearing and settlement services. Before that time, Federal Reserve services were provided without any direct, explicit charge. As might be expected, however, correspondent banks that competed with the Federal Reserve objected to this arrangement. To compete on a comparable basis, the Federal Reserve was required to base its prices charged for clearing and settlement services on its explicit costs and on an adjustment for the cost of capital that its competitors must factor into their cost structures.¹⁴ In addition, the Federal Reserve System must recover all its costs in the provision of these services. The choice made by the bank of first deposit depends on the relative costs and benefits of the different channels.

In 2001, it was estimated that 41.2 billion checks were written in the United States. Approximately 43 percent of these checks cleared through the Federal Reserve System; 28 percent cleared as direct sends, clearing house items, or through correspondent banks; and 29 percent were “on-us” checks.¹⁵

It has long been known that the U.S. payments system depends more on checks than is the case in all other industrialized nations.¹⁶ Since a great deal of effort, energy, and expense is incurred in moving large amounts of paper long distances, the

¹² For a discussion of the legal and regulatory environment of payments in the United States, see CPSS (2003).

¹³ In Gerdes and Walton (2002), it is noted that the proportion of “on-us” checks has not increased much even though the industry has consolidated. They attribute this to the reduction in checks written for cash (these are being replaced by ATM withdrawals) while on-us checks sent to payees have increased.

¹⁴ For a thorough discussion of the methods and rationale for calculating the private sector adjustment factor (PSAF), see Green, Lopez, and Wang (2003).

¹⁵ It is not the usual practice for the central bank to *operate* substantial segments of retail payment systems, nor is the Federal Reserve’s role as both operator and regulator without controversy. The Federal Reserve undertook an extensive review of its role several years ago and concluded that present arrangements are satisfactory. See Board of Governors of the Federal Reserve System (1998).

¹⁶ For an excellent review of comparative developments of payment practices in major industrialized nations, see Humphrey, Sato, Tsurumi, and Vesala (1996).

demise of the check has been seen as inevitable and desirable. However, obtaining accurate information on the exact number of checks processed in the United States is not easy. Given the number of routes that any check might take and the fact that a single check may pass through several channels, it has been difficult to collect such data every year. However, there are several benchmark years in which exhaustive surveys were undertaken. The practice was then to extrapolate out from those benchmarks on the basis of incomplete information and assumptions about the proportion of checks going through the various channels. Such benchmarks were available as a result of surveys undertaken by the Federal Reserve System in 1979 and 1995. On the basis of those surveys and other fragmentary information, it appears that the number of checks processed in the United States was overestimated for a number of years. It is instructive to examine the report of the Committee on Payment and Settlement Systems on the payment systems of selected countries. The report is an annual publication with data for a number of wealthy nations, prepared in a similar format for purposes of comparative analysis. As late as 2001, when data for 1999 were reported, it was believed (primarily on the basis of extrapolations from the 1995 benchmark) that there were over 67 billion checks processed in the United States. However, as a result of a substantial survey undertaken by the Federal Reserve, it was determined that in the year 2000 there were only 42.5 billion checks written in the United States.¹⁷ In a prescient article, Humphrey, Pulley, and Vesala forecast that the number of checks written would peak in 1997.¹⁸ It is estimated that in 2001, the number declined once again to 40.2 billion checks (CPSS, 2002). It had generally been believed that check growth had been positive but smaller than the growth in alternative electronic payments, resulting in a reduction in the check share of noncash payment instruments in the United States.¹⁹ The latest developments suggest that the share of electronic payments has increased faster than was originally believed. Further evidence of the decline in checks written arose recently, when the Federal Reserve indicated that

the number of checks processed during 2003 had declined at a faster rate than had been forecast. Because the Federal Reserve must recover all its costs in supplying processing services, it announced that it was raising its charges to banks, reducing the credits to banks for clearing balances maintained at the Federal Reserve, and changing the method of calculating imputed income from investing the clearing balances. At the same time, it announced a reduction in charges for processing electronic automated clearing house (ACH) payments.²⁰ This raising of prices for processing paper and lowering of prices for processing electronic transactions should reinforce the trends already in place.

However, it should be noted that, notwithstanding the unexpected change in the volume of checks processed, the United States is still relatively more dependent on checks than its counterparts. In 2001, the United States wrote 144.6 checks per capita, more than twice as many as the next-highest user of checks—France, with 71.2 checks per capita. Countries in Continental Europe, except France, have virtually eliminated checks: Belgium, Germany, Italy, the Netherlands, Sweden, and Switzerland all had 10 or fewer checks per capita in 2001. In Sweden, there was 0.2 check per capita written in the year 2001 (CPSS [2002]).

The latest developments for the check system in the United States are related to what might be called the “electronification” of checks. There are two such strands of this process; one is underway already and the other will probably be available in the near future. First, the ACH system has developed three new applications that use the check as a device to trigger a debit transfer on the

¹⁷ See Gerdes and Walton (2002).

¹⁸ Their projections were based on data available up to 1996, even though the publication date of the article is 2000.

¹⁹ One casualty of this decline is the Federal Reserve System itself, which announced in February 2003 that it was consolidating its check-processing operations, eliminating this activity from 13 offices and reducing staff by a projected net of 400 employees. See Federal Reserve Bank of Boston (2003).

