Deregulation, the Internet, and the Competitive Viability of Large Banks and Community Banks

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Abstract: Deregulation and technological change are transforming U.S. commercial banking from an industry dominated by thousands of small, locally focused banks into an industry where a handful of large banks could potentially span the nation and control the majority of its bank deposits. This paper examines the comparative strengths and weaknesses of large and small banks in this new environment, and outlines the strategic opportunities and threats that new technology – especially the Internet – pose for U.S. banks. Although the number of small banks will almost certainly continue to decline, we conclude that well-run small banks should be able to adjust their business strategies to the new environment and profitably co-exist with large, globally focussed banks.

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Introduction.

Over the past decade we have witnessed tremendous changes in how banks are regulated, how banks use technology to produce financial services, and how banks compete with each other. At first glance, these developments – e.g., reduced barriers to geographic entry and expansion, increased competition from banks in other countries and nonbanks in other industries, less expensive and more rapid movement of financial information – would appear to favor large domestic and international banks at the expense of small local banks. But upon further reflection, it seems that well-managed community banks should be able to turn these competitive threats into opportunities. For example, Hunter (2001) has argued that progressive community banks might combine Internet distribution, strategic acquisitions, and alliances with other financial institutions to better exploit the existing informational advantages of their local branching networks. In this paper, we argue that the banking industry will continue to feature both large global banks and small local banks into the foreseeable future.

We set the stage for our arguments by first examining how changes in banking regulations, developments in financial markets, and advances in communications technology over the past two decades have fundamentally changed the landscape of the U.S. commercial banking industry. We then analyze the strategic implications of these changes, using a simple competitive strategy framework introduced by DeYoung (2000). We use this framework to argue that deregulation and new financial technologies have driven a wedge between large banks and small banks, resulting in an industry equilibrium with two very different – but both potentially profitable – competitive strategies. Finally, we consider how widespread implementation of Internet banking will affect this new strategic equilibrium.

We conclude that the Internet has the potential to add value for both large banks and small banks. For large banks, the Internet naturally complements their large scale operations, cost advantages, and marketing presence, and if used effectively could help large banks carve away at community banks' traditional "relationship" markets. For community banks, the Internet naturally complements the high service quality that they provide to their existing relationship customers, and if used judiciously could partially reduce their cost disadvantages *vis a vis* large banks. In the end, mature Internet strategies could

make large and small banks more alike in retail banking markets, reversing the trends of the past two decades.

Although we conclude that the community banking strategy will remain viable in the future, we also believe that the number of small banks in the U.S. will almost certainly continue to decline. The implementation of the Internet is likely to increase competitive pressures further, and while many community banks will survive and prosper, the less progressive and poorly managed community banks will not. And while our empirical analyses are based solely on U.S. banking data, we believe our conclusions also apply outside the U.S. where banks face similar forces of change. Just as deregulation has allowed U.S. banks to expand across state borders, similar deregulatory acts passed in the European Union have allowed banks there to expand across national borders. Similarly, the communications and financial technologies that are transforming the operations of U.S. banks are freely available to banks in other countries.

1. Geographic deregulation and changes in banking industry structure.

Even if the stock of technology had remained constant over the past 20 years, the liberalization of U.S. banking laws alone would have resulted in drastic changes in the structure of the U.S. banking industry. The relaxation and eventual repeal of federal and state banking regulations during the 1980s and 1990s eliminated the barriers to geographic mobility which had artificially limited the size of U.S. banks.[1] Many U.S. banks took advantage of the new laws and grew substantially larger in a relatively short period of time, typically via in-market and out-of-market mergers and acquisitions. The accumulated effect of these mergers greatly increased the size of the participating banks, and also substantially changed the overall structure of the banking industry. For example, in 1990 the largest U.S.

[1] The Riegle-Neal Act of 1994 eliminated virtually all prohibitions against inter-state banking in the U.S. This act followed 25 years of *ad hoc* deregulatory acts by state governments, which had gradually permitted banking companies to expand across state borders. The European Union passed similar legislation at roughly the same time. The Single Europe Act of 1986 eliminated all barriers to cross-border resource movements, paving the way for a single uninterrupted economic marketplace in the EU. The Second Banking Directive of 1989 (implemented in

commercial bank held about $150 billion in assets and the average bank held about $275 million in assets. One decade and over 9,000 bank mergers later, the largest U.S. bank now holds about $600 billion in assets and the average bank now holds about $750 million in assets. In addition, a growing number of large U.S. banks are becoming global players by making acquisitions across international borders.

Figures 1 and 2 further illustrate the dramatic changes in the size distribution of U.S. banks. The most visible bank mergers are the "megamergers" between two very large and well-known institutions, like the 1998 merger of Bank of America and NationsBank which arguably created the first nationwide U.S. retail banking franchise. But since 1980 only one-in-twenty U.S. bank mergers has been a megamerger. Most bank mergers have combined two community banks (assets less than $1 billion), and in many acquisitions the target bank is a community bank. As a result, between 1980 and 2000 the number of large and mid-sized banks (over $1 billion) remained relatively constant, as did the number of large community banks (between $500 million and $1 billion). But the number of small community banks (less than $500 million) has been nearly cut in half, declining from about 11,000 banks to less than 6,000 banks.

Banks have a variety of motivations for making acquisitions. Benefits from increased scale are the most obvious, including but not limited to: reduced unit costs; higher per unit revenues; improved access to capital markets; the ability to make larger loans or offer broader product lines; the ability to attract and retain high quality managers; reduced portfolio risk from diversifying into new geographic markets; and network benefits from integrating systems of branches and ATMs that cover different geographic areas.[2] For banks that use traditional bank distribution channels, acquiring existing banks is simply faster and easier than growing internally by building new physical capacity. (As discussed below, acquiring physical branches may become a less important motivation for bank mergers as banking products and services are increasingly delivered over electronic banking channels.) Other motivations do not enhance efficiency. Banks operating in the same local or regional banking markets might merge in

1993) together with several sister acts created a "single passport" for financial firms in the EU, and harmonized banking regulations across its member states.

order to acquire market power. Bank managers might pursue mergers because managing a large bank tends to be related to high salaries.[3] And banks might pursue absolute size in order to become "too-big-to-fail," a strategy which, if effective, reduces the bank's cost of long-term debt financing by eliminating any default risk premium.[4]

2. Increased competition in banking markets.

The impact of geographic deregulation can be thought of as a two-sided coin. One side of the coin is the increased geographic mobility and growth opportunities for banks. The other side of the coin is increased competition for incumbent banks located in the target markets. How has the merger wave of the 1980s and 1990s affected concentration and competition in U.S. banking markets?

