How do banks make money? A variety of business strategies

Robert DeYoung and Tara Rice

Introduction and summary

Banks make money many different ways. Some banks employ traditional banking strategies, attracting household deposits in exchange for interest payments and transaction services and earning a profit by lending those funds to business customers at higher interest rates. Other banks employ nontraditional strategies, such as credit card banks or mortgage banks that offer few depositor services, sell off most of their loans soon after making them, and earn profits from the fees they charge for originating, securitizing, and servicing these loans. In between these two extremes lies a continuum of traditional and nontraditional approaches to banking—focusing on local markets or serving customers nationwide; catering to household customers or business clients; using a brick-and-mortar delivery system or an internet delivery system; and so on.

This panoply of business strategies is a relatively new development in the U.S. banking industry, made possible by deregulation, advances in information technology, and new financial processes. To date, academic economists have performed very little systematic analysis of the relative profitability, riskiness, or long-run viability of these different banking business models. Academic studies of bank performance tend to focus on issues of regulatory concern (for example, capital adequacy, bank insolvency) or investor concern (for example, the reaction of bank stock prices to bank mergers) rather than broader questions of competitive strategy. Moreover, many so-called studies of banking business strategies focus myopically on banking company size. Although banks of different sizes often do different things in different ways, size is a poor proxy for strategy: It assumes that the banking strategy space has only one dimension; it assumes that a bank's size always constrains its choice of a business model; and it assumes that two banks of the same size always use the same strategy. As we demonstrate in this article, none of these assumptions are accurate. Moreover, failing to recognize this can result in a misleading analysis of bank performance.

This is the second of two companion pieces on "How do banks make money?" appearing in this issue of *Economic Perspectives*. In the first article, we focus on the remarkable increase in noninterest income at U.S. commercial banks during the past two decades, the regulatory and technological catalysts for this historic change, and how this newfound reliance on noninterest income can affect bank performance. In this article, we explain how deregulation and technological change have encouraged U.S. commercial banks to become less like each other in virtually all aspects of their operations—including the generation of noninterest income—and how the resulting divergence in banking strategies has affected the financial performance of these companies. We define a variety of banking business strategies based on differences in product mix, funding sources, geographic focus, production techniques, and other dimensions, and examine the financial performance of established U.S. banking companies that used these strategies from 1993 through 2003. While we recognize that bank size can have implications for strategic choice and financial performance, we do not use bank size to define any of the strategy groups.

We draw a number of conclusions about "how banks make money" and how this may matter for the future of the banking industry. First, we find substantial differences in profitability and risk across the various banking strategy groups. Importantly, low profitability does not necessarily doom a banking

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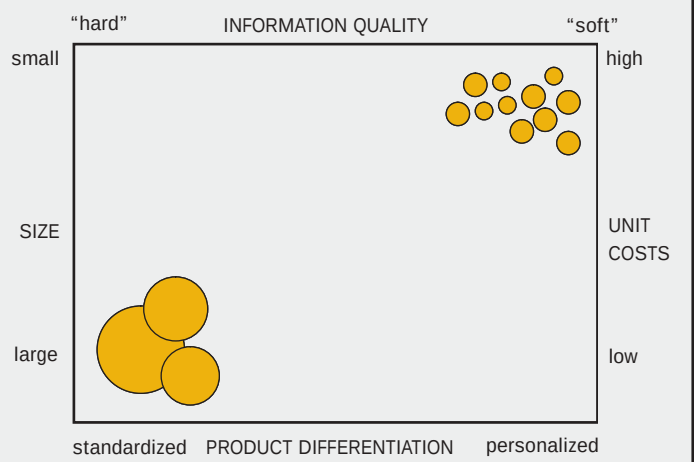
FIGURE 1

A strategic map of the banking industry



Source: DeYoung, Hunter, and Udell (2004).

strategy. High average return strategies like corporate banking tend to generate high amounts of risk, while low average return strategies like community banking tend to generate less risk; thus, on a risk-adjusted basis, both high-return and low-return strategies may be financially viable. Second, we find that very small banks operate at a financial disadvantage regardless of their competitive strategy. This suggests that the number of very small U.S. banking companies is likely to continue to decline in the future. However, our analysis suggests that the business strategies typically associated with small banks are financially viable when practiced by "larger-than-average small banks," and we stress that under some circumstances even very small banking companies can succeed. Third, we find some evidence that banking companies without discernable competitive strategies tend to perform poorly, as do banks that employ traditional banking strategies without embracing efficient new production methods. Both of these findings are consistent with fundamental precepts of good strategic management.

Banks have become less alike

Prior to the 1990s, banking companies in the U.S. were relatively (though not completely) homogeneous. In contrast, today's commercial banking companies are substantially different from each other in terms of size, geographic scope, organizational structure, product mix, funding sources, service quality, and customer focus. This strategic diversity is a byproduct of two decades of deregulation and technological change—dramatically disruptive changes in the structural underpinnings of our financial system, which we address in detail in the two sections that follow.

DeYoung, Hunter, and Udell (2004) argue that two generic banking strategies have emerged from the fog of deregulation and technological change. This is illustrated in figure 1, which describes the strategic aftermath of deregulation and technological change using four parameters: bank size, bank unit costs, product differentiation, and information quality. The vertical dimension in the map measures bank size, with large banks at the bottom and small banks at the top. Large size allows banks to achieve low unit costs through scale economies. The horizontal dimension measures the degree to which banks differentiate their products and services from those of their competitors. To provide personalized financial services, banks must have non-quantifiable, or "soft," information about their customers. In this framework, banks select their business strategies by combining a high or low level of unit costs with a high or low degree of product differentiation. The positions of the circles indicate the business strategies selected by banks and the relative sizes of the circles indicate the relative sizes of the banks.

The first of these two generic strategies, represented by the small bubbles in the upper right-hand corner of the map, is a traditional banking strategy. Small banks operating in local markets develop close relationships with their customers, provide value to depositors through person-to-person contact at branch offices, and make "relationship loans" to informationally opaque borrowers (for example, small businesses) that do not have direct access to financial markets. Although these locally focused banks operate with relatively high unit costs, they can potentially earn high interest margins: They pay low interest rates to a loyal base of core depositors and they charge high interest rates to borrowers over which they have market power due to information-based switching costs. These banks earn fee income mainly through service charges on their deposit accounts.