²⁰ See Board of Governors of the Federal Reserve System (2003a, 2003b).

ACH system. In one of these applications, the point-of-purchase (POP) application, a merchant receives a check in payment for goods or services. Instead of depositing the check in the familiar process, the merchant uses a terminal to scan the information on the bottom of the check (the "MICR" line) and the amount of the sale. The merchant then returns the check to the customer with the word "void" printed on it and informs the customer that the check amounts to authorization for the merchant to initiate a debit transfer transaction through the ACH network. There is also a legal transformation in which the check is no longer a negotiable instrument governed by the UCC and Federal Reserve regulations pertaining to checks, but is instead a "source document" for an electronic transaction that is subject to the Federal Reserve's Regulation E (a regulation promulgated as a result of the Electronic Fund Transfer Act of 1978). In a similar move (the second ACH application), the ACH system developed the accounts-receivable check (ARC), which is designed to transform checks to "source documents" as consumers mail checks to lockboxes in payment of routine bills. That is, the customer is notified that the check is an authorizing device allowing the payee to initiate a debit transfer transaction through the ACH system. Again, the legal status of the check changes, and the operative legal and regulatory environment changes from UCC/Federal Reserve check rules to Electronic Fund Transfer Act/Regulation E electronic transaction rules. The ARC application is available only for consumer payments at the present time. In the past year, from the third quarter of 2002 to the third quarter of 2003, the number of transactions in each category (ARC and POP) grew substantially. For the ARC transaction, there were 5.3 million transactions in the third quarter of 2002, which grew to 43.7 million in the third quarter of 2003. In the same period, the POP application grew from 28.7 million to 38.4 million. Another area for check electronification is in returning checks (RCK) via the ACH system (the third ACH application). That is, when a customer pays with a check, he or she is notified that should the check be returned for insufficient funds, the payee will initiate a debit

transfer through the ACH system to collect the amount. In this case, the paper process has failed, and the payee has access to faster and cheaper collection the second time around. This application has increased from 4.8 million transactions in the third quarter of 2002 to 5.8 million transactions in the third quarter of 2003. Hence, the ACH system has evolved to transform and process several new types of application, all designed to replace the paper movement of physical checks with electronic collection.²¹

The final step in electronification of checks—the second of the two strands referred to above—is underway at the present time. Instead of piecemeal ACH applications for point of sale or routine consumer bill payments, this step involves a complete transformation of the processing of paper. This is called the Check Truncation Act of 2003, which the president signed on October 28, 2003. The Expedited Funds Availability Act of 1987 had given the Federal Reserve the task of making recommendations to improve the payments system—in effect, superseding the UCC—and the Federal Reserve System proposed the check truncation legislation.²² What is envisioned here is the "truncation" of checks early in the process of physical transportation. At that step, a digital image of the check will move electronically through the process. This will eliminate the physical transportation of checks and allow the images to be retrieved as needed by customers to show evidence of having made payment.²³ It is too early to know exactly how this development will affect the number of checks processed and the channels through which the images of checks will pass on the way to collection.

It is interesting to compare this development with some of those in the European Union (EU). The EU has moved to a single banking market and a

²¹ See NACHA—The Electronic Payments Association (2003).

²² See Check 21 Act, Public Law 108-100, October 28, 2003.

²³ Many banks and thrift institutions have already truncated checks by not returning them to customers. This act will stop the movement of paper earlier in the process. Moreover, for many years, credit union legislation and regulation have made truncation of credit union share drafts mandatory.

single currency.²⁴ While the large-value payment system in Euros is connected seamlessly throughout the EU, this was not the case for cross-border retail payments. However, the EU and the European Central Bank (ECB) reasoned that the benefits of a single, integrated, competitive banking market could not be achieved without an efficient retail payment system in which cross-border payments would be made with the same speed and fees as domestic payments. The EU and ECB encouraged the banks to develop such a system. Since developments did not proceed as rapidly as the EU and ECB wanted, the EU enacted legislation requiring the banking industry to process cross-border payments under the same terms as domestic payments. The industry responded by setting up a Single European Payments Area concept that is similar to an ACH connecting the domestic payment systems in all the member nations.²⁵ What is interesting is that the EU/ECB focus is on *credit transfers* in the EU, rather than *debit transfers*, or checks. It appears that the EU, in its efforts to complete the single market in banking, considers the benefits of the credit transfer to be sufficient and therefore encourages these transfers while ignoring the debit transfer.²⁶

The Automated Clearing House (ACH) System

The ACH system is a batch-processing electronic payment system for small-value payments. Unlike the large-value payment systems (Fedwire and CHIPS), which process only credit transfers, the ACH system processes both credit and debit transfer payments. Financial institutions belong to one of 29 regional associations and participate in the ACH system as either originating depository financial institutions (ODFI) or receiving depository financial institutions (RDFI) or both. Originators and receivers are customers, and, as indicated, the transactions can be either credit or debit transfers. The originator prepares a file of transfers, delivers it to the ODFI, and the ODFI delivers the data to the ACH operator, who then transmits the information to the RDFI, who either credits or debits the account of the receiver,

depending on the nature of the transfer. There is a national association of depository financial institution members, the National Automated Clearing House Association (NACHA), which determines all the rules and regulations that govern the network.