Since the mid-1980s, the geographic reach of the typical U.S. bank holding company has more than doubled. For example, the average holding company affiliate with more than $100 million in assets was located about 160 miles from its holding company headquarters in 1985; by 1998 this distance had increased to about 300 miles.[5] This increase in the geographic reach of banking companies has substantially changed the overall structure of the U.S. banking industry, but it has had little effect on the structure of local markets. The share of the national market held by the ten largest U.S. banks doubled from about 20% to about 40% over the past two decades, while the Herfindahl index – a standard measure of market concentration – in the average urban banking market during this time period fluctuated between 1,950 and 2,050 with no clear upward trend. These data reflect that fact that most large bank mergers have been market extension mergers, in which a target bank is purchased by a bank from outside the local market.[6]

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[2] For an in-depth review of scale economies in banking, see Berger, Demsetz, and Strahan (1999).
[3] Bliss and Rosen (1999) find evidence of this "managerial hubris" explanation for bank mergers.
[4] See Kane (2000) and Penas and Unal (2001) for recent studies that attempt to find explicit evidence of the too-big-to-fail phenomenon. See Benston, Hunter, and Wall (1995) for evidence of the portfolio, or earnings diversification, motivation for bank mergers.
[5] See Berger and DeYoung (2001b).
[6] DeYoung (1999) reports that about two-thirds of bank megamergers in the U.S. since 1980 have been market extension mergers.

Even though local Herfindahl indices have remained stable during the bank merger wave, competition in local banking markets has probably grown more intense. A number of recent studies have found that local banks tend to operate at higher levels of efficiency after one of their local competitors is acquired by an out-of-market bank.[7] There are a number of explanations for this phenomenon, all of which begin with a post-merger change in the behavior of the acquired bank. The new owners of the bank often replace underperforming managers, reallocate assets to higher yielding investments, slash expenses, introduce new products and services, cut fees, raise deposit rates, or make numerous other changes that intensify competitive rivalry in the local market. Local banks either respond in kind or they lose market share.

By making repeated market extension mergers, large banks find themselves competing in hundreds of different local markets. Not only are these super-regional banks substantially larger than the community banks they face in these local banks, their business strategies tend to diverge from those of community banks. These shifts in large bank business strategies can create important profit opportunities for community banks. For example, when a large out-of-state bank acquires a small local bank, the acquired bank often reduces its commitment to small local businesses. These 'abandoned' small business customers provide a growth opportunity for other local banks, or provide a critical mass of business for new start-up banks to enter.[8]

3. Advances in financial markets and information technology.

An explosion in the growth of new financial instruments and institutions over the past two decades has placed increased competitive pressures on commercial banks. Bank depositors now have access to a vast array of mutual funds as an alternative vehicle for savings and liquidity. Bank borrowers now have access to a greater set of financing vehicles, like commercial paper for the most creditworthy firms and junk bond financing for riskier firms. To be sure, the banking sector has grown more slowly as

[7] See DeYoung, Hasan, and Kirchhoff (1998), Evanoff and Ors (2001), and Whalen (2001).
[8] For evidence of this phenomenon, see Berger, Bonime, Goldberg, and White (1999) and Keeton (2000).

result of these new financial instruments and institutions. But the loss of market share has been limited, in part, because banks have responded with new financial technologies to create entirely new business strategies. In many cases, these changes have fundamentally changed the way that banks do business.

For example, by securitizing their loans (rather than holding them in portfolios) banks have economized on increasingly scarce sources of funds. Similarly, by reorienting their business mix toward off-balance sheet activities like back-up lines of credit, banks have continued to earn revenues from business customers that switch from loan financing to, say, commercial paper financing. And banks have made themselves relatively more attractive to depositors by offering increased convenience (e.g., ATM machines) and a broader array of investment options (e.g., proprietary or third-party mutual funds).

These changes have greatly affected the composition of bank revenues, particularly at large banks. A bank with a securitized lending strategy collects little interest income because the loans it underwrites are not held for long on the books, but it collects lots of noninterest income (e.g., loan origination fees) because the volume of loans it underwrites increases. Similarly, a bank that writes back-up lines of credit (rather than writing loans) receives a fee for this service, but receives interest income only in the rare case that the client draws on the credit line. And a bank with a large ATM network will receive fee income from third-party access fees, as well as disproportionate amounts of fee income from its own customers, who arguably chose the bank because of its large ATM network and are presumably willing to pay for this convenience.

Figure 3 shows that noninterest income has increased more quickly and to higher levels over time at large banks than at small banks. This is consistent with different fundamental business strategies at large banks and small banks. Large banks are more likely originate large volumes of standardized loans that can be securitized (e.g., auto loans, credit card loans), more likely to charge high fees to retail depositors, and more likely operate widespread ATM networks that generate fee income. In contrast,

community banks are more likely to make relationship loans to small businesses that generate interest income year after year, and are more likely to offer low-fee deposit accounts.[9]

As large banks have embraced new financial technologies, new opportunities have been created for community banks. One case in point concerns the market for small business loans, a prime product line for small community banks.[10] Although some large banks (most notably Wells-Fargo) have launched efforts to credit score and securitize small business loans, the idiosyncratic nature of small business relationship lending is in many ways inconsistent with automated lending technology. Thus, shifts in large bank strategies toward automated lending may create a business opportunity for traditional community banks. Similarly, the movement of large banks toward charging explicit (and often higher) fees for separate depositor services may provide an opportunity for community banks to attract relationship-based retail customers who prefer bundled pricing.

But innovations in financial technology have also created new challenges for community banks. Mutual funds, online brokerage accounts, and sweep accounts have provided more attractive investment options for retail and small business depositors. As a result, core deposit funding has declined for all size classes of banks, but this decline has been proportionately smaller for community banks.[11] Small banks have fewer non-deposit funding options than large banks (for example, small banks typically do not have access to bond financing), so this probably indicates that small banks are paying more to attract and retain core deposits (some combination of higher deposit rates and/or lower fees on deposit accounts).[12] This puts pressure on small bank profit margins, and could constrain growth at these banks.