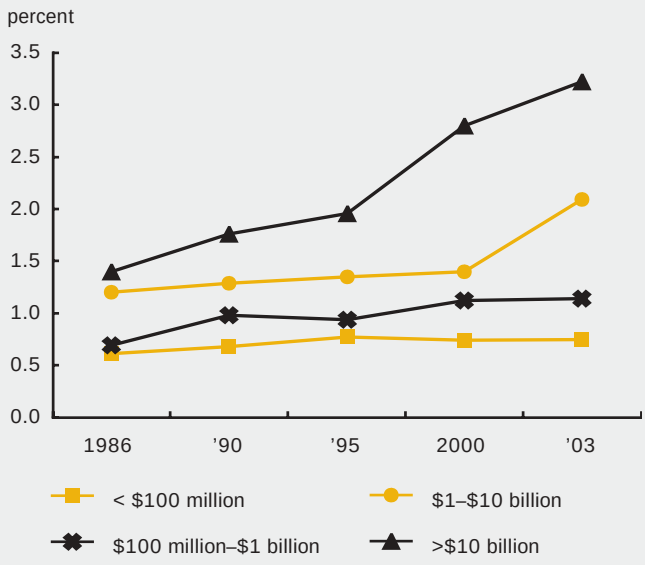
The second of these two generic strategies, represented by the large bubbles in the lower left-hand corner of the map, is a nontraditional banking strategy. Large banks take advantage of economies of scale in the production, marketing, securitization, and servicing of "transaction loans" like credit cards and home mortgages. These banks operate with low unit costs,

but they tend to earn low interest margins because the loans they produce are essentially financial commodities that are sold in highly competitive markets. Large amounts of noninterest income (for example, fees from loan origination, securitization, and servicing) are essential for this model to be profitable. Note that this approach to commercial banking became possible only after geographic deregulation allowed banks to achieve larger scale and after new technologies (for example, credit scoring models, asset securitization) permitted banks and other financial institutions to create transaction loans.

It is important to observe that the highly stylized banking strategies portrayed in figure 1 are characterized not just by differences in bank size, but more fundamentally by differences in customer preferences, information quality, pricing structures, and production techniques. As such, this analysis implies that there is a rich diversity of potentially profitable business strategies for serving retail and commercial banking customers. More fundamentally, it implies that the banking companies pursuing those strategies should have grown less like each other than in the past.

FIGURE 2

Noninterest income to assets



Indeed, there is evidence that they have. Figures 2 and 3 illustrate two of the dimensions across which U.S. banking companies have become less alike since 1986. (The data used to construct these figures are described in the previous article. See table 2 of that article and the associated text.)

Figure 2 shows that the intensity of noninterest income at banking companies of different sizes—very small (with inflation-adjusted assets less than $100 million), small ($100 million to $1 billion), mid-sized ($1 billion to $10 billion), and large (greater than $10 billion)—has systematically diverged over the past two decades. Noninterest income has become more important on average for banks of all four sizes; however, it has increased by only about 25 percent for the smallest banking companies while more than doubling for the largest banking companies. These trends are consistent with the emergence of the strategic dichotomy depicted in figure 1.

Banks have also grown less alike in the way they fund their loans and other investments. Figure 3 displays the distribution of transaction deposits to assets for banking companies in 1986 and 2003.[1] This distribution has flattened out over time, but not symmetrically. On the one hand, there has been a considerable displacement to the left, indicating that transaction deposits have become a less important funding source for many banking companies. On the other hand, the stable right-hand side of the distribution indicates that transaction deposits have remained a core source of funding for many other commercial banks. Again, this is consistent with the strategic dichotomy illustrated in figure 1.

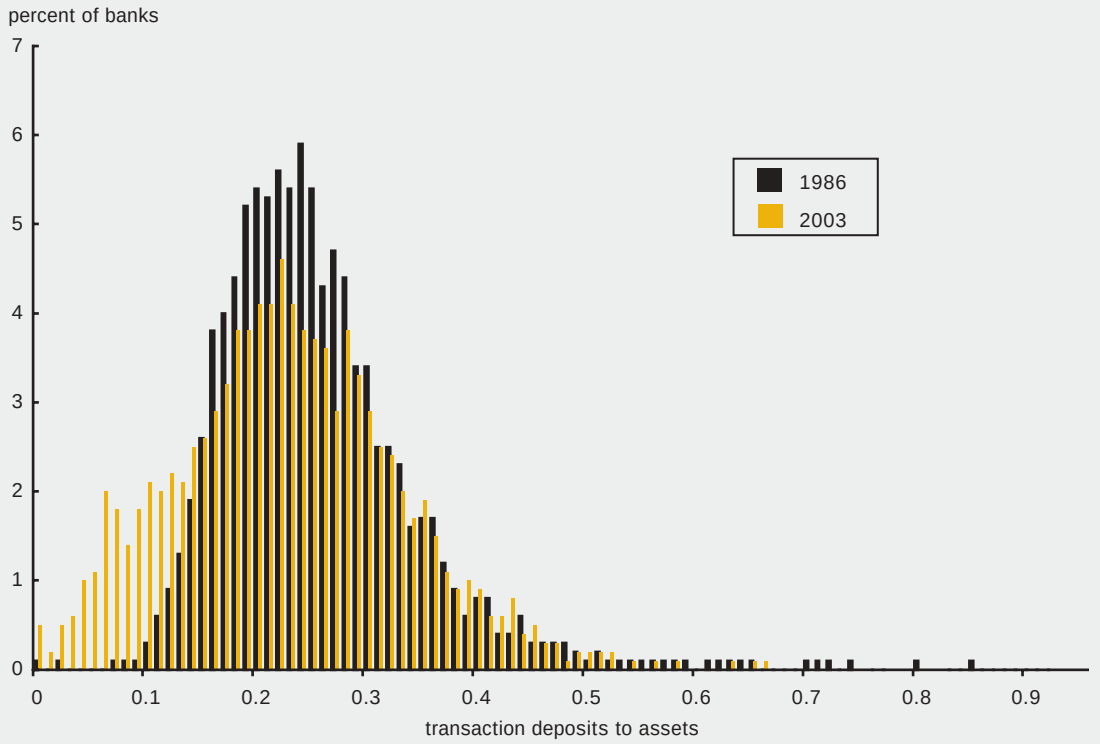
Although some of the growing dissimilarities across banking companies are clearly associated with growing differences in bank size, there are rich strategic differences across commercial banking companies that have little to do with size. As we show later in this article, these strategic differences lead to substantial heterogeneity in the financial performance of banking companies. But before we get to that analysis, we need to review the fundamental changes to the banking environment that allowed banking companies to grow so dissimilar in the first place.

Deregulation and banking business strategies

Over the past 25 years, U.S. commercial banking has been transformed from a heavily regulated industry, in which banks were prohibited from competing with each other, to a largely deregulated industry, in which commercial banks compete vigorously among themselves, as well as with investment banks, securities firms, and insurance companies. This historic industry deregulation, in conjunction with dramatic

FIGURE 3

Divergence in transactions deposits to assets, histogram for 1986 and 2003



advances in banking technology, laid the groundwork for new business strategies at commercial banks.

Deregulation has transformed almost every facet of the banking industry. It has been pro-competitive by allowing banks to expand into neighboring cities and states, to offer financial products and services that had previously been reserved for non-bank financial institutions, and to set deposit interest rates according to market forces. Deregulation has been pro-efficiency: It encouraged scale economies by allowing banks to grow larger; cost and revenue synergies by allowing banks to broaden their product lines; and operational efficiencies by exposing banks to increased market competition. And deregulation has been pro-technology by allowing banking companies to attain the large size necessary to fully benefit from declining cost technologies such as credit scoring and asset securitization, to launch mass-market advertising, and to better reduce risk via diversification.