There are a number of laws that provide the legal and regulatory framework for the ACH system. For corporate transactions, the UCC is the operative law. The Check Truncation Act of 2003 has implications for the ACH system as well. For consumer transactions, the Electronic Fund Transfer Act of 1978 is the operative law, and Federal Reserve Regulation E is the operative regulation. In addition, the federal government's role in electronic payments is governed by federal law, specifically 31 C.F.R. 31, Part 210. According to the provisions of the EFT Expansion Act/Debt Collection Improvement Act of 1996, the U.S. government has committed itself to using electronic payments for all payments to employees, vendors, and recipients of benefits. Moreover, federal tax collections are migrating to electronic form as well. Most states are following the lead of the federal government in this area.

According to NACHA, in December 2002 almost 19,500 depository financial institutions participated in the ACH system as RFDIs, while approximately 8,000 participated as OFDIs.²⁷

From 1992 to 2002, the volume of ACH transactions increased at a double-digit percentage-rate change each year, going from 2.2 billion transactions in 1992 to over 8.9 billion transactions in 2002, a compound annual rate of growth of over 13.5 percent. In contrast, the number of checks actually declined over the same period. In the early days of the ACH, a large proportion of the volume was attributable to government payments. In 1992, government transactions were 24 per-

²⁴ For a discussion of this, see Murphy (2000).

²⁵ See European Central Bank (2003).

²⁶ Humphrey, Pulley, and Vesala (2000) note that the European credit transfer systems have been much more amenable to technological change than the check (debit transfer) system in the United States.

²⁷ See NACHA (2003).

cent of the total, while in 2002 this declined to less than 10 percent. It is reported that 98 percent of federal employees use direct deposit of payroll, while 80 percent of all Social Security recipients use direct deposit of benefits. As noted above, electronic payment to vendors is virtually mandatory. Thus, the government is not likely to be a future source of major growth in volume.

One change in the types of applications for the ACH system is the movement to nonrecurring transactions. In the past, the ACH system developed applications for recurring payments, such as direct deposit of payroll and benefits, and for recurring debits for the same amount for payments such as mortgages, installment loans, insurance payments, and other such payments. On the corporate side, direct payment of vendors, payment of taxes, and corporate concentration of funds from a number of banks were all recurring repetitive transactions. Once a payment is arranged, it is repeated without the need for frequent authorizations and other arrangements. In recent years, the ACH community has turned its attention to transactions initiated by consumers. These include the point-of-purchase (POP) application discussed above, payments authorized over the telephone (TEL), and payments initiated over the Internet (WEB). These are all transactions that require a separate process each time a transaction is initiated. For many traditional applications, such as direct deposit, the consumer enters into an agreement one time, and the process is opaque to him or her. All that these consumers know (when there are no problems) is that balances appear in their accounts at certain times or that certain amounts are deducted at certain times. The consumers themselves are passive. In the newer applications, the initiator is an active participant. Since these are new applications, the growth rate for them is very high, starting from a very low base.

Automatic Teller Machines (ATMs) and Payments by Debit Cards

One of the first electronic banking applications was the implementation of the ATM. It is

arguable as to whether this is really a payment system in the sense of the other systems discussed here. That is, the vast majority of transactions are cash withdrawals in which the customer and the bank interact, but there is no third or fourth party to the transaction, and at the outset of the development of this application there was no network. However, this application does allow the customer access to cash, which is a payment alternative, and in that sense the banking system is allowing the customer to have efficient access to using cash to make payments. Also, use of the ATM allows the customer to economize on the use of currency, and evidence indicates that customers therefore hold higher deposit balances than otherwise would be the case.²⁸

In the early days of the implementation of ATM programs, there were questions as to whether these would be considered branch offices and hence be regulated by the McFadden Act and the various state branching laws. If they were, the deployment of this new application could be limited. However, in 1985 the U.S. Supreme Court upheld a circuit court ruling that an ATM was not a branch. As a result of this ruling and the popularity of the ATM with customers, especially upscale consumers, the number of ATMs increased dramatically.²⁹ As the deployment of ATMs continued, some banks started networks that allowed customers of other banks to access their accounts. This required someone, usually a large bank at the outset, to operate a “switch” that would route transactions among the various banks participating in the network. The basic idea was to enhance customer convenience by expanding the locations at which access was available. In addition, networks allowed banks to take advantage of scale economies in processing by increasing the potential number of transactions per machine. Over time these networks expanded and merged. This trend has resulted in several large regional networks, a few national networks, and a group of smaller networks. The

²⁸ See Daniels and Murphy (1994a, 1994b).