Developments in communications and information technologies may also help improve the efficiency of large banking firms. Repeated rounds of market extension acquisitions have left many large banking companies with numerous branches, subsidiaries, and affiliates located far away from the

[9] Federal Reserve System (1997, 1998, 1999).
[10] See Strahan and Weston (1998), Peek and Rosengren (1998), and DeYoung, Goldberg and White (2000) for details on small business lending and the consolidation of the banking industry.
[11] See Genay (2000) for details. Core deposits are typically defined as funds in transactions accounts plus funds in savings accounts under $100,000.

headquarters. It can be difficult to monitor activities at these far-flung installations, and this can result in increased "agency" costs for banks that have to combat shirking and/or cost-preference behaviors by managers at locations far away from the headquarters. Faster and less expensive communications technologies will likely make it easier to effectively monitor these managers; there is some evidence that large multi-bank holding companies have become more successful at controlling the operations of their affiliate banks during the 1990s than during the 1980s.[13]

4. Technology and deregulation drive a strategic wedge between large and small banks.

The foregoing discussion described a myriad of ways that deregulation and technological change have affected the competitive environment in banking. At the risk of over-simplification, we will boil down these changes to just three parameters: unit costs, product differentiation, and bank size. Following DeYoung (2000), we use these three parameters to construct the strategic maps in Figures 4 and 5. The vertical dimension in these maps measures the unit costs of producing retail and small business banking services. The horizontal dimension measures the degree to which banks differentiate their products and services from those of their closest competitors. This could be either actual product differentiation (e.g., customized products or person-to-person service) or perceived differentiation (e.g., brand image). 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 size of the circles indicate the relative sizes of the banks.

The banking industry prior to deregulation and technological advances is illustrated in Figure 4. Banks were clustered near the northeast corner of the strategy space. The production, distribution, and quality of retail and small business banking products was fairly similar across banks of all sizes. Small banks tended to offer a higher degree of person-to-person interaction, but this wasn't so much a strategic consideration as it was a reflection that delivering high-touch personal service becomes more difficult as

[12] There is evidence consistent with this in the Federal Reserve's Survey of Retail Pricing and Fees (1997, 1998, 1999), which reports that small banks tend to charge lower fees on deposit accounts.

an organization grows larger. Large banks tended to service larger large commercial accounts, but in many cases differences in bank size were pre-determined by the economic size of the local market and the restrictiveness of local branching rules.

But deregulation, increased competition, and new financial technologies created incentives for large banks and small banks to become less alike. Bank size began to increase, at first due to modest within-market mergers, and then more rapidly due to market extension megamergers. These increases in bank size yielded economies of scale, and unit costs fell. Increased scale also gave these growing banks access to the new production technologies discussed above (e.g., automated underwriting, securitization, widespread ATM networks), which reduced unit costs further but more importantly changed the nature of their retail business to a high-volume, low-cost, impersonal "financial commodity" strategy.[14]

The combined effect of these changes effectively drove a strategic wedge between the large and growing banks on one hand and the smaller community banks on the other hand. The result is shown in Figure 5. Large banks have moved in a southwest direction on the map, sacrificing personalized service for large scale and producing high volumes of standardized products at low unit costs. This allowed large banks to charge low prices and still earn a satisfactory rate of return. Although many community banks have also grown larger via mergers, they have continued to occupy the same strategic ground, providing differentiated products and personalized service. This allows small banks to charge a high enough price to earn a satisfactory rate of return, despite low volumes and unexploited scale economies.[15]

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[13] Berger and DeYoung (2001b).

[14] There is an extensive literature on scale and scope economies in the commercial banking industry. See Hunter, Timme and Yang (1990), Hunter and Timme (1991), Evanoff and Israilevich (1991), Berger and Mester (1997), and Hughes, Lang, Mester, and Moon (2001) for evidence. This evidence suggests that scale economies are quite modest for community banks under $1 billion, but that larger banks that produce a different output mix using a different production technology that yields more substantial economies of scale.

[15] Note that large banks so personalize some of their financial services – for example, investment banking or merger finance to large wholesale clients – but their retail and small business strategies tend to be commodity-like compared to those delivered by small community banks.

5. The introduction of the Internet.

As social pundits and industry analysts are fond of reminding us, the Internet "changes everything." In banking, the Internet is changing the strategic landscape in two fundamental ways. First, the Internet reduces the importance of geography in the production of financial services and the maintenance of financial relationships. Second, the Internet greatly reduces the cost of delivering most financial services. From the standpoint of our strategic map (Figures 4 and 5) this raises two compelling questions: Can community banks use the Internet to reduce unit costs while still providing personalized services to their customers? Can large banks use the Internet to deliver customized financial services without abandoning their high-volume, low-cost strategies?

The Internet and bank distribution channels. At its most basic level the Internet is simply an alternative distribution channel, so clues to how a bank will use the Internet can be gleaned from how it uses its more traditional distribution channels. Figure 6 shows how the mix of bank distribution channels has evolved in the U.S. over the past decade; in general, the point of purchase is gradually moving further from the bank and closer to the customer. The number of bank branches has increased steadily – from around 60,000 branches in 1990 to more than 70,000 branches in 2000 – while at the same time the number of U.S. banks has declined substantially. Although some of the new branches offer only a limited range of services (e.g., supermarket branches), all of them offer person-to-person service. Thus, bank branches are consistent with the high-touch, highly personalized business strategies of community banks.

The number of ATM locations has increased even faster than the number of branches. ATMs deliver a more limited array of services, but do so at increased convenience because they are located close to the customer – a convenience for which many customers are willing pay fees. While ATMs cost the bank less per transaction than brick and mortar branches, they accomplish this chiefly by replacing human tellers with automated tellers, and as such they cannot provide personalized service. Thus, an expanded network of ATMs is more consistent with the arms-length, high-volume, commodity-like business strategies of large banks.

It is not yet clear whether Internet distribution is more consistent with large bank strategies or with small bank strategies. Internet web sites offer bank customers increased convenience: banking transactions can be performed at home, and pairing ATMs with hardwired computer terminals at public kiosks allows customers to perform Internet transactions while also making cash withdrawals or deposits. Thus, the Internet distribution channel naturally extends the large bank retail strategy. But the Internet also fits well with community bank business practices. Because providing and processing an Internet transaction costs banks just pennies compared to transactions made at its branches, banks can substantially reduce their costs by encouraging their retail and business customers to migrate (at least partially) from branch banking to Internet banking. Thus, the Internet distribution channel naturally complements a community bank's business strategy by simultaneously reducing its high expenses and providing its computer-savvy (read: high-value) customers with additional options.

