

Safety, Soundness, and the Evolution of the U.S. Banking Industry

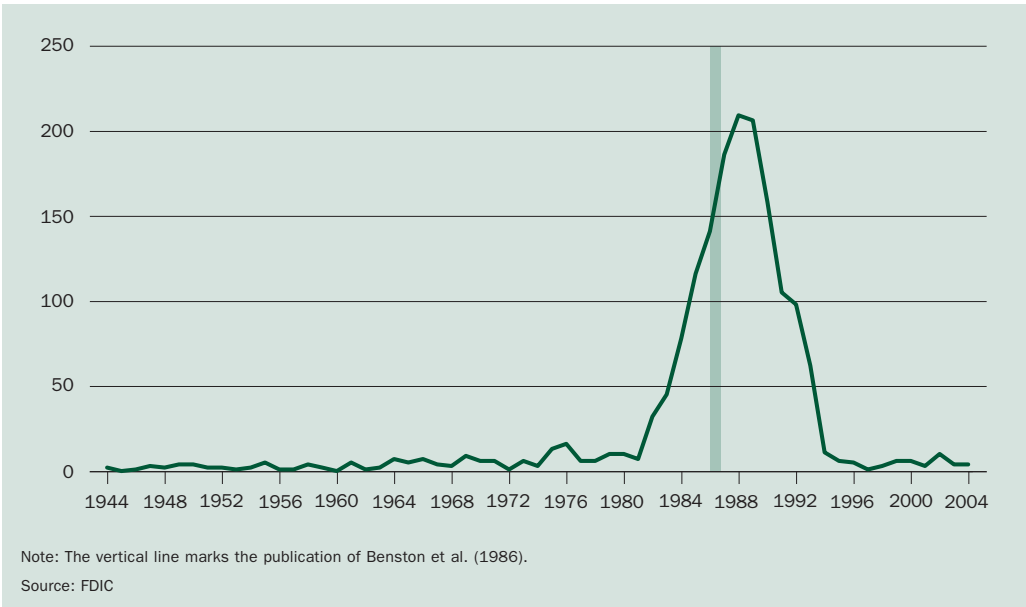
ROBERT DEYOUNG

DeYoung is an associate director in the Division of Insurance and Research at the Federal Deposit Insurance Corporation. He thanks Mark Flannery, Ed Kane, Myron Kwast, and Loretta Mester for helpful comments. This paper was presented at the conference "Safe and Sound Banking: Past, Present, and Future," held August 17–18, 2006, and cosponsored by the Federal Reserve Banks of San Francisco and Atlanta and the founding editors of the Journal of Financial Services Research.

Bank failures are the most obvious manifestation of an unsafe and unsound banking system. From the early 1980s through the early 1990s, approximately 10 percent of U.S. commercial banks failed, resounding evidence that the banking system was at the time neither safe nor sound. As Figure 1 shows, the bank failure wave was an abrupt and substantial departure from normal conditions. The forty years leading up to the banking recession were nearly failure-free: only 237 banks failed between 1940 and 1980, an annual rate of fewer than four insolvencies per 10,000 banks. But the appearance of safety and soundness during those years is deceptive because the financial regulations and industry structure present at the time were themselves the root cause of the bank insolvencies of the 1980s and 1990s. Hence, the observation that the banking industry has been nearly failure-free since the mid-1990s is not, by itself, a good indication of the safety and soundness of today's banking system.

George Benston, Robert Eisenbeis, Paul Horvitz, Edward Kane, and George Kaufman wrote *Perspectives on Safe and Sound Banking: Past, Present, and Future* in 1986 near the peak of the bank failure wave. The book offered forward-looking advice for increasing banking industry safety and soundness. Much of the authors' advice is now embedded in U.S. banking law and prudential regulatory policies, and there is consensus among industry analysts and commentators that these regulatory changes have contributed importantly to a safer and sounder U.S. banking system. But neither time nor technology stands still. Evolution and innovation in financial markets, risk management techniques, information flows, and permissible banking powers have substantially altered the fabric of the banking industry during the intervening twenty years. Collectively, these regulatory and nonregulatory changes have dampened some types of risk, amplified other types of risk, and created some new types of risk. On balance, the banking system appears to be safer and sounder today than two decades ago, but it faces new risk challenges that could not have been anticipated in the 1980s.

Figure 1
Bank Failures per Year, 1944–2004



This paper outlines the fundamental changes in the structure of the U.S. commercial banking industry over the past twenty years. I begin with a chronology of the regulatory, technological, financial, and competitive changes leading up to, during, and since the writing of *Perspectives on Safe and Sound Banking*. Next, a strategic analysis of the current state of the industry focuses on the concept of “transactions banking” and compares the transactions banking business model (and the large financial companies that practice this relatively new approach to banking) to the more traditional relationship-based banking business model. Special attention is paid to the different production technologies, product mixes, strategic behaviors, and risk-return trade-offs that characterize these two diametrically opposed approaches to commercial banking. The paper closes with a discussion of what these new developments may mean for the ongoing safety and soundness of the banking industry.

The Evolution of the U.S. Banking Industry¹

During the 1970s, and indeed during all of the postwar period leading up to the 1970s, U.S. commercial banking was a protected industry. Government regulations shielded banks from geographic competition, from product competition, and to a great extent from price competition. The McFadden Act of 1927 protected banks from outside competition by prohibiting interstate branch banking. Although the act permitted cross-border banking through multibank holding companies, these organizational structures required state approval, and during the 1970s none of the states approved. In addition to these interstate restrictions, most states imposed partial or blanket restrictions on intrastate branching. The Glass-Steagall Act of 1933 effectively isolated commercial banking as a separate and highly regulated financial sector and thus insulated banks from competition with investment banks, insurance companies, and brokerage firms. Moreover, depository institutions such as savings and loans and credit unions were not permitted to compete with banks for commercial loans. Regulation Q

imposed interest rate ceilings on all deposits except for large negotiable CDs, effectively prohibiting price competition between banks for deposit accounts.

By 1980 there were still 14,434 chartered commercial banks in the United States. More than 97 percent of these commercial banks were “community banks” with less than \$1 billion (2001 dollars) of assets, and these small banks accounted for about one-third of the industry’s total assets. The banking industry was the largest category of financial intermediary in the United States, with more than 35 percent of the nation’s intermediated assets (Federal Reserve Flow of Funds Accounts). The industry’s deposit franchise made it the dominant provider of transactions services through checkable deposit accounts, and banks were an extremely important investment vehicle for consumers through savings accounts and time deposit accounts. For example, consumers allocated approximately 23 percent of their assets to depository institutions in 1983 (the first year that these data were available from the Federal Reserve’s Survey of Consumer Finance). An important feature of banks’ deposit franchise was their access to the payment system, which at the time was predominantly paper based. In a banking world that emphasized brick-and-mortar delivery, community banks enjoyed a competitive advantage in their local markets because regulation constrained brick-and-mortar entry by out-of-market banks, and automated teller machines (ATMs) were still in their infancy. In states that limited branch banking, this advantage was especially significant because large banks simply could not branch into local markets.

Loan markets were generally segmented during the 1970s, and in some lending markets banks (along with thrift institutions) were the dominant players. Banks and thrifts dominated the residential mortgage market. Mortgage holdings by insurance companies and finance companies were relatively small, and the mortgage securitization market was limited mostly to Ginnie Mae passthroughs. With regard to consumer loans, consumer finance companies tended to attract the higher-risk and subprime borrowers, while banks, thrifts, and captive auto finance companies (for example, GMAC, Ford Motor Credit) tended to attract the prime consumer borrower. Again, because of the extensive limitations on branch banking, community banks’ power in local markets afforded them a competitive advantage in consumer lending over larger banks. Data from the Survey of Consumer Finance show that households obtained approximately 60 percent of their mortgage and consumer debt from depository institutions in 1983.

Commercial lending in the 1970s was segmented across financial institutions and within the banking industry. Large commercial banks made loans to business firms of all sizes and were the major source of short-term financing to large businesses. Small businesses are generally unable to get long-term financing other than to finance specific fixed assets such as equipment and real estate (see Carey et al. 1993). Community banks, constrained by legal lending limits, focused on lending to smaller businesses. Community banks allocated between 20 and 30 percent of their loan portfolio to commercial loans, on average. Life insurance companies were also active in business finance, but their activities were confined to longer-term financing to medium-sized businesses and some large businesses.

Financial innovation and technological change. In the late 1960s and early 1970s money market interest rates regularly exceeded the Regulation Q ceiling on deposit interest rates. This gap became huge after the Federal Reserve changed its approach to monetary policy in 1979, with the ninety-day Treasury bill rate at one

1. This section is based largely on material from Section 3 in DeYoung, Hunter, and Udell (2004).

point exceeding the passbook savings account ceiling by more than 1,000 basis points. As a result, deposits flowed out of low-yielding bank deposits and into higher-yielding investments offered by nonbank institutions. The impact of this disintermediation was felt most acutely by smaller banks and thrifts that depended on the small retail deposits covered by Regulation Q, as opposed to large banks that relied more on large-denomination CDs with interest rates that were set in competitive markets.

The threat from disintermediation was especially serious because retail customers were gaining increased access to alternatives to bank deposits for their liquid investments. The most salient change was the introduction of money market mutual funds (MMMFs) in 1971. Unlike existing large-denomination money market instruments such as negotiable CDs and commercial paper, MMMFs came in denominations affordable to

Evolution and innovation in financial markets, risk management techniques, information flows, and permissible banking powers have substantially altered the fabric of the banking industry during the past twenty years.

households and small businesses; moreover, MMMFs had a big competitive advantage over Regulation Q–constrained bank deposits because they paid higher money market investment returns and allowed consumers check-writing privileges. As a result, MMMFs grew dramatically beginning in the late 1970s. Later in the decade Merrill Lynch took this innovation one step

further with its Cash Management Account by adding a third dimension, a brokerage account. Innovations elsewhere in the financial services sector, such as universal life insurance, which combined term life insurance with a money market–linked savings component, created additional alternatives to retail bank deposits.