²⁹ For a discussion of the contemporaneous demographic pattern of adoption of ATMs, see Murphy and Rogers (1986).

number of networks peaked at approximately 130 in the mid-1980s; now fewer 40 are operating. Moreover, transaction volume is concentrated in a small number of large networks. In 1985, the top three networks processed 11 percent of the transaction volume; in 2002 that percentage exceeded 100 percent (some transactions are counted more than once, since they may travel over several networks). As these networks expanded, they negotiated reciprocity agreements with other networks, effectively expanding the reach of any single customer's ATM card. In addition, national networks can and do serve as bridges between regional networks. Most ATMs (over 98 percent) are part of shared networks, and as a result of both reciprocity and bridging they are national (or international, in the case of the Visa and MasterCard networks).³⁰ The ownership structure of the networks has changed dramatically also, with an increase in the number and share of networks owned by nonbanks. This shift has occurred as the number of networks owned by joint ventures of banks has declined.

As a result of almost 25 years of development, the ATM application is the most mature of electronic banking services. There are presently over 350,000 ATMs deployed in the United States. The proportion of off-premise ATMs has increased dramatically as banking offices that are candidates for on-premise ATMs have been saturated. Also, as the cost of machines has declined over the years, the break-even volume necessary to justify the investment cost has declined. Hence, the number of transactions has steadily increased while the number of transactions per machine peaked in the early 1990s and has steadily declined since then.

As the ATM networks expanded, it became apparent that they could be used for other transactions as well. Thus, the ATM networks evolved into the point-of-sale (POS) networks accessed by debit cards. Customers became familiar with the process of accessing their accounts with a plastic card through the ATM, and the use of the same cards and networks at the point of sale evolved naturally. The customer would

access the network with a plastic card in a manner similar to the ATM, would identify himself or herself with a personal identification number (PIN), and funds could be deducted from the customer's account. The only difference is that the funds were not made available in the form of cash but instead were transferred to the account of a merchant who decided to accept the debit card as a way for the customer to pay for goods and services. Of course, with virtual universal network coverage through reciprocity and bridging, it was possible for the customer to make payment on-line at the point of sale easily.

Debit card transactions have been growing rapidly. In 1979, they were virtually nonexistent, whereas in 2000, 8.3 billion such transactions were recorded. When compared with general-purpose credit cards, a much more mature product, the relative growth is striking. In 1995, there were 1.4 billion debit card transactions and 7.8 billion general-purpose credit card transactions, whereas in 2000 the comparable numbers were 8.3 billion and 12.3 billion. In 2000, debit cards accounted for 11.6 percent of all retail noncash payments, up from 2.2 percent in 1995. From 1995 to 2000, debit card transactions grew at the fastest rate of all types of retail noncash payments (a 41.8 percent annual rate, compared with a 2.2 percent growth rate for all payments).³¹

Within the debit card industry, there are two types of transactions. One is an on-line transaction activated by a PIN at the point of sale, with immediate debiting of the customer's account and crediting of the merchant's account. All this information travels over the same networks as the ATM transactions, and there are fees involved for the merchant, who is charged on a fee-per-transaction basis. There are also point-of-sale transactions that are known as *off-line*, signature-based transactions. In this case, the information flows over the credit card networks managed by Visa or MasterCard. In the on-line transaction, there is a

³⁰ For a thorough discussion of the ATM/debit card network industry, see Hayashi, Sullivan, and Weiner (2003).

³¹ See Gerdes and Walton (2003).

PIN to identify the cardholder, whereas in the off-line transaction the merchant is responsible for verifying the identity of the cardholder. In the off-line transaction there is also a delay in transferring the funds, and, most importantly, there is a difference in the fee structure. The merchant is charged a fee based on the size of the transaction, and the fees to the bank are generally larger in that case. For that reason, the banks have discouraged the use of on-line debit transactions in favor of the off-line debit card. Merchants have opposed this. In 2003, a major court case involving Wal-Mart and Visa and MasterCard was settled. In that case, the retailers opposed the “honor-all-cards” rule that required any merchant accepting either Visa or MasterCard credit cards to honor all their cards, including the off-line debit cards. Wal-Mart wished to honor the credit cards but not the off-line debit cards. The settlement—that merchants no longer have to honor all cards—will probably affect the structure of fees over all of the varying debit card networks and move volume to the PIN-based transactions.

Credit Cards

Credit cards are the most mature electronic payments product. Although individual retailers had issued cards to their customers for many years, the general-purpose credit card dates back to Diners Club in 1950.³² At that time, as the name indicates, the basic idea was to have a credit card accepted by a number of restaurants in Manhattan, and customers would have to carry only a single card to be able to dine. It was assumed that businessmen who customarily had business lunches and dinners would find this appealing and that those restaurants that sought to attract their business would also find it appealing. This resulted in the Diners Club program. During the 1950s, a number of banks tried to introduce bank credit cards without much success. Not until 1958 did American Express, Carte Blanche, Chase Manhattan Bank, and Bank of America enter the field. In 1962, Chase Manhattan left the business and American Express reportedly considered giving up its travel and entertainment card. Not until 1966 did Bank of America estab-

lish a franchise operation for its card, then known as BankAmericard. Thus, a franchisee bank could issue a credit card that could be used nationally (and eventually internationally). BankAmerica Service Corporation also established a network that allowed payments between banks dealing with merchants and banks issuing the cards to consumers. This was quickly followed by a consortium of banks that established the Interbank Card Association, which established another network and bank card eventually known as MasterCard.³³ In 1970, Bank of America spun off BankAmerica Service Corporation to a (bank) member-based organization that eventually became Visa USA. Thus, both MasterCard and Visa USA basically offer a franchise to their members and manage the interchange system, establishing the pricing of interchange services and the rules and regulations governing these operations. There was a shaky start that saw huge losses due to large-scale unsolicited issuance of cards in the late 1960s (a practice that is now illegal); there was also a time when rampant inflation and high interest rates made the bank credit card business unprofitable. However, the acceptance of bank credit cards at the point of sale (which now includes a personal computer attached to the Internet) became so widespread that it is difficult to imagine that this oldest of the widely used electronic payment systems is less than 50 years old.