The Internet and switching costs. Historically, both large banks and community banks have felt that they owned their deposit customers. Banks provided a limited range of financial services to deposit customers, including primary checking and savings accounts, credit cards, and access to settlement and clearing procedures. Customers had only to choose a bank, deposit money, and draw on those funds at some future date. To a large extent these customers were captive – that is, there was little threat that they would move their deposits to a different bank, because the costs of switching banks generally exceeded the benefits of switching. There were often few competitors (due to geographic and product market restrictions); competing banks could not compete freely on prices (due to Regulation Q); and most banking transactions required visits to physical bank offices (because ATMs, telephone banking, and Internet banking had not yet been introduced). Most deposit customers simply selected the bank that was located closest to their homes or work places, and as a result had inelastic demand curves that allowed banks to charge high prices for financial services. It simply didn't pay for depositors to switch banks.

But now customers have a wider range of choices. In the days when a customer had to be physically present to engage in most banking activities, proximity to the bank branch was important. A bank's best customers – that is, the customers with the most inelastic demand – were those who lived

closest to the branch. But as lower communications costs and near universal access to the Internet have greatly expanded the geographic area within any given bank's reach, the geographic distance between a bank and its deposit customers has become less important. Deposit accounts can now be opened over the Internet without ever visiting a bank or branch office. As a result, customer switching costs are declining substantially, depositors have become more price sensitive, and this reduction in demand elasticity has sharply reduced bank pricing power. At the same time, deregulation (which allowed market entry by other banks) and financial market innovations (such as checkable money market mutual funds) have increased the number of financial institutions to which depositors can switch. Banks are having to rethink their deposit and retail banking business, and relearn how to exploit their increasingly tenuous deposit relationships to create rents for the bank.

However, there is a great deal of inertia among deposit customers. Many customers still prefer to use bank branches for as depositing checks, despite the fact that ATM machines can produce records just as well as tellers in manned branches. Similarly, customers who are perfectly willing to use ATMs are often unwilling to conduct basic banking transactions over the Internet. This hesitancy to use new banking technologies will undoubtedly fade as time passes, as the cost of contacting and switching to competing financial institutions continues to fall, and as local bank customers move up the technological learning curve. But until that happens, depositor inertia may provide a window of opportunity for banks to impose *new* switching costs on these depositors.

The Internet and cross-selling financial services. One way to increase the switching costs of local deposit customers is to embed them even *more* firmly in the local branch network. Banks can do this by cross-selling an array of products to these customers, with the goal of making the branch network the customer's primary gateway to financial services. This is advantageous for the bank, because the cost of switching to a different bank increases with the number of services the customer accesses through the bank. Providing personal advisory services for these customers is an excellent, albeit costly, way to do this because it builds human bonds that are hard to break. Another approach is to offer a variety of services in a manner that makes them appear seamless – for example, a bank can link a home equity loan,

a credit card, an overdraft facility, direct payroll deposits, insurance services, and perhaps even automated payment services to these customers' deposit accounts, and present a consolidated statement to the customer at the end of every month.

Once these relationships have been solidified – that is, once the switching costs of local branch depositors have been increased by binding these customers even more closely to the bank – the bank can safely begin to wean these customers from the branches and migrate them to Internet distribution. This has three benefits for the bank. First, Internet transactions are less expensive to produce than branch transactions. Second, once customers begin to use the Internet, the bank can widen the gateway further by linking customers to even more cross-selling opportunities. Third, the specialized computer software required for the customer to gain access (which the customer must install, initialize, and learn to use) acts as yet another switching cost.

Cross-selling a vast array of financial services can require a bank to operate at a large scale and/or have a high degree of financial expertise. So this raises the interesting question: Should community and regional banks offer access to more than their own in-house products and services? The answer is: They should, and not simply because the bank will become more attractive as an access point if it offers the best services. By offering other firms' services, banks also make a commitment to customers that they will not be over charged, ripped-off, or gouged later if they lock themselves into their banks. (Economists call this technique "second sourcing.") Moreover, the banks are in a position to extract rents from the other services providers, not vice versa, because it is the banks that control the unique assets: captive customers and the access gateway.

This approach has been followed successfully by the discount brokerage firm Charles Schwab. With its mutual fund OneSource product, Schwab allows customers access to over 1,100 mutual funds from over 100 fund families. Schwab consolidates all fund statements into one statement for the customer. Fidelity's decision to withdraw most of its popular mutual funds from OneSource suggests that Schwab has the market power because it controls access to the customer.

The Internet and electronic payments. Payments services have always been a primary service provided by banks, and access to the payments system is central to the value of a banking franchise. The Internet will eventually cause a sea change in the production of payments services – away from physical checks, toward electronic impulses – and this change could have a potentially large and negative strategic impact on community banks.

Most analysts agree that payments provision is a high fixed cost/low variable cost business. In high fixed cost industries, service providers have an incentive to acquire a large share of the market, because this allows them to spread their high fixed costs over a larger base of customers. In addition, gaining a dominant market share in payments might allow a firm to establish industry standards for hardware or software (a good example from the computer industry is Microsoft Windows), giving it a competitive advantage over new entrants who must adopt these standards in order to access to the system. Being a dominant firm in payments may also allow the firm to exploit scope economies (for example, if the payments infrastructure could also be used to collect useful demographic or financial data) or economies of sequencing (for example, if the payments infrastructure can be integrated with the bank's other data systems) that give it cost advantages over competitors in other product markets.

If electronic payments provision does become concentrated in a handful of few large financial institutions, standard economic theory suggests that these firms will be able to exploit monopoly power. Dominant firms will not face much competition, because entry is unlikely: a failed attempt at entering the business will saddle the prospective entrant with large sunk costs. In addition, financial institutions with large market shares – and thus low unit costs – in this segment may be able to exploit their positions by engaging in limit pricing that further reduces the chance of competitive entry. Thus, small banks may be at a disadvantage in offering electronic payments to their customers. Being too small to economically produce the service themselves, they may have to pay high prices to dominant firms in order to purchase electronic payments on behalf of their deposit customers. Furthermore, the dominant providers may be able to extend their monopoly power in payments services into more traditional banking services.