Other innovations had an equally powerful impact on retail banking. One of the most important was the ATM, which reduced the cost of producing transactions services and made them more convenient. Banks had initially hoped that the ATM would be, as its name implies, a substitute for human tellers and perhaps even a partial substitute for bank branches. To the contrary, as the number of ATMs has increased, so has the number of bank branches; these unexpected trends imply that bank delivery systems have a variety of complex strategic characteristics, such as locations that provide customer convenience, revenue centers that generate fee income (for example, third-party ATM fees), and physical brick-and-mortar platforms for person-to-person contact and relationship building. In addition to the ATM, other alternatives to brick-and-mortar banking began to appear in the 1970s and 1980s. Although fully transactional Internet banking did not appear until later, some banks began offering limited forms of computer banking in the 1980s. Customers with a computer and modem could pay bills and transfer money between accounts over telephone lines. Credit cards and debit cards expanded rapidly in the 1970s and 1980s, and although they are not generally thought of this way, these payment vehicles represented yet another alternative to the traditional bank delivery system.

Regulatory reaction to financial innovation and technological change.

During the 1980s it became increasingly difficult to maintain a regulatory environment that could protect the banking industry from product competition, interregional competition, and interest rate competition while at the same time ensuring a vibrant and healthy banking industry. Market conditions and financial and technological innovation simply conspired against preservation of the old regime. Regulatory change became inevitable and necessary.

In some ways this change came quickly. For example, a period of high interest rates that began in 1979 led to the relatively rapid dismantling of Regulation Q, culminating

with the passage of the Garn–St. Germain Depository Institutions Act in 1982, which, among other things, allowed thrifts to make commercial loans and thus compete more directly with community banks. The demise of the McFadden Act took longer. At the intrastate level, thirty-two states liberalized their in-state geographic restrictions on banking between 1980 and 1994. At the interstate level, states began to exploit the multibank holding company loophole in the McFadden Act in the early 1980s, entering into reciprocity agreements with each other that allowed cross-border bank ownership through multibank holding companies. By the end of the decade, all but six states allowed some sort of interstate banking, with most being part of large regional compacts.

Expansion of banking powers occurred at a somewhat more incremental and deliberate pace. On the retail side, the first major change came with the Garn–St. Germain Act of 1982, which authorized banks and thrifts to offer money market deposit accounts (MMDAs), transaction accounts with no interest rate ceiling, which allowed them to compete directly with MMMFs. Until the end of the 1990s, most of the other changes were facilitated by Federal Reserve Board rulings. The Federal Reserve was given the authority under the 1956 Bank Holding Company Act and the 1970 amendments to the act to determine what activities could be conducted by banking organizations, subject to the condition that these activities be “closely related to banking.” In 1987 the Federal Reserve allowed banks to form investment banking subsidiaries (Section 20 subsidiaries), and in 1989 the Federal Reserve granted limited (percent of bank income) corporate securities underwriting privileges to a select group of banks. The percent-of-bank-income limitations were gradually relaxed during the years that followed.

Some of the most fundamental changes in the banking industry over the past two decades are a direct result of the growth of securitized lending. However, unlike the deregulatory changes just discussed, in which government basically got out of the way, securitization is a story about government intervention right from the beginning. Securitization began in the 1960s with the creation of the Ginnie Mae passthrough and exploded in the 1980s with the development of the collateralized mortgage obligation. Two government-sponsored enterprises (GSEs), the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac), are dominant forces in the residential mortgage market.² As of 2003 investors held approximately \$2 trillion in mortgage-backed securities issued by Fannie Mae (about \$1,300 billion) and Freddie Mac (about \$770 billion), and Fannie and Freddie held an additional \$1.5 trillion of mortgages and mortgage-backed securities directly in their own portfolios. Together, mortgages securitized by, or held in the portfolios of, these two GSEs accounted for about 47 percent of total residential mortgage debt in the United States (White 2003).

Securitization combined financial innovation with technological innovation. The financial innovation is the synthetic creation of a liquid, traded security from a pool of illiquid, nontraded assets (for example, individual residential mortgages and credit card receivables) where often the payoff characteristics of the traded securities are altered significantly from those of the underlying assets. For example, securitization has become an important tool for community banks to geographically diversify their

2. Fannie Mae and Freddie Mac receive an implicit government subsidy because investors treat their debt as if it were backed by a guarantee of the U.S. government. The competitive advantage embodied in this subsidy, and the incentives that it creates for Fannie and Freddie, is the subject of substantial public policy debate (for example, Hendershott and Shilling 1989; ICF 1990; Cotterman and Pearce 1996; Passmore, Sparks, and Ingpen 2001; White 2003).

otherwise locally concentrated loan portfolios. The technological innovation is the efficient compilation, computation, and dissemination of information related to the performance and operation of the asset pools. One of the key links in this information chain is credit-scoring technology, which transforms quantitative information about individual borrowers (such as income, employment, or payment history) into a single numerical credit score, which lenders can use when screening and approving loan applications, securitizers can use to group loans of similar risk into pools,

One of the most important innovations in retail banking in the 1970s was the ATM, which reduced the cost of producing transactions services and made them more convenient.

and investors can use (together with other information) to evaluate the risk of the resulting asset-backed securities.

First introduced in the 1950s, credit scoring has become widely used in consumer, mortgage, and micro-small business lending over the past thirty years (Mester 1997). Although some (mostly larger) banks

have developed their own credit-scoring formulas, most lenders rely on third-party credit bureau scores to solicit and prescreen applicants. Bureau scores are based solely on the credit history of individuals as reflected in credit bureau reports, as opposed to application scores that weigh other factors (for example, income and employment) in addition to credit bureau information (Avery et al. 1999). Research on credit scoring is still relatively new, so it remains difficult to quantify the economic impact of credit scoring on the consumer, real estate, and small business lending markets. For example, it is still an open question as to whether risk is assessed more accurately using automated credit-scoring approaches or the more traditional, case-by-case credit analysis performed by loan officers.³ It does seem safe to assert, however, that credit scoring has significantly reduced the unit cost of underwriting an individual loan, and as a result it has (a) increased the minimum efficient scale of consumer loan underwriting operations and in the process (b) expanded lenders' incentives to make credit available (Berger, Frame, and Miller 2005; Frame, Srinivasan, and Woolsley 2001; DeYoung, Glennon, and Nigro 2006).

Comprehensive deregulation, consolidation, and widespread technology adoption. Banking industry deregulation reached its zenith during the 1990s. In 1994 Congress rationalized the patchwork of state-by-state geographic rules by passing the Riegle-Neal Interstate Banking and Branching Efficiency Act, which effectively repealed the McFadden Act at the national level. The immediate response was the highest-ever five-year run of bank mergers in U.S. history in terms of both the number and the value of the banks acquired (Berger, Buch et al. 2004). Although the most prominent mergers and acquisitions are the “megamergers” that combine two large banking companies, the vast majority of U.S. bank mergers since (as well as before) Riegle-Neal have involved at least one community bank (DeYoung and Hunter 2003). In 1999 Congress, its hand forced by the announced merger of CitiBank (the largest U.S. bank) and Travelers (one of the largest U.S. insurance companies), passed the Graham-Leach-Bliley (GLB) Act. GLB effectively repealed the Glass-Steagall Act and granted broad-based securities and insurance powers to commercial banking companies.

These congressional acts ratified the decades-long deregulation movement, and as such they marked the culmination of story lines that began in the 1970s and 1980s. By removing long-standing limitations on bank size and bank product mix, these acts helped accelerate the adoption of new financial processes and information technologies by U.S. banks. In general, larger banks have been quicker to adopt new technology than have smaller banks, including electronic payments technologies, transactional

Web sites, small business credit-scoring models (Berger 2003), ATMs and ATM networks (Hannan and McDowell 1984), loan securitization, and various off-balance-sheet activities (Berger and Udell 1993). However, the more scalable among these technologies disseminated quite rapidly to smaller banks because of the existence of a highly competitive sector of third-party technology vendors and declining costs of delivering these technologies.⁴

In the 1990s credit scoring was adopted by many large banks for micro-small business lending. The definition for this class of lending varies across banks, but the ceiling loan size generally lies between \$100,000 and \$250,000. Some banks use their own proprietary models, and others have purchased credit-scoring models from outside vendors. In general these models rely on information about the entrepreneur (for example, credit bureau reports) and mercantile credit information from third-party information exchanges (for example, Dun and Bradstreet) as well as firm-specific information. Recent research indicates that this technology has been associated with an increase in overall small business lending and that it has enabled banks to make loans to a more marginal class of loan applicants (Frame, Srinivasan, and Woosley 2001; Berger, Frame, and Miller 2005; DeYoung, Glennon, and Nigro 2006).

Financial technology has also had a significant effect on how banks manage risk. After the run-up in interest rates in the 1970s caught many banks with an asset-liability mismatch, the banking industry began to adopt interest rate risk management techniques (for example, GAP-based programs and duration-based programs) to measure their interest rate exposure. Advances in financial engineering and the development of new and wider derivatives markets have improved banks' ability to implement interest rate risk management strategies. Following some highly visible financial fiascos, including Barings PLC, Orange County, and Metallgesellschaft, banks began to implement market risk management tools to measure and manage their trading risk in the mid-1990s. In the latter half of the 1990s, banks began to adopt similar value at risk–based tools for managing credit risk. The proposed new Basel Capital Accord (Basel II) goes one step further, using these new credit tools to link capital requirements to credit risk.

Possibly the biggest impact of technology on the banking system has been on the payment system, where electronic payments technologies and fund transfers are replacing paper-based payments (cash and checks) and paper record keeping. Gerdes and Walton (2002) found a 3 percent per year decline in the number of checks paid in the United States during the late 1990s, while payments made with credit cards and debit cards were increasing by 7.3 percent and 35.6 percent per year, respectively. These figures imply that checks' market share of total payments declined from 80.8 percent to 64.6 percent. Similarly, Humphrey (2002) estimated that checks' market share of total payments fell from 87.8 percent to 72.3 percent during the 1990s, although he found that overall check use was still rising modestly.

The Check Clearing for the 21st Century Act of 2003 (Check 21) permitted banks to improve the efficiency of check payments. By removing the requirement that banks return physical paper checks from the banks where the checks are deposited to the banks that pay them, Check 21 allowed banks to exploit improvements in information

3. Only one published study has analyzed whether human intervention can improve decision making on applicants rejected on the basis of credit scoring. This study used data from one bank with a historically high "override" rate and found that overrides of applicants who would have been rejected on the basis of the credit score did no better on average than their credit score alone predicted (Mayes 2003, chap. 12).