The legal and regulatory environment for the bank credit card industry includes state law (mainly usury laws), federal consumer credit law, and the outcome of court cases. The maximum rate that a lender can charge for consumer credit is established on a state-by-state basis. This became a difficult problem for the industry when interest rates were very high, and in some states legal maxima were less than banks' cost of funds. In a landmark court decision in 1978, the U.S. Supreme Court ruled that the lender's location determined the operative state usury ceiling no matter where the customer may live, even if the

³² See Mandell and Murphy (1976) and Mandell (1990).

³³ See Evans and Schmalensee (1999).

state in which the customer lived had a lower usury ceiling. This gave incentive to large card issuers to find a lender-friendly state in which to establish national operations. Several states, especially South Dakota and Delaware, aggressively solicited such bank card operations. In the 1970s, Congress enacted a number of consumer credit protection laws, at least partly as a response to the marketing and other practices of the bank credit card industry. These laws include the Truth-in-Lending Act of 1968, the Fair Credit Billing Act of 1974, the Equal Credit Opportunity Act of 1974, the Fair Credit Reporting Act of 1971, the Fair Debt Collection Practices Act of 1977, and the Electronic Fund Transfer Act of 1978. In addition, federal bankruptcy law affects bank credit card operations.

There are now over 1.2 billion credit cards in the United States. Of these, 551.9 million are issued directly by retailers; the rest are bank credit cards or travel and entertainment cards. The number of transactions grew from 12.9 billion in 1997 to 17 billion in 2001, an annual growth rate of 5.78 percent. The proportion of retailer card transactions for 2001 was 11 percent of the total, down from 15 percent in 1997. The number of merchant locations at which these cards may be used is over 13 million.

Summary of Recent Developments in Payment Systems in the United States

In the past 25 years, the nature of the payments system in the United States has changed. In part the change has been dramatic; in part it has been slow. The different payment systems reflect the development of competing networks with a variety of legal and regulatory environments. The only common theme is that payments are routed through an interbank system. There are also a variety of owners and operators of the networks, including public bodies for checks and the ACH (the Federal Reserve System), national membership organizations for open networks of general-purpose bank credit cards (Visa and MasterCard), closed networks for some general-purpose credit

cards (American Express and Discover), and proprietary (both bank and nonbank) organizations for ATM and PIN-based on-line debit card networks. In general, the ACH and the debit card transactions have witnessed the greatest growth, whereas credit card transaction growth has been modest and payments by check have actually declined. In table 1, the number of transactions for the various categories are shown for 1979, 1995, and 2000, the years for which accurate data are available.

Table 1

The Use of Checks Has Declined While the Use of Retail Electronic Payments Has Increased			
Type of Payment	1979	1995	2000
	Number (billions)		
Check	32.8	49.5	42.5
Retail Electronic Payments	5.5	14.7	28.9
Debit Card	0.0	1.4	8.3
Credit Card			
General Purpose	1.5	7.8	12.3
Private Label	3.8	2.6	2.7
Retail ACH	0.2	2.8	5.6

Source: George R. Gerdes and Jack K. Walton II, The Use of Checks and Other Noncash Payment Instruments in the United States, Federal Reserve Bulletin 88, no.8 (August 2002), 361.

Users of Electronic Banking

Who uses electronic banking? The answer is households, governments, and businesses.

Households

A number of studies have examined the determinants of household use of payment services. It was found that the adoption process for new electronic banking services followed a predictable pattern, one in which demographic factors including income, wealth, education, and position in the life cycle (age) were systematically associated with the adoption of new payment products and services. In an early contribution, Mandell found that credit card use was positively associated with

income, wealth, education, and age.³⁴ In the 1980s, a study by Murphy and Rogers and two studies by Daniels and Murphy found similar patterns for the adoption of banking and payment products and services.³⁵ More recent studies found that the patterns remain the same, but the trend is toward greater use by all demographic groups. Kenickell and Kwast examined the data in the 1995 Survey of Consumer Finances and found that higher income and financial assets, and more years of education were all positively correlated with use of electronic banking services. Age is more complex because older households are less likely to use electronic banking, all other factors held constant, for almost all electronic banking services except direct deposit—a correlation reflecting the very high acceptance of direct deposit by Social Security recipients.³⁶ Stavins analyzed the data from the 1998 Survey of Consumer Finances with similar results.³⁷ Using the most recent Survey of Consumer Finances (2001), Mester showed that over 88 percent of households use some form of electronic payment instrument (ATM, debit card, direct deposit, automatic bill paying, or “smart card”). This is an increase from 76.5 percent. From 1995 to 2001, debit card use rose from 17.6 percent to 47 percent of households, direct deposit rose from 46.8 percent to 67.3 percent, and automatic bill paying rose from 21.8 percent to 40.3 percent. The most mature of applications, the ATM, rose from 61.2 percent to 69.8 percent. In Mester’s findings all the previously determined relationships between use and demographics remained, but the penetration had increased substantially, as reflected in the data on the dramatic increase in debit card transactions and the reduction in the number of checks written.³⁸

Governments and Businesses

As indicated above, in the United States all levels of government have actively pursued the use of electronic banking in making and receiving payments, including payments to employees, benefit recipients, and vendors. This has been largely successful, and the number of checks written by all levels of government has declined. As noted

above, government payments through the ACH system have increased modestly in recent years, indicating that for government this process is largely complete.