Kane (1996), Kroszner and Strahan (1997, 1999), and others argue that it was the behavior of banking companies themselves that brought deregulation. Banks routinely circumvented regulatory constraints on geographic and product market expansion in the years prior to deregulation, and these commentators argue that deregulation was the optimal government response because the relative cost of maintaining the restrictions to one interest group (for example, large banking companies) had became less than the relative benefit of maintaining the restrictions to other interest groups (for example, small local banks that had been protected from competition).

Deregulation has been a continuous and ongoing process since the mid-1970s. Spong (2000) and DeYoung, Hunter, and Udell (2004) offer in-depth treatments of the evolution of banking and financial regulations over the past quarter-century and the impact of those changes on the structure, strategies, and performance of commercial banks. We limit our discussion here to just three deregulatory acts that have proven to be especially influential for the competitive strategies of commercial banking companies.

The *Depository Institutions Deregulation and Monetary Control Act* of 1980 sought to equalize the competitive positions of commercial banks and thrift institutions. Among other things, the act expanded

the lending powers of thrift institutions to better match those of commercial banks; increased deposit insurance coverage to $100,000 for all insured depository institutions; authorized new products such as NOW (negotiable order of withdrawal) accounts nationwide; and required the Federal Reserve to price its financial services (for example, check clearing) and make those services, as well as the discount window, available for all commercial banks and thrifts. But for commercial banking strategies, the most fundamental and far-reaching consequence of this act was the six-year phase out of Regulation Q.

Since the 1930s, Regulation Q had limited the interest rates that banks could pay their customers on time and savings deposits. Whenever competition for deposits increased—for example, if a new deposit-taking institution entered the local market or if alternative investment vehicles became more attractive than bank deposits—banks could not respond by paying higher rates to their depositors. Instead, banks compensated depositors for below-market interest rates by giving them a "bundle" of related services (for example, check printing, safety deposit boxes, travelers' checks) free of charge. This situation was extremely inefficient—banks could, at best, only respond crudely to changes in deposit market conditions and, in a world of bundled pricing, banks had little incentive to develop innovative deposit services for which they could charge customers.

Since the phase-out of Regulation Q, banks have gradually reduced bundled pricing in favor of charging explicit fees for individual retail deposit products and adjusting deposit interest rates up and down to reflect market conditions. Free to charge explicit fees for depositor services, banks had greater incentives to offer new deposit-related products such as money-market mutual funds, online bill pay, and overdraft protection. Free to pay market rates for deposits, efficiently run banks that could use deposits the most productively became able to bid those funds away from less efficient banks.

The *Riegle–Neal Act* of 1994 eliminated nearly all barriers to the geographic expansion of banking companies across state boundaries. This federal measure put the finishing touch on over 20 years of piecemeal deregulation by the states, which began in the mid-1970s with the removal of existing restrictions on in-state branching in a handful of individual states and culminated with a number of multi-state compacts that allowed banking companies to own and operate affiliates in other states. By sweeping away most federal restrictions and remaining state restrictions on interstate banking and branching, the Riegle–Neal Act gave banking companies the freedom to enter new states either by purchasing existing banking franchises or by opening new branches and allowed multibank holding companies to consolidate their separate banking affiliates into systems of branch offices.

These changes had their most visible impact on the structure of the banking system. A wave of interstate mergers and acquisitions has created a handful of nearly nationwide banking companies (for example, Bank of America, Citibank, J. P. Morgan–Chase), as well as a second tier of superregional banking companies (for example, Wells Fargo, Fifth Third, Wachovia), most of which exceed the size of the largest pre-Riegle–Neal banking companies. This geographic expansion has, in turn, provided new opportunities for both large and small banking companies to improve their operational efficiency. Duplicative back office systems (such as payroll and accounting) and organizational expenditures (separate boards of directors, bank examinations, and so on) could be eliminated by consolidating individual banks into networks of branches. Automated, information-intensive applications like credit scoring and asset securitization became more cost effective as business volume increased. Entry by large, out-of-state banking companies has increased competitive rivalry in local banking markets and created incentives for increased efficiency at local banks (DeYoung, Hasan, and Kirchhoff, 1998).

But the economies made possible by increased bank size can come at a cost, especially for large retail banks. For example, automated credit card lending and online bill-paying are low-cost ways to produce large volumes of traditional banking services, but these processes have changed the nature of retail banking from a high-touch, relationship-based service to an arms-length, financial commodity business. DeYoung, Hunter, and Udell (2004) argue that this change has had a profound influence on the business strategies of large banking companies: Because commodities do not command high margins, large banking companies may come to rely on marketing and the creation of brand images to support prices (much like other large consumer product companies). And although geographic deregulation has put community banks at a cost disadvantage relative to large banking companies, the small size of community banks can work to their strategic advantage by allowing them to provide the personal service for which deposit customers are willing to pay higher prices (or accept lower interest rates) and for which small business customers are willing to pay higher interest rates.

The *Gramm–Leach–Bliley Act* of 1999 expanded the permissible activities of commercial banking

companies. Formally, Gramm–Leach–Bliley (GLB) repealed sections 20 and 32 of the Glass–Steagall Act of 1933, a Depression-era law that effectively prohibited commercial banks from engaging in investment banking activities. In practice, GLB allows well-run commercial bank holding companies to engage in securities underwriting, securities brokerage, mutual fund services, financial advisement, and related activities without limitation, so long as these activities are conducted in a separate affiliate of the holding company. For well-run banks with federal charters, GLB permits separately capitalized financial subsidiaries.

Similar to the Riegle–Neal Act, GLB was preceded by a series of regulatory rulings during the 1990s that incrementally relaxed restrictions on banking powers. For example, the Office of the Comptroller of the Currency granted national banks to power to sell insurance from offices in small towns, and the Federal Reserve partially relaxed the limitations on the amount of revenue a banking company could generate in its Section 20 securities subsidiaries. But the new product powers granted by GLB made a bigger difference by completely relaxing the restrictions on the permissible volumes of nonbanking activities and by allowing commercial banks to engage in completely new activities such as merchant banking.

Some commercial banks now provide "one-stop-shopping" for the typical retail customer, including mortgage loans, credit cards, checking accounts, investment products and advice, and insurance products. Similarly, some commercial banks now offer a full range of financing options to their corporate customers, including loans, debt underwriting, and stock underwriting. In either case, GLB allows commercial banks to expand their traditional banking business into less traditional financial service areas by leveraging their existing distribution networks as well as the proprietary information they have gleaned over the years about their retail and corporate customers.

Technological innovation and banking business strategies

Financial services is among the industries that have been most transformed by technological change. Advances in information flows, communications infrastructure, and financial markets have dramatically altered the way in which banks assess the creditworthiness of their loan customers, service their deposit customers, process payments, and produce and distribute nearly all of their other products and services. Coupled with the effects of industry deregulation, technological advances have led to substantially increased competition in the financial marketplace as both banks and their nonbank rivals have become continuous innovators, forever attempting to improve and expand the number and variety of financial products and services that they offer.