4. Frame and White (2004) survey the literature on technology adoption in the banking industry.

technology. Instead, banks could simply transmit electronic check images, saving substantial transportation and handling expenses and potentially easing the competitive disadvantages of check transactions relative to credit and debit card transactions.

The technology-driven switch from paper-based payments to electronic-based payments is reflected in the steep increase in automated clearinghouse (ACH) transactions, such as monthly mortgage payments and direct payroll deposits. ACH

Some of the most fundamental changes in the banking industry over the past two decades are a direct result of the growth of securitized lending.

volume handled by the Federal Reserve increased at a 14.2 percent annual rate from 1990 to 2000, and this pace has resulted in an 83 percent reduction in the costs of producing these transactions from \$0.959 to \$0.158 in real 1994 dollars (Berger 2003). Technology-driven cost

reductions in the processing of checks and cash payments have been more modest (Bauer and Ferrier 1996; Bohn, Hancock, and Bauer 2001; Gilbert, Wheelock, and Wilson 2002).

More recently, Internet banking has changed the landscape of the financial services industry by reducing both the importance of geography and the cost of transactions. In its most extreme form, a relatively small number of banks offer their services exclusively on the Internet. As of July 2002 there were just twenty such Internet-only operations; approximately another dozen Internet-only institutions have failed, been acquired, or voluntarily liquidated; and in addition, several large banks have integrated their Internet-only units into the main bank after poor stand-alone performance.⁵ The more widespread Internet banking approach is the “click-and-mortar” model that combines a transactional Internet site with traditional brick-and-mortar offices or ATM networks.

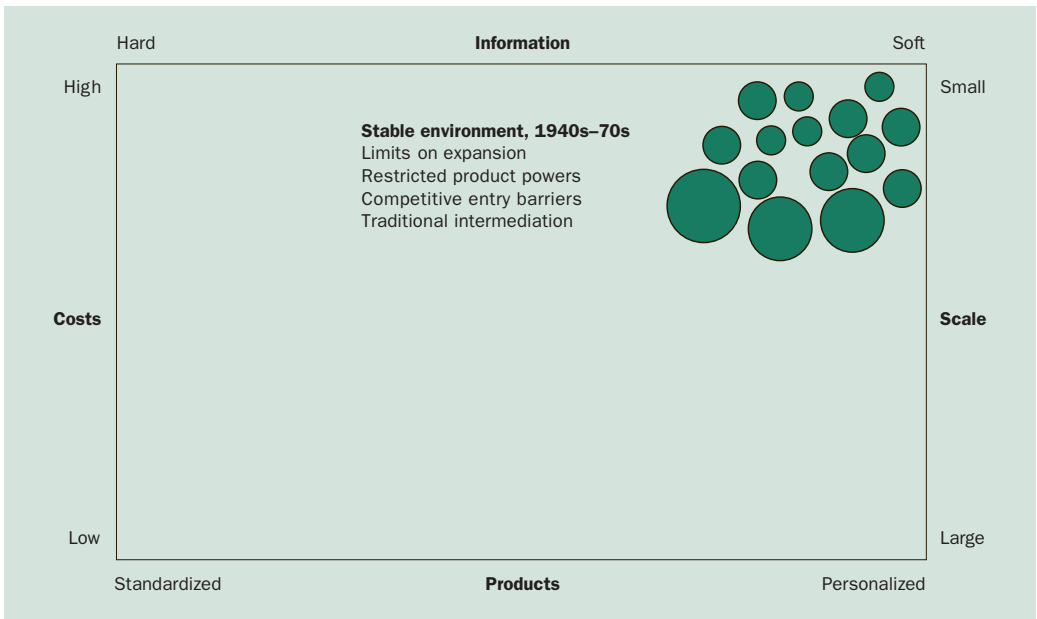
A substantial majority of banks have at least an informational Web site, and close to a majority—and virtually all large banks—now offer transactional Internet sites (Furst, Lang, and Nolle 2001, 2002; Sullivan 2001; Berger 2003). Because the basic Internet banking transaction has low variable costs, there are economies of scale associated with this production process and distribution channel (DeYoung 2005). However, this does not preclude small banks from offering this technology, because they can outsource both the development and the maintenance of their Internet sites to website vendors. There is some evidence that offering Internet banking services enhances the profitability of small banks (DeYoung, Lang, and Nolle, forthcoming).

Overall, the increased efficiency that results from a shift from paper-based to electronic payments should reduce the amount of transactions balances required by consumers. Indeed, consumers have reduced the fraction of their financial assets allocated to transactions accounts by a third, from 7.3 percent in 1983 to 4.6 percent in 2001 (Federal Reserve Survey of Consumer Finance). Moreover, the increased efficiency that results from a shift from full-service head offices to more specialized delivery channels (branches, ATMs, Web sites) should reduce the number of inputs that banks require to produce a given amount of banking services. The number of offices (bank branches plus the head office) per bank has nearly quadrupled since 1970, while assets per office, deposits per office, and transactions per office have steadily increased, and the number of full-time employees per office has declined (DeYoung, Hunter, and Udell 2004).

A Stylized View of Banking Strategies

The previous section described myriad ways that deregulation, technological change, and financial innovations have changed the competitive environment for commercial

Figure 2
The U.S. Banking Industry, Pre-deregulation

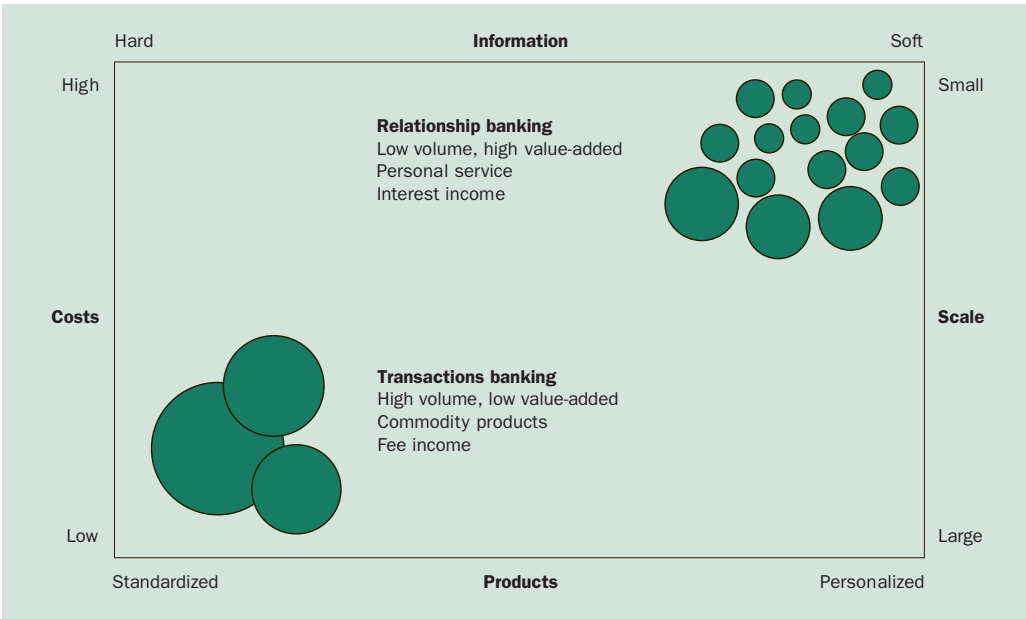


banks. At the risk of oversimplification, this section describes the strategic impact of these phenomena using just four basic parameters: bank size, unit costs, lending technologies, and product differentiation. This approach is derived from a series of studies by DeYoung (2000), DeYoung and Hunter (2003), and DeYoung, Hunter, and Udell (2004) and is illustrated here by the strategic maps in Figures 2 and 3.

The vertical dimension in these maps measures bank size, with large banks at the bottom and small banks at the top. Because the production of banking services tends to exhibit scale economies, the vertical dimension also measures unit costs, with low unit costs at the bottom and high unit costs at the top. Research on bank scale economies has evolved over the years, and the literature contains a fair number of inconsistencies; however, some important points of agreement have emerged over time. One point of general agreement is that small banks using a traditional banking model (that is, intermediating transactions deposits into loans held on portfolio) can gain substantial reductions in their unit costs—but not fully exploit all available scale economies—while still remaining relatively small. Of course, as banks continue to grow larger, they will gain access to additional reductions in unit costs, albeit at a declining rate. But at some point bank size is constrained unless the bank changes the manner in which it produces credit products and other financial services. For example, Rossi (1998) shows that unit cost reductions at financial institutions doing less traditional banking (for example, high-volume origination and securitization of mortgage loans or credit card loans) continue to be substantial even at very large scale, and this technological reality likely precludes small banks using traditional lending approaches from successfully competing head to head with very large banks in the production of financial commodity products.

5. These figures are based on internal records compiled by the Federal Financial Institutions Examination Council.

Figure 3
The U.S. Banking Industry, Post-deregulation



The horizontal dimension in Figures 2 and 3 measures the degree to which banks differentiate their products and services from those of their closest competitors. Banks that offer differentiated products and services (such as customized loan contracts or personalized private banking) are located on the right, and banks that offer nondifferentiated products and services (such as standardized mortgage loans or discount online brokerage) are located on the left. Note that not all product differentiation is tangible—it can often be a perception in the mind of the customer. For example, community banks attempt differentiation by knowing the names of their customers upon sight, while large banks attempt to differentiate via marketing campaigns to create brand images for otherwise undifferentiated products. If successfully deployed, both of these strategies can support higher prices for retail banking services.

The horizontal dimension of standardization versus customization is also consistent with the distinction between hard and soft information (Stein 2002; Berger, Miller et al. 2005; Scott 2004). Banks on the left side of this information spectrum use automated lending technologies to originate and securitize standardized mortgage or credit card loans and to deliver credit-scored micro-business loans. Moving to the right, banks emphasize more traditional lending technologies such as asset-based lending and financial statement lending. Finally, at the far right, banks specialize in relationship lending where loan officers acquire soft information about the borrower over time via financial interactions with the borrower and through interaction with the local community.