The Internet and overarching bank strategies. If banks use the Internet mainly as a substitute for, or as a complement to, more traditional distribution channels, then the current strategic banking environment will not materially change. If anything, deploying the Internet in this way might drive the strategic wedge illustrated in Figure 5 even deeper. Large banks could expand their customer base without having to acquire other banks, and without having to operate their expensive branch networks. This would hasten the ongoing process of increased size, lower unit costs, and greater product commoditization at large banks, and would carry them even further to the southwest in the strategy space. In this scenario, large banks would be even less attractive for the high-value, relationship-based target customers of community banks. Community banks would be able to maintain their profit margins without cutting their costs, and as a result they could simply use the Internet as a complement to their existing branch networks, offering only a limited array of convenience services at their websites. Community banks would remain pinned in the northeast corner of the strategy space, producing high-cost, customized services for local customers.

However, if banks deploy the Internet more thoughtfully, they may be able to move closer to the highly profitable southeast corner of the strategy space, as shown in Figure 7. The southeast corner dominates all other strategic positions because banks that locate there can charge high prices for differentiated products, and can produce those products at a low unit costs. So we reiterate the two questions we asked at the beginning of this section: Can community banks use the Internet to reduce unit costs while still providing personalized services to their customers? Can large banks use the Internet to deliver customized financial services without abandoning their high-volume, low-cost strategies?

6. Community bank strategy.

The massive reduction in the number of U.S. community banks since 1980 does not signal a lack of viability for the community bank business model. Primarily, it indicates that a history of regulatory entry barriers left the U.S. with too many community banks. Thousands of poorly managed banks were protected from competitive pressure, and when barriers to geographic and product market entry were

lifted the least viable community banks (the poorly managed, the poorly located, or the otherwise just plain unlucky) exited the market, while well-managed community banks flourished.

Thousands of U.S. community banks are indeed flourishing. Figure 8 displays the annual average profitability between 1985 and 2000 for best-practices community banks. (We define "best-practices" endogenously, as banks that earn return-on-assets equal to the 75th percentile for their size group.) Large best-practice community banks have consistently earned returns equal to or exceeding those of the typical large commercial bank over each of the past 10 years.[16] Small best-practices community banks have earned slightly lower returns – evidence that scale economies exist for community banks – but still have been quite competitive with returns at the typical large commercial bank. So despite the problems that face community banks – the increasing competitive pressure, the declining bank numbers, the small scale of operations, and the problems retaining core depositors – there is plentiful evidence that the community banking strategy can be a profitable one.

Table 1 investigates the sources of high and low profitability at large banks and community banks over the past five years. On average, the data suggest that poor performance at community banks is attributable to inefficient operations, not to any fundamental weakness in the community bank business model. On one hand, both highly profitable community banks (represented by banks above the median) and moderately profitable community banks (represented by all banks) tended to use high amounts of core deposit funding and tended to generate low levels of noninterest income – two of the items identified above with the technology-based wedge between large bank business strategies and community bank business strategies. On the other hand, highly profitable community banks were more likely to have high loans-to-asset ratios and low noninterest expense ratios – two measures typically associated with efficient bank operations. Thus, the data are consistent with recent research on managerial efficiency at U.S.

[16] The returns displayed in Figure 7 are book returns, and are not adjusted for risk. It is not possible to compare risk-adjusted earnings because the stocks of most community banks do not trade publicly. However, the intertemporal variability in the Figure 7 data suggests that community bank earnings are less risky than large bank earnings – hence, on a risk-adjusted basis, Figure 7 may understate community bank returns relative to large banks. DeYoung and Roland (2001) provide evidence that large bank business strategies (e.g., increases in fee-based activities) reduce earnings stability.

banks, which consistently finds that the potential benefits from eliminating cost, revenue, and production inefficiencies at poorly run banks can outweigh the potential benefits from increasing the size of small banks.[17]

These historical data bode favorably for the competitive viability of community banks. But community banks may face even greater challenges in the future. The structural fallout from geographic deregulation is not yet complete, and consolidation will likely continue to reduce the number of community banks in the U.S. As with past mergers, most future mergers will likely combine community banks with each other, and will generate efficiencies not only by eliminating poorly performing target banks but also by increasing the scale of the combined banks. This increase in scale *within* the community bank population may prove to be more important than in the past, as academic studies have found that minimum efficient bank size tends to increase with technological change.[18] Further advances and wider implementation of the Internet and other communications technologies will continue to reduce switching costs, making it increasingly difficult for community banks to hold on to their best customers.

How can well-managed community banks best respond to these challenges? They should not abandon their core strategy of delivering high-value-added, relationship-based services – rather, they should adjust this core strategy to make it work better under the new technological, competitive, and financial conditions.

More centralized decision-making. For most banks, the optimal organizational structure combines some degree of centralized decision-making authority with some degree of decentralized decision-making authority.[19] Decentralized authority gives the operations side of the bank the flexibility to exploit local market information advantages, while centralized authority allows the product side of the bank to exploit opportunities for product synergies, scale economies, and innovation. Banks at the very extremes of the strategic map may not find such a combined strategy useful: a very large and

[17] See Berger, Hunter, and Timme (1993) and Berger and Humphrey (1997) for reviews of this literature.
[18] See Hunter and Timme (1986, 1991) for a discussion of technological change and minimum efficient bank size.
[19] See Hunter (1995) for an examination of the importance of centralized versus decentralized decision-making in large and small banks.

geographically dispersed bank that sells completely standardized financial products has little need for local information gathering or decision-making (e.g., a credit card bank), while a very small community bank that personalizes all of its retail and small business relationships has little need for centralized command and control type decision-making. But banks that wish to migrate from these extreme corners of the strategic map toward the more profitable southeast corner will likely benefit from a mix of centralized and decentralized decision-making.

As a first approximation, decentralized decision-making is a good fit for community banks, because it keeps bank decision-makers in close proximity with the customer and with local information. To be sure, decentralized decision-making also has some potential disadvantages: branch office managers can misuse the autonomy granted to them by senior management, and maintaining a decentralized approach may mean foregoing opportunities for scale or scope economies in certain product processes. But these types of problems are less severe for community banks in the first place, because small banks are less likely to have internal information and management control (agency) issues, and because they have relatively limited access to economies of scale and scope.