To be sure, technological change would have occurred in the banking industry even in the absence of deregulation. But deregulation sped the application of new technologies by allowing banks to achieve the scale necessary to use new technologies efficiently and, by enhancing competition, deregulation provided banks with incentives to adopt and adapt these new technologies. As discussed above, this process also worked in the opposite direction, with technological advance speeding the progress of deregulation. As new technologies increased the efficiency of large-scale banking and created synergies between traditional and nontraditional banking products, the industry and its advocates were able to bring pressure to break down the barriers to geographic expansion. This included bold circumvention of existing legal constraints on geographic and product market expansion, the most famous of which was the 1998 merger of banking giant Citibank with insurance giant Travelers, more than a year before the passage of the Gramm–Leach–Bliley Act in 1999.

Technological changes in the banking industry can be roughly separated into two categories: improvements in data processing and communications technologies and the emergence of entirely new financial instruments, markets, and production processes. The former has allowed financial information to flow more quickly, accurately, and cheaply; the latter largely reflects the manner in which banking companies and their competitors have exploited these new information flows. Together, these phenomena have played key roles in the evolution of bank business strategies and the ways that banks make money. We offer three examples here.

Payment services

Faster information flows have transformed the manner in which banks provide payment services to their customers. The development and expansion of electronic payment channels and instruments have permitted banks to offer their deposit customers unprecedented levels of convenience, often at lower costs. For example, today about 34 percent of household payments are made using electronic channels like debit cards, credit cards, and automated bill pay; as recently as 1990 only about 15 percent of household transactions were electronic, with the remaining 85 percent made with cash and checks (HSN Consultants, Inc., 2002).

The reduction in use of the physical paycheck is testimony to the important role of transactions made

through the Automated Clearing House (ACH). ACH not only makes direct deposit of household wages possible, but it facilitates automated online bill pay for households and businesses, in addition to other recurring transactions. Retail business customers benefit from electronic lockbox services and check truncation, and the recently passed Check 21 legislation will accelerate these changes in our financial infrastructure by requiring banks to accept "substitute checks," which can be transmitted as electronic images. And for those who wish to make old-fashioned cash transactions, financial information that flows through ATM (automated teller machine) networks has made access to cash more convenient, while generating fee income for banks and creating an entirely new financial service sector for nonbank owners of ATMs.

Online brokerage

A more specialized application of financial information technology is online discount brokerage. Online brokerage of any sort was obviously not possible prior to the invention of the internet, and the discount brokerage model fits well with this distribution channel. This application reduces production costs two different ways: potential scale economies from operating on a nationwide basis and potential reductions in overhead expenses by targeting "do-it-yourself" customers. (For these customers, less personal service ironically translates into greater convenience.) Because this product is offered in a very competitive marketplace, online discount brokerage firms like Charles Schwab and E*Trade must pass a large portion of these savings on to their customers in the form of lower transaction fees.

Along with other changes in the retail financial landscape—like the widespread adoption of mutual fund investing and the shift to defined contribution pension plans—the emergence of discount brokerage firms has increased the competition for household savings and investments. In response, most large retail banks now offer some version of online brokerage to help retain retail depositors.

Intermediation

Banks have traditionally earned most of their profits by intermediating between parties that have excess liquidity (depositors) and parties that need additional liquidity (borrowers). For a variety of reasons, banks historically have been better than other institutions at mitigating the informational asymmetries and other logistical problems that prevent direct finance between these parties.[2] But advances in information processing and financial markets have greatly reduced banks' comparative advantages, and the resulting "disintermediation" has changed, in some cases dramatically, the roles that banks play in credit markets.

On the consumer lending side, the advent of credit scoring models that use "hard" (that is, quantifiable) information to evaluate creditworthiness, together with the development of secondary markets for securitized loans, has changed the way that banks and other financial institutions provide credit to households (Stein, 2002). Instead of earning interest margins from holding mortgage, auto, or credit card loans in their loan portfolios, banks can earn separate fees for originating the loans, securitizing the loans, and servicing the loans, while the interest income flows to the investors that purchase the securities backed by these loans. New financial institutions—such as brokers that originate and immediately securitize home mortgages and monoline credit card and finance companies that take advantage of huge scale economies in the production, distribution, and servicing of consumer credit—have emerged to service much of the market share in consumer credit that traditionally belonged to depository institutions like banks.

On the business lending side, the introduction of high-yield ("junk") bonds, increased access to commercial paper, and other financial market developments have allowed large commercial borrowers to bypass banks in favor of direct finance. While commercial banks have lost considerable market share in commercial lending, one way that they continue to play a role in commercial finance is by charging a fee in exchange for providing the back-up lines of credit that firms need to float commercial paper. In this new technological environment, loans to small and moderate-sized businesses based on private, information-rich relationships between business people and their commercial bankers stand out as one of the last types of loans that are still produced in the traditional intermediation fashion.

Business strategies at banking companies

A simple and often-employed method for comparing the performance of different banking strategies is to separate banking companies by size. As we have seen, scale is clearly important: The scale of a large banking company gives it access to low-unit-cost marketing and production techniques, while the scale of a small banking company allows it to build person-to-person relationships with its customers. But economies of scale is not the only dimension across which banking companies vary strategically. Moreover, we assume that achieving a large scale, a medium scale, or a small scale is not the main objective of a banking

company; rather, it is to earn a rate of return commensurate with the risk to which owners of the bank are exposed. In pursuit of high risk-adjusted earnings, banking companies choose from among many banking strategies, some of which can be practiced by small banks as well as large banks.

For the purposes of this study, we define eight distinct banking business strategies based on differences in product mix, location, production techniques, and other characteristics across U.S. banking companies: traditional banking, nontraditional banking, private banking, agricultural banking, corporate banking, local community focus, payment transactions, and a diversified banking strategy. The procedures we use to define these strategy groups, and to assign banking companies to these groups, are presented below and are not highly scientific. We used our informed judgment to select a short list of characteristics that one would expect to find at banks that used each of these business strategies and we set arbitrary numerical thresholds for each of those characteristics above or below which banking companies would be included in, or excluded from, each strategy group. It is important to note that we did not use bank size to define any of these eight strategy groups and, as a result, each strategy group includes banking companies of different sizes. (For comparative purposes, we also define a number of groups based purely on bank size and bank growth rates.)

Banking companies were eligible for assignment to one or more of these strategy groups if they were at least ten years old in 1993,[3] were still operating in 2003, were domestically owned, and had positive amounts of loans, transaction deposits, deposits insured by the Federal Deposit Insurance Corporation (FDIC), and equity capital in both 1993 and 2003. A total of 1,281 banking companies met these eligibility conditions. We selected the 1993–2003 period because it began after the passage of the Federal Deposit Insurance Corporation Improvement Act (FDICIA) of 1991 and because it was long enough to adequately observe the variability of banking company returns over an entire business cycle. We drew the data for our analysis chiefly from the *Reports of Condition and Income* (call reports), Federal Reserve Board FR Y-9C reports, the Federal Reserve Board National Information Center's (NIC) structure database, the Federal Deposit Insurance Corporation's *Summary of Deposits* database, and the Center for Research on Stock Prices (CRSP) database. We express all data in thousands of year 2003 dollars, unless otherwise indicated.