Pre-deregulation. Figure 2 illustrates the commercial banking industry prior to the deregulation, technological advance, and financial innovation of the 1980s and 1990s. The positions of the circles indicate the business strategies selected by banks, and the relative size of the circles indicates the relative size of the banks. All banks were clustered near the northeast corner of the strategy space. Geographic regulation restricted the size of banks and prevented most (and perhaps all) of them from

fully exploiting available scale economies. The available technology for producing and delivering banking services required interpersonal contact between loan officers and borrowers to collect soft information, paper-based transactions for payments, and visits to the bank to receive cash and deposit checks—all of which required brick-and-mortar bank and branch locations staffed by bank employees. The level of price competition on the deposit side was restricted on the one hand by Regulation Q and on the other hand by the lack of substitute liquidity and transactions providers. Retail competition, to the extent that it existed, was nonprice competition (for example, person-to-person service, the convenience of having a branch nearby, and of course free toasters for opening accounts). The price competition that is a hallmark of commodity-based financial services was largely absent. And banks faced relatively little competition from nonbanks or securities markets for supplying credit to businesses.

Before deregulation, banks that specialized in retail banking, small business banking, and corporate banking shared many of the same characteristics, regardless of their size. Small banks tended to offer a somewhat higher degree of person-to-person interaction with retail customers, and large commercial accounts by necessity went to large banks, but small banks and large banks had more commonalities with than differences from each other. For the most part, there was a single retail banking strategy (with some variants) and very little strategic difference among most banks' approaches to commercial lending.

Post-deregulation. Deregulation, technological advance, and financial innovation created new strategic opportunities for banks, and, as competition heated up, banks had incentives to pursue those opportunities. As discussed above, the average size of commercial banks began to increase—at first because of modest within-market mergers and then more rapidly because of extension megamergers—and the disparity in bank size within the industry also increased.⁶ Although increased size yielded scale economies for banks of all sizes, the largest banks gained access to the lowest unit cost structures.

Large banks also became less like traditional banks because the size of their operations allowed them to more efficiently apply the new production technologies for which the “hardening” of information is crucial (for example, automated underwriting, securitization, widespread ATM networks, electronic payments). This shift had two effects. First, it reduced large banks' unit costs even further. Second, it changed their retail banking strategy to a high-volume, low-cost, “financial commodity” strategy. Home mortgages, credit cards, and online brokerage are three examples of financial services that have become dominated by large and very large financial institutions, which use hard information and automated production and distribution processes to deliver these services at low unit costs. Because price competition is strong for nondifferentiated products, pricing pressure keeps margins low despite these banks' low unit costs. High volumes, constant vigilance to keep expenses in line, and continuous innovation are essential for this strategy to earn satisfactory returns for shareholders.

The incentives created by industry deregulation (which increased the potential size and scope of commercial banks) and innovations in information technology and financial markets (which gave large banks access to an entirely new business model) drove a strategic wedge between the large and growing banks on the one hand and the smaller community banks on the other hand. The result is shown in Figure 3. Large banks have moved in a southwest direction on the map, sacrificing personalized service

6. See DeYoung (1999, 2000) for a summary of the causes and consequences of U.S. bank mergers.

for large scale and gaining low unit costs by shifting to automated production techniques. Although many community banks have also grown larger via mergers, they have remained relatively small and have continued to occupy the same strategic ground. By virtue of their small size, local economic focus, and person-to-person ethos, community banks are well suited to gathering the soft information necessary to deliver highly differentiated small business credit products and high-end consumer banking services. This more traditional strategy has allowed well-managed community banks to charge prices high enough to earn satisfactory rates of return despite their higher cost structures. In this view of the banking industry, community banks are differentiated from large banks by their “high-value-added” strategy.

Four additional points complete the strategic analysis in Figures 2 and 3. First, the corners of the strategy space represent the only potentially viable strategic choices for banks; being “stuck in the middle” of such a map indicates the lack of a strategy and leads to mediocre financial performance (Porter 1980). Second, the northwest corner of the strategy space (high cost, low-value-added) is not a viable strategy for obvious reasons. Third, the southeast corner of the strategy space (low cost, high-value-added) is the most preferred location, but it is unlikely to be a viable long-run strategy. Without some kind of entry barrier (such as patents or monopoly rights), the excess profits generated at this location will invite entry and the resulting competition will compress margins back to a normal rate of return. Strategy-specific barriers also stand in the way. Large banks may attempt to differentiate their products and services from those of their competitors by creating brand images and other perceived differences, but offering true person-to-person service (as well as other high-value-added retail and small business services) is difficult to achieve at a large scale. Small banks may attempt to achieve lower unit costs via growth, but they run the risk of getting stuck in the middle because of the strategic dissonance between large size and personal service. Nonetheless, the mere existence of this strategic ground, and the excess profits that banks can earn in the short run or moderate run by occupying it, creates an incentive for both large and small banks to innovate. Banks that do not strive via innovation to reach this strategic ground are likely to leave the industry in the long run.

Finally, the dichotomy illustrated in Figure 3 obviously oversimplifies the array of strategic choices available to commercial banks. For example, some large banks offer customized services to certain sets of clients with idiosyncratic financial needs, such as corporate investment banking clients and high-net-worth “private banking” customers. Furthermore, some small Internet-only banks specialize in providing extremely standardized retail banking services (DeYoung 2005). But the simplifications in this framework allow us to isolate the main characteristics of community banks (small size, local focus, and more traditional banking technology) and large banks (large size, broad appeal, and highly automated banking technology) and in turn to realize that community bank strategies and large bank strategies rely on different profit drivers. DeYoung, Hunter, and Udell (2004) argue that both small banks and large banks have access to financially viable business models; in particular, they argue that financial success for community banks in competitive local markets depends chiefly on (a) being large enough to capture some modicum of scale economies and (b) bank managers’ ability to effectively implement the business model.

Evidence Consistent with the Strategic Map

There is considerable empirical evidence consistent with the strategic dichotomy illustrated in Figure 3, some of which is displayed in Table 1. These data are mean values of various financial ratios for different-sized groups of U.S. commercial

Table 1
Mean Values for U.S. Commercial Banks in 2004

	Large bank	Large community bank	Medium community bank	Small community bank	Rural community bank
Asset size	> \$10B	\$500M–\$2B	\$100M–\$500M	< \$100M	< \$2B
Headquarters location	urban	urban	urban	urban	rural
Credit card loans/total loans	0.076	0.004	0.003	0.002	0.003
Loans sold or securitized/total loans	0.262	0.031	0.017	0.006	0.010
Small business loans/total loans	0.044	0.089	0.115	0.143	0.128
Fed funds purchased/assets	0.086	0.039	0.020	0.009	0.011
Core deposits/total deposits	0.287	0.382	0.527	0.618	0.622
Net interest margin	0.032	0.036	0.038	0.039	0.038
Advertising expense/ total noninterest expense	0.027	0.020	0.016	0.013	0.015

Note: All banks are at least ten years old.
Source: FDIC data and author's calculations

banks in 2004. (Using data from other individual years since 1999, or data averaged over the 2000–05 period, yields results qualitatively similar to those displayed in the table.) To be included in the analysis banks had to meet the following criteria: They held a state or federal commercial bank charter, were located in one of the fifty states or the District of Columbia, were at least ten full years old,⁷ and had reasonably traditional bank balance sheets that included loans, transactions deposits, and insured deposits; monoline banks and other special-purpose banks were excluded. Banks were also excluded if they did not fall into one of the five asset-size classes represented in Table 1: large banks, with more than \$10 billion in assets; community banks with either less than \$100 million in assets, \$100 million to \$500 million in assets, or \$500 million to \$2 billion in assets; or rural community banks, with less than \$2 billion in assets. Rural banks are included as a separate category because of their special role in providing agricultural credit and because they tend to face less competition in the rural towns in which they are located; however, rural banks use a business model very similar to that of other community banks and for most purposes can be considered to be community banks. Finally, the community banks and the rural banks had to meet the following additional conditions: They were domestically owned, derived at least half their deposits from branches located in a single county, and were either freestanding firms, the sole bank in a one-bank holding company, or an affiliate in a multibank holding company composed solely of other community banks.

The five size classes in Table 1 correspond to the dichotomy suggested by the strategic map analysis: Banks in the “large bank” group have more than \$10 billion of assets, a size that far exceeds most definitions of a community bank. Banks in the other four groups are clearly too small to be producing financial commodity products as their main strategy. Comparing the financial ratios across the columns of Table 1

7. DeYoung and Hasan (1998) found that the average newly chartered bank in the United States in the 1980s and early 1990s did not become fully financially mature until it was at least nine years old.

Table 2
Mean Values for Large U.S. Commercial Banks in 2004

	Large bank	Large community bank
Asset size	> \$10B	\$500M–\$2B
Headquarters location	urban	urban
Noninterest income/ total operating income	0.394	0.219
Fee income on deposits/ total noninterest income	0.279	0.418
Composition of noninterest income		
Investment banking	0.059	0.029
Loan servicing	0.046	0.018
Securitization	0.041	0.001
Insurance	0.034	0.020
Other	0.541	0.514

Note: All banks are at least ten years old.
Source: FDIC data and author's calculations

offers further support for a “strategic wedge” between larger and smaller banks—but it also suggests that in some dimensions, the size-based differences are more of a continuum than a discrete difference.

The data for credit card loans, loan sales and securitizations, and small business loans offer clear evidence of a strategic wedge between large and small banks. On average, about 8 percent of loans at the large banks were credit card loans—a classic financial commodity product—compared to less than half of 1 percent for the smaller banks. The production of credit card loans (even after excluding monoline credit card banks) has clearly gravitated toward large banks because of the scale economies present in this business line. Credit card receivables are often securitized, and, consistent with this fact, the average large bank securitized about 26 percent of its loans during 2004. This rate compares to a mere 3 percent or less at the small banks. This finding indicates that most of the loans made by small banks are either nonstandardized (for example, business loans, commercial real estate loans) and hence cannot be securitized or are part of a multiple-product bank-borrower relationship that is enhanced by holding the credits on the balance sheet (for example, deposit accounts plus loan accounts). Small business loans are the other side of this lending coin: The small business loan is the classic relationship loan, underwritten based on soft information. On average, the large banks had only 4 percent of their loan portfolio invested in small business loans versus between 9 percent and 14 percent for the smaller banks. (Note that this comparison likely understates the small-business lending gap between large and small banks: Some large banks make “micro-small business loans” that are underwritten based on the personal credit score of the proprietor and hence can be more like credit card loans than relationship loans based on soft information.)