However, as we move into a more integrated electronic and Internet banking world in which geographic location is less important for defining a bank's customer base, maintaining a decentralized decision-making approach may become less important for community banks. For banks that possess special localized knowledge about their markets – but recognize that retail customers in an Internet banking world will have fairly low switching costs – a combined strategy of decentralized operational decision-making and centralized product decision-making may make more sense.

Outsourcing and affiliations. Because they lack significant scale, community banks will always be at a cost disadvantage relative to large banks. Some small banks have attempted to mitigate their lack of scale by outsourcing back office operations to large scale venders (to reduce unit costs) or by affiliating with large scale providers of nonbank financial services (to provide their customers with broader access). However, when attempting to circumvent the weaknesses of their small-scale and decentralized strategy, community banks must be careful. Outsourcing must be done without sharing a substantial portion of

their profits with the outsourcing venders, and without having their a substantial portion of their customers captured by the access providers. More fundamentally, focussing too closely on scale can be a strategic mistake for community banks because – as illustrated in the strategic map analyses – large scale operations can be antithetical to relationship-based services, and community banks over-reaching for scale can easily lose their core strategic advantage.

Internet implementation. The Internet can be an opportunity for community banks as well as a threat. On one hand, community banks are unlikely to successfully use the Internet to acquire new customers, because small banks cannot afford the high advertising expenditures necessary to support a web-based marketing campaign. (One of the ironies of e-commerce is that advertising in the print media and on television is often needed to attract customers to a new web site.) On the other hand, it is absolutely crucial for community banks to offer transactional web sites in order to retain their existing high-value customers, who are willing to pay high prices for differentiated, highly personalized products and services, but who also want the flexibility and convenience of performing some of their financial transactions over the Internet.

In some ways the Internet may level the playing field between large banks and small banks. The expense of setting up a basic transactional web site is relatively low, which allows small banks to offer their basic retail customers a web channel that is competitive with those offered by larger banks. Once the web site is in place, community banks could reduce their unit costs by eliminating *some* of their expensive brick and mortar branches locations. This must be carefully done, because overdoing this cost-cutting strategy could diminish the branch-based, person-to-person contact upon which the community banking strategy is based; in other words, community banks cannot run the risk of getting too far out in front of the migration of captive, inertial local branch depositors to the Internet. But as time passes, the Internet should allow community banks to stay in close touch with their high-value customers while selectively pruning their physical plant and personnel overhead.

7. Large bank strategy.

The continuing movement of large banks from the northeast corner to the southwest corner of the strategic map is to some extent a self-fulfilling prophecy. These banks have grown large via merger, and achieving scale economies is typically among the announced objectives of these mergers – indeed, this is backed up by recent studies that find opportunities for significant economies of scale at regional, super-regional, and global banks.[20] Larger banks also they tend to sell a non-traditional mix of services, using production and distribution techniques that give them access to deep scale savings but that require higher operating leverage (lower per unit expenses but higher fixed expenses).[21] The most extreme cases of this are "mono-line" banks that employ new financial technologies to specialize in a single standardized product (e.g., credit card banks, mortgage banking) which enjoy scale economies out to very large sizes.[22] But standardized (i.e., undifferentiated) products do not command high prices, so for large banks the path to higher profits requires continued growth to capture additional scale-related savings.

Another reason that the profit margins of large banks rely so much on cost reductions is the plentiful competition among large banks in most retail and wholesale markets. Scale and scope economies typically have important implications for the structure of an industry – if such economies are substantial, an industry will tend to be relatively concentrated and entry will be difficult. But despite the large cost savings apparently available from increased size in banking, there is currently little evidence of market power for large banks in U.S. banking markets. As long as industry consolidation does not devolve into a tight oligopoly and pricing power – and currently there is little reason to expect this, given continued entry by large domestic banks, large foreign banks, and de novo banks – there should continue to be pricing pressure on large and small banks alike. In such a world, a bank cannot raise its prices unless the products they are selling are differentiated from their competitors' products.

[20] See Berger and Mester (1997) and Hughes, Lang, Mester, and Moon (2001) for evidence.

[21] Hunter, Timme and Yang (1990) and Hunter and Timme (1991) provide evidence that large and small banks use entirely different production functions; their research suggests that efficient scale for community banks is well below efficient scale for large banks. DeYoung and Roland (2001) discuss in detail the implications of operating leverage at commercial banks.

Limits to scale. Like all physical phenomena, there are limits to scale-related gains: at some point, the unit cost curve must stop declining. But interpersonal phenomena may be more limiting than physical phenomena in this regard. As discussed above, when business units move further away from headquarters it becomes more difficult to control their activities.[23] This could be one of the reasons why researchers simultaneously find significant *potential* gains from increased bank size, but that most large banks do not fully exploit that potential.[24] These difficulties are amplified at cross-border banks: in addition to the problems of managing a geographically diverse company, cross-border banks must overcome differences in language, culture, currencies, regulations, and local business practices that could drive up costs, depress revenues, or hamper growth.[25]

As time passes, improved technology is likely to partially mitigate the operational and managerial problems of distance. For example, there is evidence that improved communications technology has allowed banking customers to move further away from their banks, challenging the idea that local proximity – and thus small bank size – is necessary for a strong banker-borrower relationship.[26] There is also evidence that advances in communications technology are allowing banks to better control the operations of their affiliates as these offices move further away from the headquarters.[27]

Imposing centralized decision-making authority may also help mitigate the agency costs found in large, geographically dispersed banks. In many ways, a centralized management model goes hand-in-hand with the ongoing movement of large banks from the northeast corner to the southwest corner on the strategic map. Centralization is consistent with standardized products and services; centralization seems like a natural way to limit agency costs as an organization grows in size; and centralization may become easier to implement as new technologies allow headquarters managers to better communicate in real time with branch managers. Barnett Bank and Bank One are two examples of U.S. banking companies that

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[22] See Rossi (1998) for evidence of mono-line scale economies in mortgage banking. See Jones, Lang, and Nigro (2001) for evidence of recent consolidation in the loan syndication business.
[23] See Berger and DeYoung (2001a).
[24] See Hughes, Lang, Mester, and Moon (2000) and Demsetz and Strahan (1997).
[25] Berger, DeYoung, Genay, and Udell (2000) provide evidence that banks tend to do poorly when operating abroad.
[26] See Petersen and Rajan (2002) and Cyrnak and Hannan (2000).

switched from very decentralized strategies to more centralized strategies as they grew larger: separately chartered bank affiliates were converted into branch offices and decision making authority was moved from local managers to headquarters management.