The eight business strategies are not meant to be fully exhaustive of all the competitive strategies being used by banking companies today. Moreover, we defined the strategy groups tightly: Over half (758 out of 1,281) of the eligible banking companies were not assigned to any strategy group. Although we did not design the strategy groups to be mutually exclusive, only about 10 percent (123) of the 1,281 banking companies fell into more than a single group; of these, just 28 banking companies were assigned to three or more strategy groups, and just two banking companies were assigned to four strategy groups.

The *traditional banking* group contains 117 banking companies; 2003 assets averaged about $242 million and ranged from $10 million to $1.7 billion. To be included in this strategy group, banking companies had to be portfolio lenders that did not securitize any assets in either 1993 or 2003, and their ratios of core deposits to assets, loans to assets, and net interest income to operating income all had to rank higher than the 25th percentile among our sample of 1,281 banking companies in both 1993 and 2003.

The *nontraditional banking* group contains 29 banking companies; 2003 assets averaged about $140 billion and ranged from $590 million to $771 billion. To be included in this strategy group, banking companies had to securitize at least some assets in both 1993 and 2003; rank lower than the 25th percentile in our sample in terms of both deposits to assets and net interest income to operating income; and rank above the 75th percentile in terms of the asset value of letters of credit issued to assets. This group includes many of the nationally recognized commercial banking companies (for example, Bank of America, J. P. Morgan–Chase, Wachovia, Wells Fargo), as well as a number of superregional (for example, Fifth Third, National City, Suntrust) and regional commercial banks (for example, First Tennessee, Marshall & Ilsley, Regions Financial).

The *private banking* group contains 11 banking companies; 2003 assets averaged about $25 billion and ranged from $550 million to $92 billion. To be included in this strategy group, banking companies had to rank above the 99th percentile in terms of fiduciary income to operating income in 1993 and 2003. Some of the better known companies in this group are Northern Trust, State Street, Bank of New York, and Mellon Financial.

The *agricultural banking* group contains 96 banking companies; 2003 assets averaged $108 million and ranged from $4 million to $1.2 billion. To be included in this strategy group, banking companies had to rank

above the top 90th percentile in terms of agricultural production loans to total loans in both 1993 and 2003.

The *corporate banking* group contains 14 banking companies; 2003 assets averaged about $74 billion and ranged from $729 million to $327 billion. To be included in this strategy group, investment banking activities had to generate at least 1 percent of a bank's operating income in 2003; the bank had to rank above the 75th percentile in commercial loans to total loans in both 1993 and 2003; and the bank had to rank above the 50th percentile of the sample in terms of demand deposits to total deposits and the asset value of letters of credit issued to assets in both 1993 and 2003. Some of the companies included in this group are Bank One (before its acquisition by J. P. Morgan–Chase), Commerce Bancshares, FleetBoston (before its acquisition by Bank of America), Huntington Bancshares, Mellon Financial, PNC Financial, and U.S. Bancorp.

The *community focus* group contains 151 banking companies; 2003 assets averaged about $268 million and ranged from $8 million to $4.1 billion. Companies in this strategy group generated at least half of their deposits from a one-county area and ranked above the 50th percentile in core deposits to assets and loans to assets, in both 1993 and 2003.

The *transaction services* group contains 96 banking companies; 2003 assets averaged about $1.6 billion and ranged from $8 million to $46 billion. Banking companies in this strategy group ranked above the top 75 percent of banking companies in terms of both payment-related income associated largely with checking transactions (service charges on deposits plus foregone interest revenue on deposits) and payment-related income not necessarily associated with checking transactions (estimated payment-related fees from ATM, fiduciary, and credit card activities) as a percentage of operating income in 2003.

The *diversified banking* group contains 97 banking companies; 2003 assets averaged about $1.6 billion and ranged from $160 million to $26 billion. This strategy group includes banking companies that do not specialize in any of the areas described above but participate to at least some extent in each of those areas. To be included in this strategy group, banks had to rank between the 10th and 90th percentiles among the 1,281 eligible banks in terms of service charges to assets, other (non-service charge) noninterest income to assets, net interest income to assets, home mortgage loans to total loans, commercial real estate loans to total loans, and consumer loans to total loans in both 1993 and 2003. Moreover, these banks had to rank above the 90th percentile in terms of commercial loans to total loans and below the 90th percentile in agricultural production loans to total loans, in both years.

In addition to these eight largely activities-based strategy groups, we defined five purely *size-based strategy groups*: assets less than $100 million (541 banks); assets between $100 million and $500 million (303 banks); assets between $500 million and $1 billion (59 banks); assets between $1 billion and $10 billion (89 banks); and assets greater than $10 billion (29 banks). We applied these size thresholds to the assets of each banking company twice: In 2003 we applied them to actual 2003 asset values, and in 1993 we applied them to 1993 asset values that had been adjusted upward to account for industry asset growth and inflation between 1993 and 2003. We also defined two strategy groups based on the asset growth rates. The geographic deregulation of U.S. banking markets in the late 1980s and 1990s created unparalleled opportunities for U.S. banking companies to grow, either by making acquisitions or by growing internally. The *mergers* (external growth) group contains 17 banking companies, with 2003 assets averaging $143 billion in a range from $514 million to $771 billion. These banking companies grew at an inflation-adjusted rate of 250 percent or more between 1993 and 2003, and at least 25 percent of this increased size was attributable to assets acquired in mergers. The *growers* (internal growth) group contains 85 banking companies, with 2003 assets averaging $2.8 billion and ranging from $47 million to $88 billion. These banking companies grew at an inflation-adjusted rate of 250 percent or more between 1993 and 2003 without making any major acquisitions.

Finally, we defined a *no-strategy* group. This group contains 113 banking companies that did not qualify for any of the eight main strategy groups in both 1993 and 2003. (Note that the no-strategy group does not include banking companies that "switched" strategies, that is, banks that qualified for one of the eight main strategy groups in 1993 and qualified for a different strategy group in 2003. The financial performance of these banks would likely have been impacted by the costs of transitioning from one business strategy to another.)

Financial performance of different business strategies

We used quarterly accounting data to calculate three financial performance measures for each of the 1,281 banking companies in our 1993–2003 dataset: The profitability of each bank is the annualized average return on equity (ROE) over the 44 quarters from 1993 through 2003. The riskiness of each bank is the

annualized standard deviation of quarterly ROE over that period. The risk-adjusted return of each bank, also known as the Sharpe ratio, is the annualized quarterly ROE minus the annualized interest rate on 90-day Treasury bills, divided by the annualized standard deviation of quarterly ROE.[4] In addition, for the 157 banking companies in our dataset that were publicly traded, we used weekly stock prices to calculate market-based analogs of these three financial performance measures.

Table 1 displays summary statistics (means and standard deviations) for all of our performance measures. We note that our performance measures are observed ex post—that is, they reflect actual rather than expected revenues and expenses—and as such they are just proxies for investors' expectations of future returns, upon which finance theory is based. We also note that our dataset excludes banking companies that were acquired or failed between 1993 and 2003, and as a result the performance measures for the "surviving" companies that populate our dataset may be biased. For example, banks that practice especially risky strategies will be more likely to fail, all else being equal, so the average ROE for a high-risk strategy group may be biased upward.