The comparative data for fed funds purchased and core deposits are also consistent with the two theorized approaches to banking. On average, the large banks funded more than 8 percent of their assets with funds purchased overnight from other banks compared to between 1 percent and 4 percent for the smaller banks. Similarly, only

about 29 percent of total deposits at the average large bank were “core” funding (that is, transactions deposits, savings deposits, and certificates of deposit less than \$100,000) compared to between 38 percent and 62 percent for the smaller banks. Both of these findings illustrate the difference between the traditional banking approach, in which long-term deposits are used to fund on-balance-sheet portfolios of nonstandardized loans that reflect a variety of customer relationships, versus the transactional banking approach, in which standardized loans are securitized and sold, funding is short run, and deposit accounts are typically unrelated to loan accounts. However, note that the decline in core deposit funding as banks get larger is a relatively gradual decline rather than a discrete regime shift between small and large banks. This pattern might indicate that the rapid asset growth rates of the largest community banks require a less traditional funding mix (it is well known that core deposits cannot be grown as fast as loan accounts), or it might indicate that the largest community banks are growing at the expense of their relationship-based business strategies and are risking getting stuck in the middle of the strategic map.

The incentives created by industry deregulation and innovations in information technology and financial markets drove a strategic wedge between large and growing banks and smaller community banks.

The differences in net interest margin across the various-sized banks flow directly from the comparative differences in funding and lending just noted. The average net interest margin for the large banks was 3.2 percent compared to 3.6 percent to 3.9 percent for the smaller banks. Securitizable loans are financial commodities sold in highly competitive markets, and the competitive rivalry (a) puts downward pressure on loan rates and (b) can create pressure to extend credit to risky borrowers that have high probabilities of defaulting or missing payments. These phenomena depress interest income per dollar at large banks relative to the interest rates that smaller banks can charge for relationship-based loans made to informationally opaque borrowers in less competitive markets. Fed funds and noncore deposits are more expensive sources of funding and thus put upward pressure on deposit interest rates. This pressure increases interest expenses per dollar at large banks relative to the interest rates paid by smaller banks to their largely core depositors.

Finally, the intensity of advertising expenditures differs substantially by bank size. On average, advertising expenditures account for only 1.3 percent to 2.0 percent of noninterest expenses at the small banks compared to about 2.7 percent at the large banks. This doubling of advertising intensity from the smallest banks to the large banks is consistent with the strategic map analysis in several ways. First, most large banks are still in the process of growing and entering new geographic markets, and advertising support is essential for establishing presence in a new market. Second, small banks can spend less on advertising because their strategy is locally focused (so word of mouth is relatively more effective) and is based on multiproduct relationships that keep the customer coming back to bank branches and Web sites (where it is inexpensive to communicate with customers). The implications of these advertising patterns will be discussed at greater length below.

Although large banks generate lower interest margins than small banks, they augment their interest income with noninterest income—often referred to generically as “fee” income—to a greater extent than small banks. Table 2 shows that noninterest income accounts for nearly 40 percent of operating income (net interest income plus noninterest income) on average in the large bank group, roughly twice as much as the average bank in the large community bank group (about 22 percent). This disparity is

also consistent with the strategic dichotomy illustrated in Table 1. For example, securitized lending operations generate relatively little interest income because loans are not retained, but they generate a disproportionate amount of noninterest income through loan origination fees, loan securitization fees, and loan servicing fees. Also note that the composition of noninterest income at large banks includes substantially more fee income from investment banking and insurance activities than at smaller banks; these nontraditional banking activities were made possible by deregulation, and the fact that smaller banks have not taken greater advantage of these powers is due in part to the scale of operations needed but is, more importantly, an indication of their strategy that focuses on traditional banking activities.

Further Implications of Strategic Change

While the data offer clear support for the strategic map analysis in Figures 2 and 3, a more complete appreciation of this strategic shift requires analysis outside of this simple and highly stylized framework. This section draws on existing research in banking and finance to more closely examine how the dichotomy of transactions banking versus relationship banking has shaped competitive rivalry and financial performance in the U.S. banking industry.

Industry structure. Geographic deregulation released a binding constraint on the size of banking companies that wished to grow larger, and advances in financial and information technologies provided a potentially attractive business model (transactions banking) that could be exploited most profitably by large banks. The fastest way for commercial banks to take advantage of these opportunities was to acquire other existing banks. On average, 500 commercial banks were acquired each year between 1990 and 2000 in an industry that started the decade with about 12,000 banks. These acquisitions substantially altered the structure of the U.S. banking industry.

As illustrated in Figure 4, the wave of bank mergers and acquisitions had two effects on the number and size distribution of U.S. banks. First, the number of banks (measured by the number of bank charters) had declined by about half since 1980, from around 14,000 banks—a number that had remained remarkably stable since the 1950s—to fewer than 8,000 banks today. Note that this large decline in banks is a net figure and was not completely caused by mergers and acquisitions. On the one hand, the 2,000-plus bank failures displayed in Figure 1 account for a portion of this decline, while on the other hand, more than 3,000 new banking charters were granted by state and federal banking authorities during the 1980s, 1990s, and 2000s. Strong anecdotal evidence, as well as systematic empirical evidence, indicates that these new, or “de novo,” banks tended to start up in markets in which local established banks had been acquired (Berger, Bonime et al. 2004; Keeton 2000).

Second, the size distribution of banks has clearly changed. The number of banks with more than \$1 billion in assets has remained between 300 and 450 since 1980, and the number of banks with between \$500 million and \$1 billion in assets has remained near 3,000 since 1980. Nearly all of the reduction in the number of banks has occurred in the less-than-\$500-million category, which has fallen from approximately 11,000 in 1980 to fewer than 5,000 today. Three phenomena account for most of this huge decline: The vast majority of bank failures since 1980 occurred in this size group; most of the banks acquired since 1980 were from this size group; and a substantial number of banks grew out of this size group by acquiring other small banks. (The stable populations in the two larger size groups indicate that the number of banks growing into higher size groups was roughly offset by the number of banks disappearing from the industry as merger targets.)

Figure 4

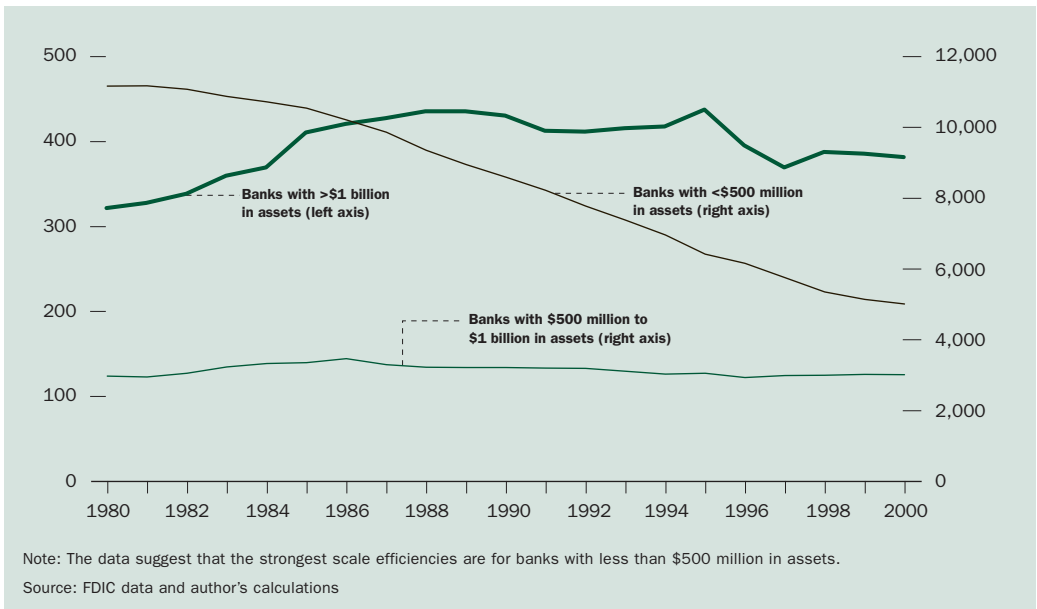
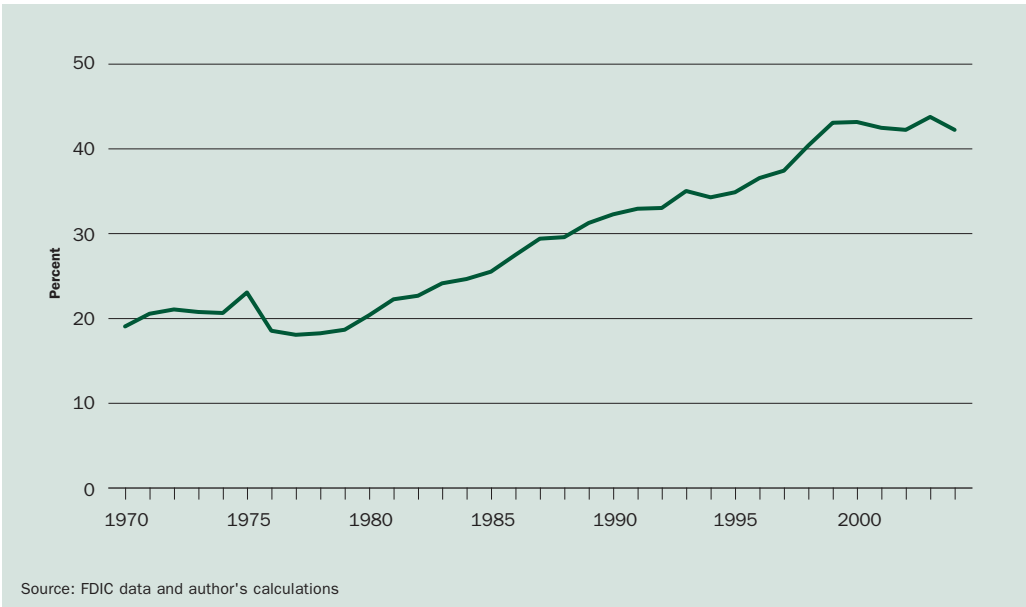
Survivor Analysis: Number of Bank Charters for Banks in Different Asset Categories

Figure 4 is a crude version of a survival analysis (Stigler 1958). Scale economies provide the most likely explanation for the death of so many small and medium-sized community banks, while larger community banks continue to survive. The literature on bank scale economies is large and has produced greatly different estimates of minimum efficient scale over the years.⁸ The earliest studies concluded that scale economies were fully exhausted by relatively small banks; most of these studies estimated minimum efficient scale for banks to be less than \$1 billion of assets (2001 dollars). More recent studies have yielded somewhat different insights; many of these studies conclude that scale economies are available for large regional and super-regional banks. While part of the difference between these two sets of studies is the inferior (though state-of-the-art at that time) methodologies used by the earlier studies, the more important difference is the change in production technologies over time as banks have taken advantage of new information and financial technologies in the production of banking services. The survival analysis in Figure 4 suggests that economically meaningful scale savings can be captured by growing up to \$500 million in assets but that growing beyond \$500 million—at least for community banks—yields far less substantial gains.