The business sector receives payments from households in various ways. Households pay businesses at the point of sale by cash, check, or debit or credit card. They pay businesses mostly by check in response to invoices through the mail. Businesses pay each other usually by check or through the ACH, and increasingly businesses pay taxes through the ACH as well. There are no business databases comparable to the Federal Reserve’s Survey of Consumer Finances. Hence, one has to seek indirect evidence from numerous sources to determine business use of electronic banking. First, it is clear that retail businesses find it necessary to accept debit or credit cards at the point of sale. Casual inspection of retail sites combined with a reported total of point-of-sale terminals in excess of 13 million in the United States is sufficient to indicate that businesses find it either convenient and low cost, or a business necessity, to accept POS electronic payments.³⁹ The concept of point of sale has been expanded to include the telephone and the Internet, and the credit or debit card is the payment instrument of choice here.

NACHA publishes data about the types of transactions processed through the ACH system. It is possible to make reasonable assumptions about the source and destination of many of these transactions and their use by businesses and governments. First, all direct deposits are considered business or government payments to households. This is one of the largest applications on the ACH system, with over 3.8 billion transactions in 2002. As indicated in the 2001 Survey of Consumer Finance and reported by Mester (2003),

³⁴ See Mandell (1970).

³⁵ See Murphy and Rogers (1986) and Daniels and Murphy (1994a, 1994b).

³⁶ See Kennickell and Kwast (1997).

³⁷ See Stavins (2001).

³⁸ See Mester (2003).

³⁹ It should be noted that the United States ranks high in per capita deployment of EFTPOS (electronic fund transfer point-of-sale) terminals in comparison with other developed countries. See CPSS (2003).

the direct deposit of payroll, Social Security, and other benefits, as well as pension and dividend payments, has been very popular with consumers. As a result its growth from 2001 to 2002 was only 4.7 percent, smaller than the double-digit-percentage increases in most other electronic transactions. Direct debits through the ACH involving recurring payments from consumers to businesses were over 2.8 billion in 2002, a 10.08 percent increase from 2001. These two applications—direct deposits and direct debits—usually represent recurring transactions.

Some of the other new ACH applications involve businesses in transactions that are not recurring. First, there is the point-of-purchase application in which a consumer check is transformed from a negotiable instrument to a source document. This involves a consumer-to-business transaction at the point of sale and is a direct substitute for either a debit or a credit card transaction. Other nonrecurring payment transactions from consumers to businesses include Internet and telephone-initiated transactions. Finally, a recent addition to the consumer-to-business electronic transaction menu is the accounts-receivable application, in which a check mailed to a lockbox is transformed at that point to a source document that is processed through the ACH system. All these applications have grown at very high rates.

Finally, within the ACH system there are various business-to-business transactions. These include trade payments as well as intracorporate payments designed to aggregate cash balances from a number of banks into a single account that can be used to efficiently make payments and invest surplus funds. These have grown at double-digit rates in recent years, in excess of 12 percent from 2001 to 2002.⁴⁰

Another way to gain some insight into business use of electronic banking is to examine the findings of a number of surveys of corporate use of cash management services. For example, in 2002 Phoenix-Hecht conducted its annual Cash Management Monitor and received responses from 1,665 corporations with annual sales in excess of \$100 million. One of the many findings of the

survey was that over 97 percent of large corporations and 92 percent of upper-middle-size corporations already used the ACH extensively. Indeed, Phoenix-Hecht sees little opportunity for expanded ACH volume in any application except consumer-authorized debits. Another interesting finding is the use of sweep accounts by over 75 percent of all reporting corporations. Sweep accounts allow daily movement of funds from demand deposit accounts into an overnight repurchase agreement or money market mutual fund. This is important for corporate use of electronic payment services. That is, corporations move funds out of demand deposit accounts where explicit payment of interest is prohibited. In this case, banks do not offer any earnings credit to offset fees, and therefore corporations have incentives to adopt the lowest-cost payment services.⁴¹ Moreover, respondents indicated that imaging technology and Internet applications were important areas being considered.⁴² Phoenix-Hecht also conducts a Middle Market Monitor for companies with annual sales between \$40 million and \$100 million. In 2003, 1,260 companies responded. Over 86 percent of these companies used the ACH, and many respondents indicated that initiating transactions over the Internet is one of the more important technology applications. Middle-size companies also used sweep products as well. In summarizing the results of the middle-market company survey, Phoenix-Hecht indicated that “although middle market companies typically use fewer cash management products than large companies, as a group the middle market usage ‘profile’ is becoming more like that of the larger companies.”⁴³ In a similar survey, Treasury Strategies, Inc., asked 131 large corporations (less than \$1 billion to \$25 billion in annual revenues) many questions about their treasury activities. While there were no specific questions on the use of particular payment services, there was substantial emphasis among respondents on streamlining operations, lowering costs, and aggressively using

⁴⁰ See NACHA (2003).