The quarterly accounting-based returns exhibit considerably less variation over time—and as a result, substantially higher risk-adjusted profits—than the weekly stock market returns. This difference is likely due to three factors: accounting conventions that affect the valuation of assets and the way that expenditures are recognized over time; changes in relevant information and investor expectations that are priced by the stock market but not included in backward-looking accounting statements; and the different frequencies over which we observe the accounting data and the market data (quarters versus weeks).[5] Also note that the accounting-based returns are substantially lower on average than the stock market-based returns. The most likely explanation is that publicly traded companies with low returns are likely to become takeover targets and drop out of our sample, while closely held private companies (often small banks) with low returns are more likely to continue to operate independently.

TABLE 1

Accounting-based and market-based financial performance measures

	Quarterly accounting ROE 1,281 companies	Weekly stock market returns 157 companies
	mean (standard deviation)	
Return	0.1199 (0.0785)	0.1726 (0.0708)
Risk	0.0337 (0.0413)	0.2813 (0.0721)
Risk-adjusted return	4.0646 (3.5873)	0.4636 (0.2094)

Notes: ROE is return on equity. Performance measures are observed ex post. Banking companies that were acquired or failed are not included. Measures are not comparable across columns.

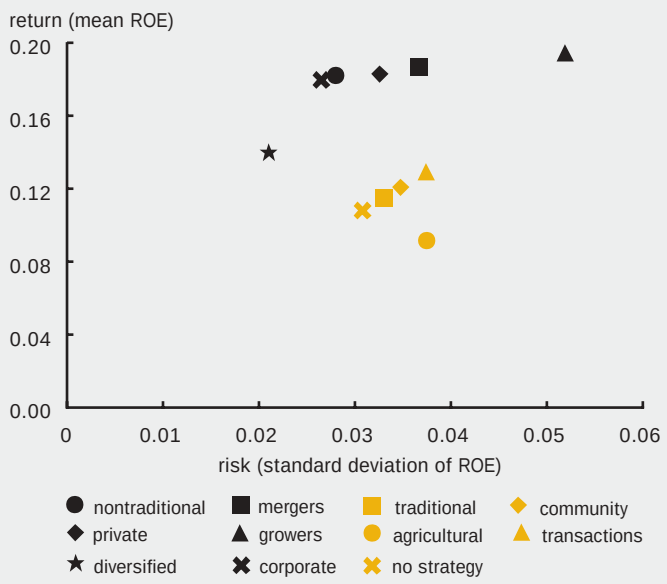
Accounting-based financial performance

Figure 4 plots the average accounting-based return and risk measures for each of the strategy groups. These average risk-return profiles fall into two clusters. One cluster of strategies (diversified, corporate, nontraditional, private banking, mergers, and growers) forms an arc of risk–return combinations consistent with the fundamental principle of finance that markets reward risk-taking with higher returns, but that the returns to risk-taking are diminishing. (This arc is not a representation of the "efficient" risk-return frontier, because we have plotted it based on the average risks and average returns of the banks in each strategy group.)[6] Moving from left to right on the graph—from low-risk–low-return strategies to higher-risk–higher-return strategies—these strategy groups line up in an economically sensible order. Not surprisingly, the diversified strategy has the lowest (ex post) risk position. The corporate, nontraditional, and private banking groups come next, with increasingly higher levels of risk (and associated higher returns) that are roughly consistent with the increasing reliance of the banks in these groups on noninterest income (DeYoung and Roland, 2001).

The highest risks and the highest returns, on average, are generated by banking companies that grew quickly during the sample period by either external means (the mergers group) or internal means (the growers group). For the merging banks, accounting earnings are likely to be volatile because of accounting charges taken during the post-merger transition period. For the growing banks, this volatility is likely related to several different phenomena: the temporary excess capacity in physical plant necessary to grow a bank by opening new branch locations; a slippage in credit quality that often occurs when banks attempt to grow their loan portfolios quickly; and the purchase of expensive time deposit funding to which these banks often must resort to finance fast asset growth. The high accounting earnings also have a number of plausible explanations. On the one hand, profitable

FIGURE 4

Average book returns and risk for strategy groups



banks are better able to generate the large amounts of internal funds to make the repeated purchases or investments necessary to expand rapidly. On the other hand, the data simply may indicate that merger-based and growth-based strategies tended to pay off during the 1990s (Calomiris and Karceski, 1998). Finally, the returns for the high-risk growers strategy may be biased upward to the extent that unsuccessful fast-growing banks that failed are not in our dataset.

A second cluster of strategies (traditional, community focus, transactions, agricultural, and no strategy) lies well below the risk-return arc. The returns generated by the banks using these strategies do not appear to be high enough to compensate bank owners for the risks they are taking—in other words, the data suggest that these are not economically viable banking strategies, and these strategies and the banking companies that use them could disappear from the banking industry sometime in the future. But before writing off these banking strategies, we note that there is a substantial size disparity between the two clusters of banking companies: Those on the risk–return arc tend to contain larger banks, while those in the lower cluster tend to contain small banks. Is the poor average financial performance of the banks in the second cluster of strategy groups attributable to untenable banking strategies, inefficiently small bank size, or a combination of both?

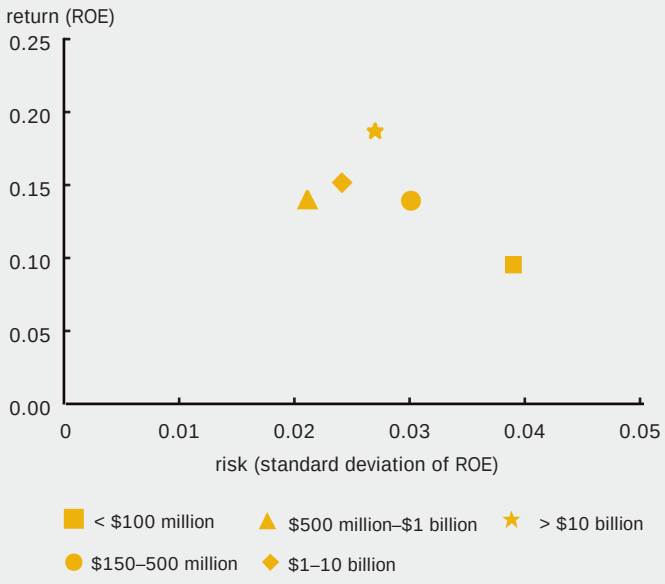
To investigate this possibility, we plotted the average accounting-based return and risk measures for each of our five purely sized-based groups. As shown in figure 5, for banking companies with assets less than $500 million increased size unambiguously improves (ex post) financial performance—that is, returns increase without having to accept more risk—while for banking companies larger than $500 million increased returns are attainable on average only by accepting increased risk. This crude analysis is consistent with several findings in the bank scale economy literature. In general, this literature finds that even relatively large banking companies can expect to reduce per-unit costs by growing larger. Berger, Demsetz, and Strahan (1999) provide a relatively recent review of this literature. However, Evanoff and Israilevich (1991) and Berger and Humphrey (1991) demonstrated that the bulk of these per-unit cost improvements are captured at relatively small bank size—that is, average costs decrease with bank size but at a rapidly diminishing rate. Other studies have found that banking companies that grow larger tend to take on increased risk (for example, Demsetz and Strahan, 1997; Hughes, Lang, Mester, and Moon, 1996), consistent with the patterns for the larger banking companies in figure 5.