Efficient scale is likely to be quite different for transactions banks and other banks that do not use traditional banking business models. As noted above, Rossi (1998) shows that even very large mortgage banks (which use a classic transactions banking approach) face increasing returns to scale. Hughes et al. (1996) conclude that even the largest commercial bank holding companies (in which product volume is often dominated by transactions banking activities) also exhibit increasing returns

8. See Berger, Hanweck, and Humphrey (1987); Mester (1987); Clark (1988); Hunter, Timme, and Yang (1990); Hunter and Timme (1991); Evanoff and Israilevich (1991); Clark (1996); and Berger and Mester (1997) for reviews of the bank scale economy at various points in time.

Figure 5
Noninterest Income as a Percentage of Banks' Operating Revenues



to scale. And DeYoung (2005) argues that Internet-only banks (again, with a pure transactions banking strategy) exhibit larger scale economies than similar-sized banks that have branches. Acquiring other relatively large banks in other markets has been the quickest way for large banks to capture the potentially huge scale economies available from transactions banking models.

Geographic expansion by merger has eliminated thousands of banking charters and has created very large banking companies—for example, just before the passage of the Reigle-Neal Interstate Banking Act in 1994, only four banks had more than \$100 billion in assets; a decade later ten banks were that large, with two of these banks approaching \$1 trillion in assets. This industrywide consolidation has had little effect on the structure of local markets—by definition, geographic expansion mergers leave local market shares unchanged—but the nature of the competitive rivalry in markets can change. Studies have shown improved cost efficiency at small local banks following market entry by large out-of-market banks, presumably because of competitive pressure (DeYoung, Hasan, and Kirchhoff 1998; Evanoff and Ors 2001). Other studies have shown that outside entrants with stronger “brand images” are able to expand their local market shares faster than average (Berger and Dick, forthcoming), consistent with the idea that perceived differentiation can be an effective tool for large banks that sell financial commodity products.

Geographic expansion mergers have also increased the distances within banking organizations and may have created internal management problems. Berger and DeYoung (2001, 2006) find that banking affiliates located farther away from the headquarters bank were less operationally efficient. While improvements in communications and information technologies have proved helpful in reducing these long-distance management problems, such organizational inefficiencies are one reason that small, locally focused banks may continue to be financially viable in competition with large banks. Distances between banks and their loan clientele have also increased over

time. This phenomenon is mainly technology-driven: automated, credit-scored lending models allow banks to make consumer, mortgage, credit card, and even some small business loans to borrowers they have never met in person, and asset securitization and credit derivatives allow banks to manage the risk associated with this type of lending (Petersen and Rajan 2002; DeYoung, Glennon, and Nigro 2006).

It is important to understand that the reduction in banking companies over the past two decades has not necessarily increased the distances between borrowers and lenders because banks have simultaneously increased the size of their branching networks. There

are about 70,000 commercial bank branches in the United States today compared to only about 40,000 in 1990. This explosion in bank branches has been largely strategic in nature. For example, in some markets (such as Chicago) large banking companies are packing the map with branches in order to establish market presence and to limit entry

by competitors. By increasing the size and scope of its branch network, a bank can position itself closer to its current clients as well as its potential customers. This strategy can be especially important for large, transactions banks; although it is difficult for these banks to offer personalized banking services, they can offer high levels of customer convenience by locating close by. This higher level of convenience may explain why retail customers appear willing to pay higher deposit-related fees at large banks. Finally, physical branches located in prominent places also serve as an important advertising vehicle, especially in markets into which a bank has just expanded.

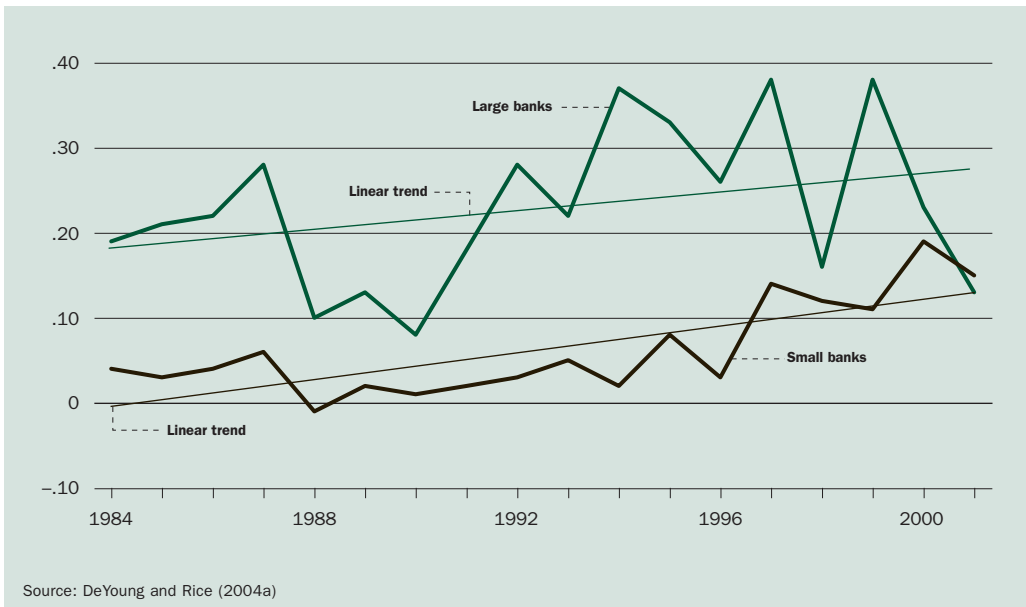
Noninterest income. After the dramatic consolidation of industry structure, perhaps the next biggest change in the U.S. banking system in the past two decades is the shift from interest income to noninterest income. As shown in Figure 5, the percentage of total industry income derived from noninterest income doubled between 1980 and 2000. (Note that this time period coincides almost exactly with the large decline in the number of U.S. commercial banks shown in Figure 4.)

The increased importance of noninterest income at U.S. banks can be traced to three primary sources. First, product market deregulation (that is, the expansion of Section 20 securities subsidiaries during the 1990s, insurance powers granted to national banks during the late 1990s by the Office of the Comptroller of the Currency and the Gramm-Leach-Bliley Act of 1999) granted banking companies the power to produce or sell nontraditional banking services such as equity and debt underwriting, securities brokerage, and insurance products. These lines of business generate primarily fee income and negligible interest income. Second, some traditional banking services that used to generate interest income for banks now generate fee income. For example, while in the past banks might make a loan to a business client (interest income), banks might now sell that client a backup line of credit (noninterest income) that the client needs to issue its own commercial paper or other debt instrument. Similarly, a large portion of retail lending by banks has shifted from portfolio lending (interest income) to securitized lending (noninterest income). Third, the repeal of Regulation Q, which allowed banks to pay market interest rates on deposits, had the effect of increasing the prices charged for deposit services (teller services, check charges, certified checks, bounced checks, etc.), which had traditionally been subsidized by low deposit interest rates.

It is tempting to conclude that the increase in noninterest income shown in Figure 5 means that loan-based and other intermediation activities have become a

After the dramatic consolidation of industry structure, perhaps the next biggest change in the U.S. banking system in the past two decades is the shift from interest income to noninterest income.

Figure 6
Correlation of Returns on Equity and Net Interest Margin



less important part of the value of the banking franchise. Figure 6 displays 1984–2001 time series of the annual cross-sectional correlations between commercial bank profits (returns on equity [ROE]) and net interest margins, for both large (assets greater than \$1 billion) and small (assets less than \$1 billion) banks (DeYoung and Rice 2004b). If intermediation had become less important to banks over time, these time series should arguably be declining over time, but this is obviously not the case.

The increase in noninterest income has altered the risk-return profiles of U.S. banks. DeYoung and Roland (2001) argue that noninterest income may be riskier than interest income, contradicting the early expectations of many industry analysts who believed that fee income was more stable than interest income or that fee income had positive diversification effects at banks. First, the fee income generated by some financial services is likely to be more volatile than interest income from lending. For example, compare fee income from the origination of mortgage loans that are quickly sold off to interest income from a small business loan that is held in portfolio. The former is a nonrepeat business with revenues that are sensitive to volatility in the housing market and mortgage interest rates, while the latter is based on a long-term relationship that both sides wish to continue. Similarly, because fee income from brokerage activities is typically a fixed portion of the value of assets under management, or a fixed percentage of the value of the trades made, these revenues contain systematic (undiversifiable) risk that is generated by the business cycle. Second, many noninterest activities have high fixed costs (personnel expenses), while lending has high variable costs (interest expenses). This high fixed-to-variable cost ratio results in higher operating leverage for the noninterest activities, which amplifies revenue volatility into even greater earnings volatility.

Several empirical studies have investigated the riskiness of noninterest income at U.S. commercial banks. DeYoung and Roland (2001) find that non-deposit-related fee income is associated with both higher revenue volatility and higher earnings volatility.

DeYoung and Rice (2004b) find that marginal increases in noninterest income are associated with a worsening of banks' risk-return trade-off. Stiroh (2004a, 2004b) finds no evidence of diversification gains at banks that combine interest and noninterest income. Choi, DeYoung, and Hasan (2007) study market returns at banks from forty-two different countries and find that noninterest income exposes banks to increased systematic risk.

Financial performance. The two broad strategies illustrated in Figure 3—transactions banking and relationship banking—are known as generic strategies (Porter 1980). Within any generic strategy there can be many strategic variations having similar though not identical characteristics. DeYoung and Rice (2004a) defined eleven such strategic groups within the U.S. commercial banking industry, with the objective of determining whether these different banking business models generated similar or different financial returns.