⁴¹ For a discussion of the use of sweep accounts in cash management, see Cook, Murphy, and Silverberg (2000).

⁴² See Phoenix-Hecht (2002).

⁴³ See Phoenix-Hecht (2003), 2.

technology to do so. Over 65 percent of all respondents used treasury work stations, a process that implies intensive management of all aspects of treasury operations, including adoption of least-cost methods of making payments.⁴⁴

While businesses, especially large and middle-market businesses, are aggressively using electronic payment methods, they are still involved in paper transactions. In a recent Federal Reserve study, it was estimated that consumers were the largest sector that wrote checks (50.9 percent of all checks written), and most of them (almost 2/3 of all checks written) were sent to businesses.⁴⁵ Businesses were the second largest writer of checks (32.3 percent of the total), mostly to consumers and other businesses. It would appear that the best candidates for further business adoption of electronic payment products would be check conversion or check truncation at the point at which checks are remitted to businesses, in many cases a lockbox. Also, there is room for expansion of electronic services to business-to-business payments. A recent study by the Association for Financial Professionals indicates that while most respondents used the ACH for payroll disbursements and cash concentration, payments to other businesses was limited by a number of factors, the most important of which was internal lack of integration of payments and accounting system technology.⁴⁶

Check Writing and Electronic Banking: An International Perspective

When the United States is compared with 13 other advanced industrial nations in 2001, an interesting pattern emerges. When measures of electronic banking are considered, the United States has a very high usage factor. For example, the United States has a large number of ATMs compared with its population. The average for the 13 countries is 875 ATMs per million inhabitants, while in the United States there are 1,137 ATMs per million. The United States has more than the average number of POS terminals that accept debit cards per inhabitant, more than the average number of debit card transactions per

inhabitant, more than the average number of POS terminals that accept credit cards per inhabitant, and more than the average number of credit card transactions per inhabitant. The same is true for number of cards (debit or credit) issued and held by inhabitants. However, the United States is still an outlier when it comes to check writing. In 2001, there were 144.6 checks per inhabitant written in the United States, more than twice as many as in France, the next-highest user of checks. The United States uses many fewer credit transfers as would be expected for a country that has been dominated by checks for so many years. The combination of high ATM use, high card use at the point of sale, and the large number of checks written indicates that the number of cashless payment transactions per inhabitant in the United States is much larger than in all other countries in this sample. There are 270.3 cashless payment instruments used per inhabitant in the United States and more than 201.1 cashless payment instruments used per inhabitant in France, the next highest.⁴⁷ Hence, the key to adopting a higher proportion of low cost transactions in the United States lies with reducing the number of checks written, since the adoption of most electronic payments has been successful, whether one examines trends or international comparisons.⁴⁸

Pricing Payment Services and Products

In the United States, there is a historical link between the regulatory environment and the nature of pricing for payment services, especially checks. For many years, banks were prohibited from paying interest to demand deposit customers, and there was a ceiling on what could be paid to customers with savings accounts or certificates of deposit. As interest rates in general rose in the post-World War II period, incentives were creat-

⁴⁴ See Treasury Strategies, Inc. (2003).

⁴⁵ See Federal Reserve System (2002).

⁴⁶ See Association for Financial Professionals (2002).

⁴⁷ See CPSS (2003).

⁴⁸ A classic review of how payment systems operate in Europe, Japan, and the United States can be found in Humphrey, Sato, Tsurumi, and Vesala (1996).

ed for banks to pay implicit interest on deposits in the form of reduced fees on checking (perhaps all the way to no service charge), increased convenience through the construction of branch offices in many locations, and other means of convincing customers to keep funds on deposit when explicit interest payments to these customers were either zero or below market. This led to a situation of cross-subsidies in general and overuse of checks in particular. Customers with high balances and fewer checks written were cross-subsidizing those with low balances and many checks written. There were few if any incentives to limit check writing.⁴⁹ At the same time, credit card pricing had created cross-subsidies as well. Credit card customers generate revenues for card-issuing banks in three ways: first, they pay interest on unpaid balances; second, they may pay an annual fee; and third, their transactions generate interchange revenue. Since interest is not charged to many customers who do not carry unpaid balances at the end of the billing cycle, these customers do not pay directly for the costs they generate by their credit card activity. In addition, at the point of sale the customer is not charged a different price for the goods or services depending on whether he or she chooses a low- or high-cost method of payment. Since the merchant pays a fee to the bank (the merchant discount) that is based on the size of the transaction and the customer does not benefit from using the low-cost transaction, the bank has an incentive to have a card transaction migrate to the bank credit card or the off-line debit card because the merchant discount paid to the bank is higher. Hence, there is no explicit pricing incentive for the customer to choose the lowest-cost method of making payment.⁵⁰