Although this demonstration of the risk–return effects of increased banking company scale is admittedly crude, applying these findings to our analysis produces stark and economically sensible results. In figure 6 we re-plot the average risk profiles of the banking strategy groups after removing companies with assets less than $500 million. The result is a relatively smooth arrangement of the strategy groups along the original risk–return arc from figure 4. (The average risk–return tradeoff between these strategy groups is illustrated by a quadratic ordinary least squares trend line estimated for the 11 data points shown in the figure. Again, we note that this line is based on average financial performance, and is not an "efficient risk–return" frontier.) The community focus, agricultural, and transactions strategy groups are now located on the imaginary risk–return arc and exhibit the relatively low levels of risk that are consistent with business models that rely on close customer relationships.

Although the risk–return profiles of the traditional and no-strategy groups also improved after adjusting for scale effects, these two groups still fall somewhat short of the other strategy groups. For the no-strategy

FIGURE 5

Average book returns and risk for size groups



group, the explanation may be that firms that lack strategic direction will naturally perform poorly (Porter, 1980). For the traditional group, the explanation may be that recent advances in information flows, pricing strategies, and production methods can enhance profitability, and banking companies that do not integrate these advances into their business model will operate at a disadvantage.

Transforming risk into return

Figure 6 provides reasonably compelling evidence that changing strategies would require a banking company to accept more risk in exchange for higher returns or lower returns in exchange for lower risk, on average. However, the figure does not reveal directly whether any of these risk–return tradeoffs are superior to others. In table 2 we rank each of the strategy groups shown in figure 6 by their average risk-adjusted returns, or Sharpe ratios. The Sharpe ratio can be interpreted as a measure of how well a banking company transforms risk-taking into profitability.[7]

This average performance measure divides the strategies into three subgroups. The growers have by far the worst Sharpe ratios, equal to just 5.3 on average. Despite the possible upward performance bias for this group (discussed above), banking companies that experienced rapid internal growth tended to generate low returns relative to the riskiness of this behavior. A second subgroup includes the traditional, private, agricultural, and no-strategy banks, with Sharpe ratios ranging from 6.0 to 6.7 on average. We discussed the potential shortcomings of the traditional strategy and the no-strategy groups above. The relatively poor performance of the private banking strategy group is likely explained by the large fluctuations in the stock market during the latter half of our sample period, while the small number (five) of agricultural banks in this analysis makes the poor average performance of this group difficult to interpret. The third subgroup includes the community, corporate, mergers, diversified, transactions, and nontraditional strategy groups, with Sharpe ratios ranging from 7.3 percent to 8.1 on average. The relatively good risk–return performance of these six strategies is instructive: These strategy groups are very different in terms of product mix, customer focus, production processes, funding sources, and company size. Thus, the data in table 2 suggest that a broad range of different types of banking strategies are financially viable, once banking companies have achieved at least a modicum of scale.

We performed a complete set of pair-wise tests to see which pairs of strategy groups had statistically different average Sharpe ratios and found only a few of the pairs to be statistically different. One way to interpret this result is that all of these strategic groups can be, on average, economically viable. However, it is more likely that the small number of observations in some of the strategy groups, along

TABLE 2

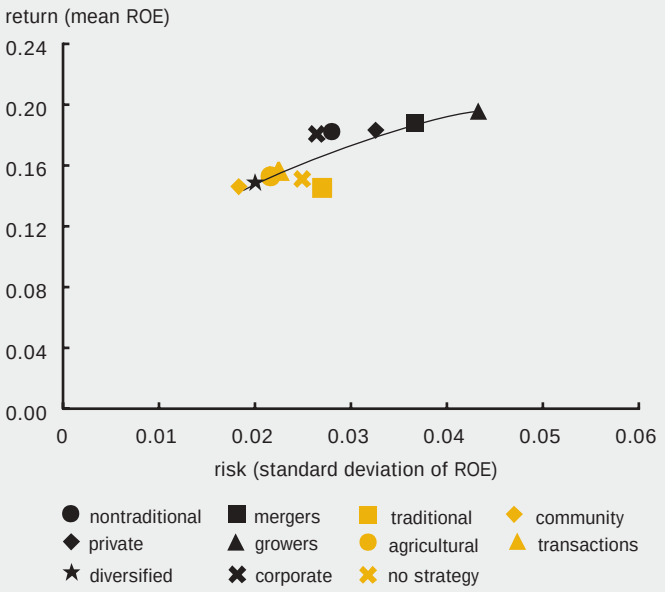
Strategy groups by average accounting-based Sharpe ratios

Rank	Strategy	Number of firms	Mean Sharpe ratio
1	Nontraditional	29	8.0621
2	Transactions	24	7.9124
3	Diversified	60	7.7869
4	Mergers	17	7.4915
5	Corporate	14	7.4682
6	Community	26	7.2875
7	No strategy	113	6.6622
8	Agricultural	5	6.4347
9	Private	11	6.3675
10	Traditional	17	6.0248
11	Growers	50	5.2830

Note: Calculations exclude banking companies with assets greater than $500 million.

FIGURE 6

Average book returns and risk for strategy groups



Note: Excludes banking companies with assets below $500 million.

with substantial noise in our estimated Sharpe ratios, is simply preventing us from finding statistical differences between most of the strategy pairs.

Market-based financial performance

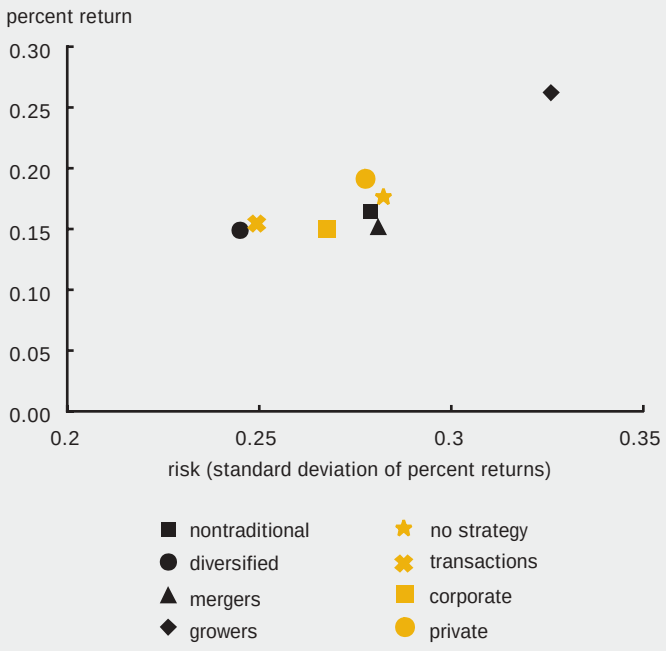
We re-plotted the risk–return averages once again, this time using stock market-based performance measures. Although we have stock market returns for only about 12 percent of the 1,281 banking companies in our sample, using these data to compare the risk–return profiles of the strategy groups provides a good robustness check on our accounting-based risk–return analysis. Stock returns reflect more information than accounting returns, and the stock prices upon which they are based are forward-looking valuations by informed investors rather than backward-looking records based on often arcane accounting rules.