Less centralized decision-making. Although centralization has its merits, there are two reasons why a *completely* centralized organizational strategy is unlikely to be optimal for large banking companies.[28] Complete centralization works well for a company like McDonald's which never customizes its products to fit individual consumer needs, but it can be costly in the banking industry where gathering and processing unique customer information is a core competency. Maintaining at least some degree of decentralized decision-making authority would seem to be essential for banks, because creating and capturing new profit opportunities in banking frequently depends on keeping bankers in close (and fast) touch with local customers and local information.

Furthermore, ongoing reductions in customer switching costs (discussed above) are likely to reduce the future effectiveness of centralized decision-making. With customers that can switch easily among multiple financial service providers, it will become increasingly difficult for banks to make significant profits by selling traditional banking products on a commodity basis; in other words, the southwest corner of the strategy space becomes less attractive. In such a world, retaining high-value customers requires more personalized products and services (a movement toward the southeast corner of the strategy space), which in turn requires more decentralized decision-making authority within the bank. A potentially profitable strategy for large banks may be to offer all customers a choice of a wide menu of standardized products and services (which emerge from a centralized product and services strategy) but to also offer personalized financial service and advice, along with customized pricing, for certain products and customers deemed to be high value-added (this emerges from a decentralized operations strategy).

Innovation. As large banks exhaust all the potential gains from increased scale – or after they grow so large or so geographically diverse that their agency problems become unmanageable – large

[27] See Berger and DeYoung (2001b).

banks will have to change course and concentrate on strategic advantages that are not directly related to size. Instead, a change in strategy aimed at the potentially profitable southeast corner will be in order. How might large banks maintain their low cost advantages while simultaneously providing more personalized products and services that yield higher prices?

Innovation is one potential path. However, most product innovations on the retail side are easily imitated and quickly replicated by competitors, so any first mover advantages are likely to be fleeting. Unless the innovation is proprietary, or unless it can be linked to a strategic behavior that discourages rival firms from competing against the innovating firm, the innovation must be continuous, which is both expensive and unpredictable.

One potentially long-lasting innovation is to identify areas of high transaction cost and to reduce those costs by *internalizing* the transactions. To the extent that there are first-mover advantages in this approach, the bank can build a long-term franchise. For example, Citibank has recognized that there are still very high costs in making cross-border payments. By setting up a global network of branches and developing tremendous expertise in foreign exchange transactions, it has internalized cross-border payments. The savings in transactions costs coupled with the very high volume of transactions make this a very profitable franchise. Moreover, others banks are unlikely to challenge this franchise because of the high costs of setting up a competing network, and the formidable position now occupied by Citibank.

Another possibility is to use innovation to build a captive customer base. This is, in a sense, what Charles Schwab has done. It was on of the first brokerages to allow customers to trade electronically. In the process, it cross-sold a variety of products, including information services and mutual funds services that locked the electronic customer into a relationship with Schwab. At the same time, these customers give Schwab the scale to pursue further innovation.

Internet implementation. The current conventional wisdom is that both large banks and community banks will combine the Internet channel with their traditional brick and mortar branches,

[28] See Hunter (1995) for evidence on the general efficiency of centralized and decentralized organizational forms in banking.

using a "click and mortar" distribution strategy.[29] An alternative approach is the Internet-only, or "virtual bank," distribution strategy that eschews brick and mortar branches altogether. Only a few Internet-only banks are operating in the U.S., and to date these banks have not performed well – but Internet-only banks are using a very new business model, and it is possible that both these banks and their customers are only just learning how to efficiently use this model, and that financial performance will improve in the future.[30] If the Internet-only delivery model ultimately proves to be profitable, it would seem to be well-suited for banks that have the capacity to offer large volumes of low cost, standardized products and services.

8. The future: A new competitive environment

At some point in the near future the bank merger wave will finally subside. When it is finished, the market structure of the banking industry will no longer reflect the historical restrictions on geographic and product market mobility. At that point, the banking industry will more closely resemble non-banking industries in an important strategic dimension: growth by internal expansion will become a viable strategic alternative for banks, because in the new industry equilibrium there will be fewer easy opportunities to grow by acquisition. Under these more "normal" industry conditions, the Internet will play an expanded and more complicated strategic role. Internal growth strategies typically require increased advertising and marketing expenditures, and this is an area where deep-pocketed large banks have a clear advantage over small community banks. When large banks exhaust their opportunities to grow *via* inexpensive acquisitions, their strategic growth objective will switch from wholesale acquisition of other banks to the acquisition of individual customers of other banks.

Large banks will have two sources of customers. At one extreme the large banks will compete for each other's customers in a kind of zero sum game, consuming any cost or productivity gains by reducing prices. In this scenario large banks remain mired in the southwest corner of the strategy space,

[29] Furst, Lang, and Nolle (2000) find evidence that click and mortar banks are more profitable than traditional brick and mortar banks. Sullivan (2000) concludes that click and mortar banks are no less profitable than traditional banks.

selling commodity-like services at low margins and relying on innovation and increased scale to drive down unit costs. Community banks will have uncontested access to the highly profitable southeast corner, although they may or may not be able to occupy it. At the other extreme the large banks will compete for the customers of the community banks, perhaps using the informational potential of the Internet to target high-value community bank customers, and offering them customized or semi-customized financial services at relatively low prices. In this scenario large banks will migrate towards the more profitable southeast corner of the strategy space, and the market share of community banks will shrink.

Continued technological change in the banking and financial services industry and in electronic or Internet banking are inevitable. The degree to which large banks are successful – and the hence the amount of profitable market share ultimately retained by community banks – may depend on how well both sets of bankers can harness the benefits of new technology in an increasingly competitive and fully deregulated environment. These changes pose great challenges and offer potential opportunities for community bank, regional banks, and large banks alike. Is new banking technology more likely to allow large banks to personalize their product offerings while maintaining the cost advantages of large scale production? Or is new banking technology more likely to allow community banks to overcome the cost disadvantages of small scale production while maintaining their traditional, personalized approach to banking? The data and analysis presented above suggest a future with far fewer community banks than exist today, but they also suggest a future competitive equilibrium in which a relatively large number of community banks remain viable alongside a relatively small number of increasingly large banks.