Although the regulation limiting interest payments on deposits was removed in 1980, there is still a perceived preference on the part of consumers for pricing arrangements that do not involve per-item charges for checks written.⁵¹ In the Federal Reserve payments project in 2002, it was noted that the number of checks written per household has increased over time, while the government and the business sector have made more progress in replacing checks with electronic pay-

ments.⁵² There is indirect evidence that pricing has an effect on decision making by business about checks versus electronic payments. First, most large and middle-size corporations actively manage their cash, and they invest all deposits on a daily (overnight) basis, usually through sweep arrangements. This may be construed as a market-based innovation to avoid the impact of the prohibition of interest payments on business demand deposits. Since banks must pay a competitive rate on these balances, they must charge fees that cover their costs of providing transaction services to these business customers. The Phoenix-Hecht and Treasury Strategies, Inc., surveys discussed above support the use of these cash management tools. In addition, Phoenix-Hecht conducts and publishes surveys on the prices of specific transaction services,⁵³ and the surveys of corporate cash management practices indicate that annual reviews (including of pricing) are common. Moreover, the corporate cash management community has worked to standardize formats for categories of services and procedures for designing requests for proposals (RFPs) for banks offering cash management services.⁵⁴ As indicated above, in their use of electronic banking services, middle-market corporations resemble larger corporations as banks refine their offerings and saturate the large corporate market. This migration process to smaller firms will increase the use of electronic banking for smaller corporations in the future.

If we accept that pricing incentives have caused businesses and governments to economize on high-cost methods of payment, is there any evi-

⁴⁹ The link between pricing, regulation, and electronic funds transfer is discussed in Murphy (1977).

⁵⁰ It should be noted that the *total* cost of making the transaction is important to the payer, including postal costs if the mails are involved as well as the time and transportation costs involved in making the transaction. The switch to electronic payments by consumers may reflect changes in the total cost even though the explicit transaction costs are not charged directly to them.

⁵¹ The Federal Reserve conducts an annual survey of retail fees of depository institutions. For a summary of the findings of these surveys, see Hannan (2002). See also Stavins (1999).

⁵² See Gerdes and Walton (2002).

⁵³ See Phoenix-Hecht (2003).

⁵⁴ See Association for Financial Professionals (2003, 2003).

dence that this would happen on the consumer side if explicit pricing were somehow introduced? There is very limited evidence, in those instances in which per-item pricing is observed for consumers in the United States, that it has the expected effect on check writing.⁵⁵ However, the most rigorous, thorough econometric examination of the effect of pricing on choice of payment instrument was conducted by Humphrey, Kim, and Vale for Norway, a country that implemented explicit per-item prices for a number of payment instruments used at the point of sale. The findings supported a strong substitution effect of electronic for paper transactions at the point of sale.⁵⁶

Implications for Banking Profitability and Regulatory Oversight

This review of the development of payment systems in the United States indicates the following:

- Banks will have to adapt their offerings and internal back-office processing to reflect the changes underway, leading to greater use of electronic banking by consumers. Fortunately, although the process of change has recently accelerated, the trends should not overwhelm the industry.
- Since more electronic transactions are cheaper to process, as is the conversion or truncation (or both) of checks, banks that do not explicitly charge for transaction services on a per-item basis will see a reduction in costs. For banks that have explicit fees for each service (mainly banks that supply cash management services), it will be necessary to ensure that the profit margins on the electronic transaction services are commensurate with those on the paper transaction services.
- Since cross-subsidization and implicit pricing lead to distortions, overuse of some services,

and lack of transparency, there is no justification for the remaining restriction on paying interest on demand deposits. Interest is allowed for consumer accounts, and large businesses have evaded the restriction by using sweep accounts. The Federal Reserve should pay interest on bank balances, and banks should not be restricted in paying interest on any demand deposit account.

- There has been and will continue to be consolidation in the provision of cash management services to large corporations, but banks of all sizes will be able to continue to serve their customers with a mix of capabilities, including ATMs, on- and off-line debit cards, credit cards, acting as receivers of ACH payments on behalf of their customers, and other services. There should be no reason to believe that these trends by themselves will have any substantial impact on the market structure of the banking industry.
- Bank regulators must concern themselves with operational risk. The developments discussed in this paper indicate that regulators must be aware of the risk implications of the changes in payment systems and must adapt their approaches accordingly.
- Regarding operational risk, one important aspect that must be considered by bank regulators is the trend toward nonbank ownership and operation of significant portions of the payment networks. Since the operation of these networks has a direct effect on the risk exposure of regulated banks, the risk management procedures of these firms may have significant implications for bank regulators.
- Banks and bank regulators need to be concerned about the market structure of the network providers, especially those for ATMs, debit cards, and credit cards. Significant consolidation among network providers has already occurred, and any further concentration raises concerns about pricing, service quality, and product innovation in this segment of the market, one in which bank regulators have no direct responsibility.

⁵⁵ See Murphy (1991).

⁵⁶ See Humphrey, Kim, and Vale (2002). Other studies of cross-country analyses of payments failed to find significant relationships between pricing and use because of poor data and little application of per-item pricing. See Humphrey, Pulley, and Vesala (1996).

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