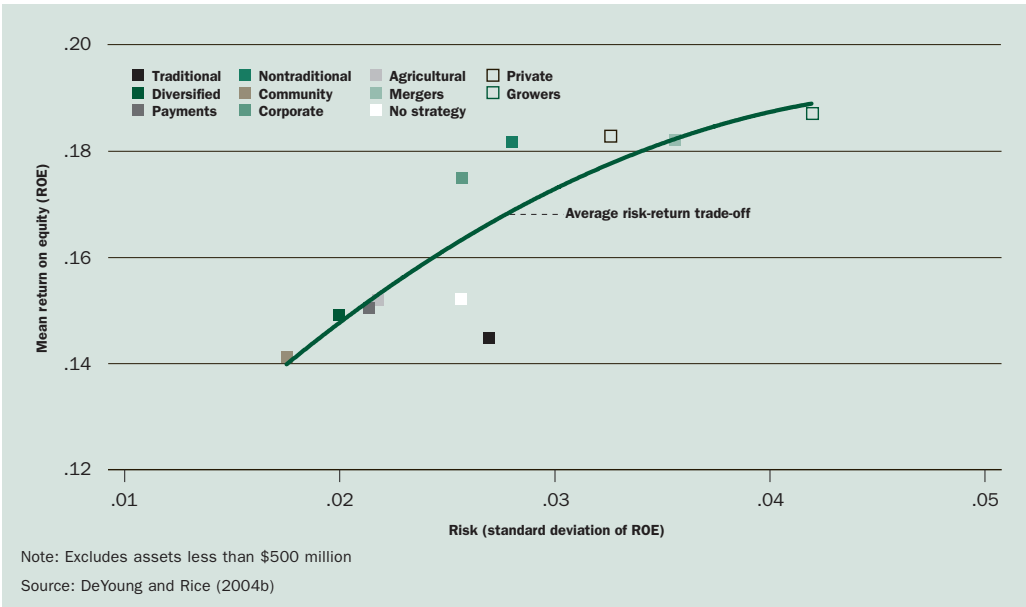
Banks were assigned to one or more of these strategic groups based on the financial services in which they concentrated, the input mixes and production technologies they used to generate those services, their growth strategies, and the customer segments that they targeted. Banks with less than \$500 million in assets were excluded because, as discussed above, these banks are likely operating below minimum efficient banking scale. For the remaining banks, the mean ROE (a measure of expected return) and standard deviation of ROE (a measure of risk) were calculated using data from 1993 through 2003. Finally, the average risk and average return were calculated across the banks in each strategic group.

The results of this exercise are displayed in Figure 7, where the points on the graph represent the risk-expected return combination for each of the eleven strategic groups. The nontraditional group is closest to the stylized transactions banking model (large size, substantial loan securitization activity, high noninterest income, low core deposit funding), while the community bank group is closest to the stylized relationship banking model (small size, local focus, portfolio lending, low noninterest income, high core deposit funding). The community banking model generates a very low expected return and very low risk, while the nontraditional group generates relatively higher expected return and relatively higher risk. In other words, transactions (nontraditional) banking is riskier than relationship (community) banking, but the owners of transactions banks receive higher expected returns in order to put up with this riskiness—that is, there is a positive risk-expected return trade-off across banking strategies. The regression line running through the eleven points represents the average risk-return tradeoff in the industry, moving from strategic group to strategic group.⁹

The high level of risk for the nontraditional strategic group and the low level of risk for the community banking group are both consistent with the research findings discussed in the prior section: Noninterest income is relatively volatile, while relationship lending income is relatively stable. Similarly, the risk-return positions of the other strategic groups make economic sense. The high expected returns for banks that were growing quickly during the sample period (“growers” and “mergers”) reflect the profitable investment opportunities that make firms grow quickly, and the high risk for these banks reflects the transitory expenses associated with rapid growth (for example, one-time merger-related charges, short-run excess capacity at newly established branches). “Diversified” banks that produce a balanced set of different loan and fee-based outputs operate with relatively low risk. “Private” banks that manage the investment portfolios of their wealthy clientele have relatively high levels of risk, reflecting the sensitivity of their fee income to systematic or market risk.

9. The regression was estimated using an intercept term and a simple quadratic specification of risk.

Figure 7
Accounting Risk and Return, 1993–2003



“Traditional” banks that have not availed themselves of recent financial innovations (such as those with no asset securitization or with a heavy dependence on interest income) and banks with “no strategy” (those that did not fall into any of the other ten strategic groups) both have poor risk-expected return trade-offs. The former strategy implies the financial perils of nonprogressive, stagnant management, while the lack of strategy illustrates the dangers of being stuck in the middle.

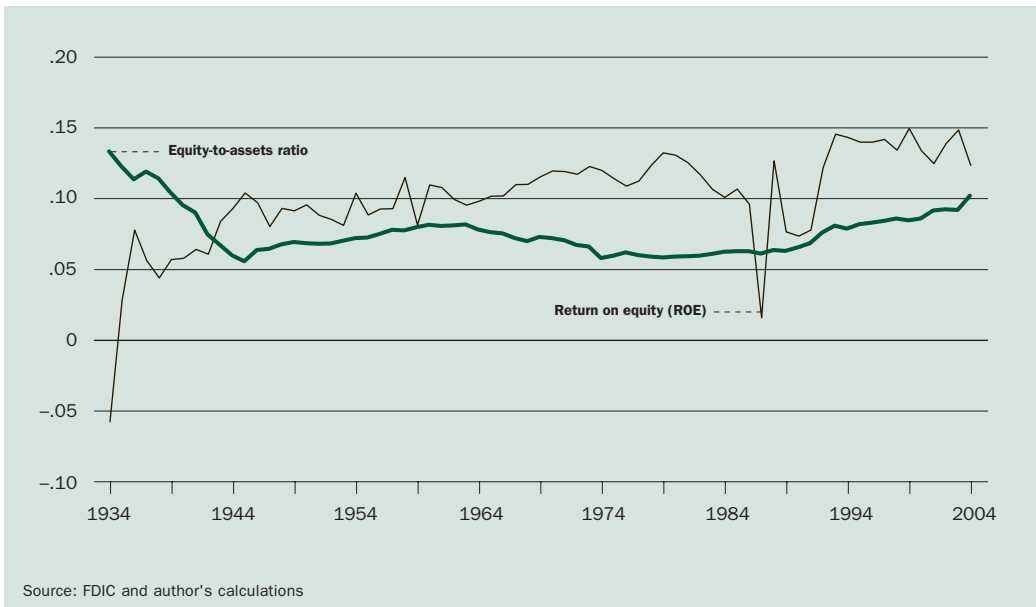
Is the Industry Safe and Sound Today?

Today’s commercial banking industry is clearly more diverse than the banking industry in 1986, when *Perspectives on Safe and Sound Banking* was written. Today’s largest banks dwarf those of twenty years ago, while very small community banks still exist in large numbers. Some banks practice strategies that rely almost completely on non-interest income, while more traditional banks still exist that rely primarily on interest income. Some banks have aggressive growth strategies that would have been unpracticable during the geographically regulated industry of the 1980s. Some banks use asset securitization and derivative securities to manage credit and interest rate risk, while other banks continue to rely primarily on careful loan underwriting, monitoring, and asset-liability management practices. Some banks create brand images with advertising campaigns, while others continue to let word of mouth carry their reputations to local customers. Most banks continue to count on core deposit funding, while many of the largest banks purchase a large portion of their funds in financial markets.

Given this increased diversity, one would expect substantial variation in financial performance across banking companies—and perhaps a greater chance that, at any given time, at least some banking companies would be suffering financial distress. Is the banking industry safer and sounder today than twenty years ago?

The answer is almost certainly yes, in no small part because of the public policies advocated twenty years ago by Professors Benston, Eisenbeis, Horvitz, Kane,

Figure 8
Bank Capital and Earnings, 1934–2004



and Kaufman, many of which lie at the core of today's regulatory and supervisory banking policies. Not surprisingly, the manifestation of these policies can be seen in the historically high capital levels held by today's banks. Figure 8 shows the aggregate equity-to-assets ratios for U.S. commercial banks (book values) each year during the postwar period. Note the continuous improvement in the aggregate capital level that started in the early 1990s, increasing from 6 percent then to 10 percent today. This large reservoir of capital provides a substantial margin of safety and soundness against the (perhaps) increased opportunities for risk taking in today's deregulated banking industry.

This large capital cushion is the result of three developments. First and foremost is the stricter supervisory and regulatory framework mandated by the Federal Deposit Insurance Corporation Improvement Act, the centerpiece of which is prompt corrective action that imposes costly restrictions on banks with diminishing capital levels. In addition, the increased competitive pressure facing banking companies—predominantly a result of deregulation and financial innovation—requires banks to operate efficiently or else exit the industry via acquisition. Efficient operations yield higher earnings, and higher earnings generate increased capital via retained earnings. And finally, fortunate macroeconomic circumstances over the past twenty years, together with the elimination of so many regulatory constraints, have allowed banks to achieve record earnings levels. Figure 8 illustrates how truly impressive these increases in bank earnings are: Industry return on equity has remained at historically high levels since the early 1990s despite the fact that industry equity levels have nearly doubled.

One should not conclude from this performance that today's banking industry is invulnerable to a banking crisis—unfortunately, history likes to repeat itself. But it is safe to conclude that the industry is safer and sounder now than it was twenty years ago.