Figure 7 displays the average market-based return and risk measures for the strategy groups that contained at least five publicly traded banking companies with assets greater than $500 million. The results are quite consistent with the accounting-based plots. The diversified strategy group once again defines the low-risk, low-return endpoint, and the growers group once again defines the high-risk, high-return endpoint. In between these two endpoints, six other strategies—transactions, corporate, nontraditional, private, mergers, and no-strategy—are arrayed in a risk–return ordering somewhat similar to the accounting-based ordering plotted in figure 6. Thus, we have some confidence that our accounting-based risk and return measures are providing a roughly accurate ordering of the relative risks and returns across banking strategies.

Finally, to demonstrate the large amount of variability in these data, we plotted the market-based performance measures for the individual banking companies from three strategy groups with distinctively different risk–return profiles: the diversified strategy, the nontraditional strategy, and the grower strategy. Figure 8 shows the resulting scatter plot. Although the individual data points overlap to a large extent, they do not overlap completely, and it is easy to see a rough, but positive, risk–

FIGURE 7

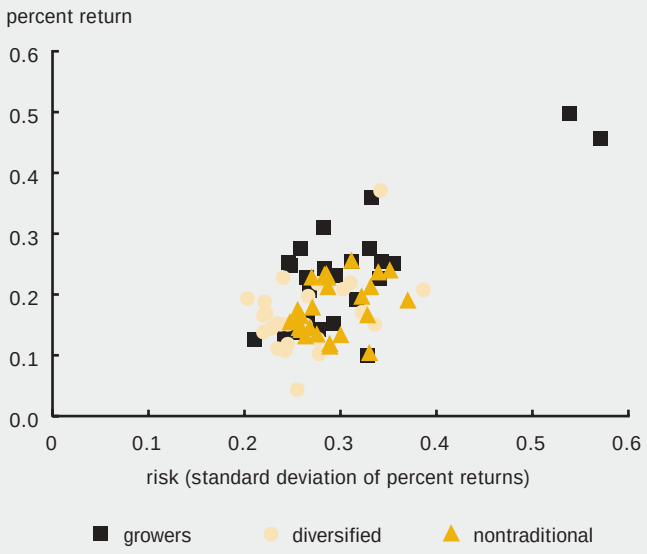
Average stock market returns and risk for strategy groups



Note: Excludes banking companies with assets below $500 million.

FIGURE 8

Stock market returns and risk for traded banking companies with assets > $500 million in three selected strategy groups



expected return tradeoff across these three strategies. The scatter plot also provides a good illustration of why it can be difficult to find statistical differences in risk-adjusted returns across strategic groups, even though the banking companies in these groups show a systematic risk–return ordering.

Conclusions and implications

We began this set of articles by asking the question "How do banks make money?" In the course of our analysis we have discussed various trends and developments in the banking industry that provide partial answers to this question. But we have also uncovered some broad themes regarding bank performance and competitive strategies that make some banks more profitable than others.

U.S. banking companies employ a wide variety of business models. For example, some are specialized and some are very broad; some have a retail focus and some have a wholesale focus; some are nationwide in scope and some are purely local; some focus on traditional commercial banking and some focus on non-bank financial services. We find substantial differences in profitability across these different strategic approaches—but we also find that high-return strategies tend to generate high amounts of risk, while relatively low-return strategies tend to generate less risk. This suggests a tradeoff between risk and return that can leave the shareholders of high-risk banks and the shareholders of low-risk banks roughly equally compensated on a risk-adjusted basis. In other words, a variety of different banking strategies—from small, locally focused community banking to large, economy-wide corporate banking—appear to be financially viable business models.

The major caveat to this conclusion is that *very small* banks tend to operate at a financial disadvantage, regardless of their business model. In order to earn a market return for their shareholders, banking companies must capture at least some of the scale economies that are available in banking production functions. Although we use an asset size threshold of $500 million to make this point in our analysis, we stress that the critical size for a banking company varies with its strategy, and even within a strategy group the critical size needed for financial viability likely varies with managerial abilities, local market conditions, and other considerations. Our analysis suggests that the number of very small U.S. banking companies is likely to continue to decline in the future. Still, there are reasons to expect that hundreds of very small banking companies will continue to exist. For example, very small banks that serve geographically isolated rural communities may remain financially viable if the lack of competition in these markets allows them to charge prices high enough to offset the cost disadvantages associated with very low scale. And, of course, very small banks whose owners are willing to operate at a relatively low rate of return in exchange for receiving personal satisfaction or providing a community service are also likely to survive in some numbers.

NOTES

[1]To check whether the shift in the distribution in figure 3 was merely due to an increase in equity capital in most banks during this period, we also examined the distribution of transaction deposits to liabilities. This distribution was nearly identical to figure 3.

[2]The function of banks as intermediaries lies at the core of a rich theoretical literature on why banks exist. See DeYoung and Rice (2004) for a short review of this literature.

[3]For bank holding companies (BHCs) and financial holding companies (FHCs), we based this threshold on the average age of the commercial banking affiliates in these multi-bank companies.

[4]The quarterly ROE data were de-seasonalized prior to these calculations, and quarters in which banking companies made large acquisitions were excluded from the calculations.

[5]To explore the extent to which the scale of the accounting-based and market-based risk and return measures differ, we recalculated the market-based measures using quarterly data. The average market-based returns fell from 0.1726 to 0.1553 and the average standard deviation of market-based returns fell from 0.2813 to 0.2579. These changes only partially closed the gap between the accounting-based and market-based measures reported in table 1. Thus, we conclude that the primary difference between the scales of the market-based and accounting-based measures lies with accounting conventions and not the frequency with which we observe the returns.

[6]We acknowledge that the average performance of banking companies that use a given strategy may not be a good comparative indicator of the potential performance of that strategy. For example, it may be the case that some strategies are attempted only by companies with very efficient management teams (in which case the average performance will be representative of the best-practice performance), while other strategies are attempted by both well-managed and poorly managed banking companies (in which case the average performance will not be representative of the best-practice performance). We plan to pursue this issue in future research.

[7]A technical point: Each of the Sharpe ratios displayed in table 2 is calculated by taking the average of the individual Sharpe ratios for the banking companies in a given strategy group. These numbers are analytically different from the Sharpe ratios implied for each of the strategy groups in figure 6, which plots the averages of the individual returns (vertical axis) and individual risks (horizontal axis) for the banking companies in each strategy group. In the figure, the Sharpe ratio is implied by the slope of a line running from about 0.043 on the vertical axis (the average risk-free rate during the sample period) through the plotted points. The two approaches are conceptually similar and result in similar rankings of the strategy groups in terms of their risk–return tradeoffs. However, the Sharpe ratio averages displayed in table 2 are superior because they directly link risk and return for each banking company, which is where the ex ante managerial decisions to trade risk for return are made.

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