REFERENCES

- Avery, Robert B., Raphael W. Bostic, Paul S. Calem, and Glenn B. Canner. 1999. Credit scoring: Statistical issues and evidence from credit bureau files. Board of Governors of the Federal Reserve System Working Paper, March.
- Bauer, Paul W., and Gary D. Ferrier. 1996. Scale economies, cost efficiencies, and technological change in Federal Reserve payments processing. *Journal of Money, Credit, and Banking* 28, no. 4, pt. 2:1004–39.
- Benston, George J., Robert A. Eisenbeis, Paul M. Horvitz, Edward J. Kane, and George G. Kaufman. 1986. *Perspectives on safe and sound banking: Past, present, and future*. Cambridge, Mass.: MIT Press.
- Berger, Allen N. 2003. The economic effects of technological progress: Evidence from the banking industry. *Journal of Money, Credit, and Banking* 35, no. 2:141–76.
- Berger, Allen N., Seth D. Bonime, Lawrence G. Goldberg, and Lawrence J. White. 2004. The dynamics of market entry: The effects of mergers and acquisitions on de novo entry and small business lending in the banking industry. *Journal of Business* 77, no. 4:797–834.
- Berger, Allen N., Claudia M. Buch, Gayle DeLong, and Robert DeYoung. 2004. Exporting financial institutions management via foreign direct investment mergers and acquisitions. *Journal of International Money and Finance* 23, no. 3:333–66.
- Berger, Allen N., and Robert DeYoung. 2001. The effects of geographic expansion on bank efficiency. *Journal of Financial Services Research* 19, nos. 2–3:163–84.
- . 2006. Technological progress and the geographic expansion of the banking industry. *Journal of Money, Credit, and Banking* 38, no. 6:1483–1513.
- Berger, Allen N., and Astrid Dick. Forthcoming. Entry into banking markets and the first-mover advantage. *Journal of Money, Credit, and Banking*.
- Berger, Allen N., W. Scott Frame, and Nathan H. Miller. 2005. Credit scoring and the availability, price, and risk of small business credit. *Journal of Money, Credit, and Banking* 37, no. 2:191–222.
- Berger, Allen N., Gerald A. Hanweck, and David B. Humphrey. 1987. Competitive viability in banking: Scale, scope, and product mix economies. *Journal of Monetary Economics* 20, no. 3:501–20.
- Berger, Allen N., and Loretta J. Mester. 1997. Inside the black box: What explains differences in the efficiencies of financial institutions? *Journal of Banking and Finance* 21, no. 7:895–947.
- Berger, Allen N., Nathan H. Miller, Mitchell A. Petersen, Raghuram G. Rajan, and Jeremy C. Stein. 2005. Does function follow organizational form? Evidence from the lending practices of large and small banks. *Journal of Financial Economics* 76, no. 2:237–69.
- Berger, Allen N., and Gregory F. Udell. 1993. Securitization, risk, and the liquidity problem in banking. In *Structural change in banking*, edited by Michael Klausner and Lawrence J. White. Homewood, Ill.: Business One Irwin.
- Bohn, James, Diana Hancock, and Paul Bauer. 2001. Estimates of scale and cost efficiency for Federal Reserve currency operations. Federal Reserve Bank of Cleveland *Economic Review* 37, no. 4:2–26.
- Carey, Mark, Stephen Prowse, John Rea, and Gregory Udell. 1993. The economics of private placements: A new look. *Financial Markets, Institutions, and Instruments* 2:1–66.
- Choi, Sungho, Robert DeYoung, and Iftekhar Hasan. 2007. Risk, return, and non-interest income at commercial banks: Cross-country evidence. Federal Deposit Insurance Corporation Working Paper.
- Clark, Jeffrey A. 1988. Economies of scale and scope at depository financial institutions: A review of the literature. Federal Reserve Bank of Kansas City *Economic Review* (September): 16–33.
- . 1996. Economic cost, scale efficiency, and competitive viability in banking. *Journal of Money, Credit, and Banking* 28, no. 3, pt. 1:342–64.
- Cotterman, Robert F., and James E. Pearce. 1996. The effects of the Federal National Mortgage Association and the Federal Home Loan Mortgage Corporation on conventional fixed-rate mortgage yields. In *Studies on privatizing Fannie Mae and Freddie Mac, U.S. Department of Housing and Urban Development*, edited by U.S. Department of Housing and Urban Development. Washington, D.C.: U.S. Department of Housing and Urban Development.
- DeYoung, Robert. 1999. Mergers and the changing landscape of commercial banking (part I). Federal Reserve Bank of Chicago, *Chicago Fed Letter*, no. 145.
- . 2000. Mergers and the changing landscape of commercial banking (part II). Federal Reserve Bank of Chicago, *Chicago Fed Letter*, no. 150.
- . 2005. The performance of Internet-based business models: Evidence from the banking industry. *Journal of Business* 78, no. 3:893–947.

- DeYoung, Robert, Dennis Glennon, and Peter Nigro. 2006. Borrower-lender distance, credit scoring, and the performance of small business loans. Federal Deposit Insurance Corporation CFR Working Paper.
- DeYoung, Robert, and Iftekhar Hasan. 1998. The performance of de novo commercial banks: A profit efficiency approach. *Journal of Banking and Finance* 22, no. 5:565–87.
- DeYoung, Robert, Iftekhar Hasan, and Bruce Kirchoff. 1998. The impact of out-of-state entry on the efficiency of local commercial banks. *Journal of Economics and Business* 50, no. 2:191–203.
- DeYoung, Robert, and William C. Hunter. 2003. Deregulation, the Internet, and the competitive viability of large banks and community banks. In *The future of banking*, edited by Benton Gup. Westport, Conn.: Quorum Books.
- DeYoung, Robert, William C. Hunter, and Gregory F. Udell. 2004. The past, present, and probable future for community banks. *Journal of Financial Services Research* 25, no. 2:85–133.
- DeYoung, Robert, William W. Lang, and Daniel L. Nolle. Forthcoming. How the Internet affects output and performance at community banks. *Journal of Banking and Finance*.
- DeYoung, Robert, and Tara Rice. 2004a. How do banks make money? A variety of business strategies. Federal Reserve Bank of Chicago *Economic Perspectives* 28, no. 4:52–67.
- . 2004b. Noninterest income and financial performance at U.S. commercial banks. *Financial Review* 39, no. 1:101–27.
- DeYoung, Robert, and Karin P. Roland. 2001. Product mix and earnings volatility at commercial banks: Evidence from a degree of total leverage model. *Journal of Financial Intermediation* 10, no. 1:54–84.
- Evanoff, Douglas, and Philip Israilevich. Productive Efficiency in Banking. 1991. Federal Reserve Bank of Chicago *Economic Perspectives* (July): 11–32.
- Evanoff, Douglas D., and Evren Ors. 2001. Local market consolidation and bank productive efficiency. Federal Reserve Bank of Chicago manuscript.
- Frame, W. Scott, Aruna Srinivasan, and Lynn Woosley. 2001. The effect of credit scoring on small business lending. *Journal of Money, Credit, and Banking* 33, no. 3:813–25.
- Frame, W. Scott, and Lawrence J. White. 2004. Empirical studies of financial innovation: Lots of talk, little action? *Journal of Economic Literature* 42, no. 1:116–44.
- Furst, Karen, William W. Lang, and Daniel E. Nolle. 2001. Internet banking in the U.S.: Landscape, prospects, industry implications. *Journal of Financial Transformation* 2 (August): 45–52.
- . 2002. Internet banking. *Journal of Financial Services Research* 22, nos. 1–2:95–117.
- Gerdes, Geoffrey R., and Jack K. Walton II. 2002. The use of checks and other retail noncash payments in the United States. *Federal Reserve Bulletin* (August): 360–74.
- Gilbert, R. Alton, David C. Wheelock, and Paul W. Wilson. 2002. New evidence on the Fed's productivity in providing payments services. Federal Reserve Bank of St. Louis Working Paper #2002-020A, September.
- Hannan, Timothy H., and John M. McDowell. 1984. The determinants of technology adoption: The case of the banking firm. *Rand Journal of Economics* 15, no. 3:328–35.
- Hendershott, Patric. H., and James D. Shilling. 1989. The impact of the agencies on conventional fixed-rate mortgage yields. *Journal of Real Estate Finance and Economics* 2, no. 2:101–15.
- Hughes, Joseph P., William W. Lang, Loretta J. Mester, and Choon-Geol Moon. 1996. Efficient banking under interstate branching. *Journal of Money, Credit, and Banking* 28, no. 4, pt. 2:1045–71.
- Humphrey, David. U.S. cash and card payments over 25 years. 2002. Florida State University Working Paper.
- Hunter, William C., and Stephen Timme. 1991. Technological change in large U.S. commercial banks. *Journal of Business* 64, no. 3:339–62.
- Hunter, William C., Stephen G. Timme, and Won Keun Yang. 1990. An examination of cost subadditivity and multiproduct production in large U.S. banks. *Journal of Money, Credit, and Banking* 22, no. 4:504–25.
- ICF Inc. 1990. Effects of the conforming loan limit on mortgage markets. Final report prepared for the U.S. Department of Urban Development, Office of Policy Development and Research. Fairfax, Va.: ICF Inc.
- Keeton, William R. 2000. Are mergers responsible for the surge in new bank charters? Federal Reserve Bank of Kansas City *Economic Review* (First Quarter): 21–41.
- Mayes, Elizabeth, ed. 2003. *Credit scoring for risk managers: The handbook for lenders*. Mason, Ohio: Thomson/South-Western.
- Mester, Loretta J. 1987. Efficient production of financial services: Scale and scope economies. Federal Reserve Bank of Philadelphia *Business Review* (January): 15–25.

- . 1997. What's the point of credit scoring? Federal Reserve Bank of Philadelphia *Business Review* (September/October): 3–16.
- Passmore, Wayne, Roger Sparks, and Jamie Ingpen. 2001. GSEs, mortgage rates, and the long-run effects of mortgage securitization. Federal Reserve Board Finance and Economics Discussion Series Working Paper 2001-26, December.
- Petersen, Mitchell A., and Raghuram G. Rajan. 2002. Does distance still matter? The information revolution and small business lending. *Journal of Finance* 57, no. 6:2533–70.
- Porter, Michael E. 1980. *Competitive strategy: Techniques for analyzing industries and competitors*. New York: Free Press.
- Rossi, Clifford V. 1998. Mortgage banking cost structure: Resolving an enigma. *Journal of Economics and Business* 50, no. 2:219–34.
- Scott, Jonathan A. 2004. Small business and the value of community financial institutions. *Journal of Financial Services Research* 25, nos. 2–3:207–30.
- Stein, Jeremy C. 2002. Information production and capital allocation: Decentralized versus hierarchical firms. *Journal of Finance* 57, no. 5:1891–1921.
- Stigler, George J. 1958. The economies of scale. *Journal of Law and Economics* 1 (October): 54–71.
- Stiroh, Kevin J. 2004a. Diversification in banking: Is noninterest income the answer? *Journal of Money, Credit, and Banking* 36, no. 5:853–82.
- . 2004b. Do community banks benefit from diversification? *Journal of Financial Services Research* 25, nos. 2–3:135–60.
- Sullivan, Richard J. 2001. Performance and operation of commercial bank Web sites. Federal Reserve Bank of Kansas City *Financial Industry Perspectives* (December): 23–33.
- White, Lawrence J. 2003. Focusing on Fannie and Freddie: The dilemmas of reforming housing finance. *Journal of Financial Services Research* 23, no. 1:43–58.