[30] DeYoung (2001a, 2001b) finds that new Internet-only banks perform poorly relative to other new banks, but he also finds some evidence in support of the proposition that Internet-only banks are moving up a steep learning curve.

References

Benston, George J., William C. Hunter, and Larry D. Wall. 1995. "Motivations for Bank Mergers and Acquisitions: Enhancing the Deposit Insurance Put Option versus Earnings Diversification," *Journal of Money, Credit, and Banking* 27 (August): 777-798.

Allen N., Seth D. Bonime, Lawrence G. Goldberg, and Lawrence J. White. 1999. "The Dynamics of Market Entry: The Effects of Mergers and Acquisitions on De Novo Entry and Small Business Lending in the Banking Industry." Board of Governors of the Federal Reserve System.

Berger, Allen N., Seth D. Bonime, Lawrence G. Goldberg, and Lawrence J. White. 1999. "The Dynamics of Market Entry: The Effects of Mergers and Acquisitions on De Novo Entry and Small Business Lending in the Banking Industry." Board of Governors of the Federal Reserve System.

Berger, Allen N., Rebecca S. Demsetz, and Philip E. Strahan. 1999. "The Consolidation of the Financial Services Industry: Causes, Consequences, and Implications for the Future." *Journal of Banking and Finance* 23 (February): 135–94.

Berger, Allen N., and Robert DeYoung. 2001a. "The Effects of Geographic Expansion on Bank Efficiency," *Journal of Financial Services Research*, forthcoming.

Berger, Allen N., and Robert DeYoung. 2001b. "Technological Progress and the Geographic Expansion of the Banking Industry," Federal Reserve Bank of Chicago, manuscript.

Berger, Allen N., Robert DeYoung, Hesna Genay, and Gregory F. Udell. 2000. "The Globalization of Financial Institutions: Evidence from Cross-Border Banking Performance," *Brookings-Wharton Papers on Financial Services*, vol. 3, pp. 23-125, Robert Litan and Anthony Santomero, eds.

Berger, Allen N., and David B. Humphrey. 1997. "Efficiency of Financial Institutions: International Survey and Directions for Future Research," *European Journal of Operational Research* 98: 175-212.

Berger, Allen N., William C. Hunter, and Stephen G. Timme. 1993. "The Efficiency of Financial Institutions: A Review and Preview of Research Past, Present, and Future," *Journal of Banking and Finance* 17: 221-49.

Berger, Allen N., and Loretta J. Mester. 1997. "Inside the Black Box: What Explains Differences in Efficiency of Financial Institutions?" *Journal of Banking and Finance* 21: 895-947.

Bliss, Richard T., and Richard J. Rosen. 1999. "CEO Compensation and Bank Mergers," Federal Reserve Bank of Chicago, Conference on Bank Structure and Competition, *Proceedings*: 516-532.

Cyrnak, Anthony, and Timothy Hannan. 2000. "Non-Local Lending to Small Businesses," Federal Reserve Board of Governors, manuscript.

Demsetz, Rebecca S., and Phillip E. Strahan. 1997. "Diversification, Size, and Risk at Bank Holding Companies." *Journal of Money, Credit, and Banking* 29 (August): 300–13.

DeYoung, Robert. 1999. "Mergers and the Changing Landscape of Commercial Banking (Part I)," Federal Reserve Bank of Chicago, *Chicago Fed Letter*, number 145, September.

DeYoung, Robert. 2000. "Mergers and the Changing Landscape of Commercial Banking (Part II)," Federal Reserve Bank of Chicago, *Chicago Fed Letter*, number 150, February.

DeYoung, Robert. 2001a. "The Financial Performance of Pure Play Internet Banks," Federal Reserve Bank of Chicago, *Economic Perspectives*, First Quarter: 60-75.

DeYoung, Robert. 2001b. "Learning-by-Doing, Scale Efficiencies, and Financial Performance at Internet-Only Banks," Federal Reserve Bank of Chicago, manuscript.

DeYoung, Robert, Lawrence G. Goldberg, and Lawrence J. White. 2000. "Youth, Adolescence, and Maturity of Banks: Credit Availability to Small Business in an Era of Banking Consolidation." *Journal of Banking and Finance* 23 (February): 463–92.

DeYoung, Robert, Iftekhar Hasan, and Bruce Kirchhoff. 1998. "The Impact of Out-of-State Entry on the Efficiency of Local Banks," *Journal of Economics and Business* 50: 191-204.

DeYoung, Robert, and Karin P. Roland. 2001. "Product Mix and Earnings Volatility at Commercial Banks: Evidence from a Degree of Leverage Model," *Journal of Financial Intermediation* 10: 54-84, January.

Evanoff, Douglas D., and Philip R. Israilevich. 1991. "Productive Efficiency in Banking: Econometric and Linear Programming Evidence," Federal Reserve Bank of Chicago, *Economic Perspectives* 15 (July): 11-32.

Evanoff, Douglas D., and Evren Ors. 2001. "Local Market Consolidation and Bank Productive Efficiency," Federal Reserve Bank of Chicago, manuscript.

Federal Reserve Board of Governors. 1997, 1998, 1999. *Annual Report to Congress on Retail Fees and Services of Depositories.*

Furst, Karen, William W. Lang, and Daniel E. Nolle. 2000. "Internet Banking: Developments and Prospects," Office of the Comptroller of the Currency, working paper 2000-9.

Genay, Hesna. 2000. "Recent Trends in Deposit and Loan Growth: Implications for Small and Large Banks," Federal Reserve Bank of Chicago, *Chicago Fed Letter*, number 160, December.

Hughes, Joseph P., William Lang, Loretta J. Mester, and Choon-Geol Moon. 1996. "Efficient Banking under Interstate Branching." *Journal of Money, Credit, and Banking* 28: 1043–71.

Hughes, Joseph P., William Lang, Loretta J. Mester, and Choon-Geol Moon. 2000. "Are Scale Economies Elusive or Illusive?" Federal Reserve Bank of Philadelphia, manuscript.

Hughes, Joseph P., William Lang, Loretta J. Mester, and Choon-Geol Moon. 2001. "Recovering Risky Technologies Using the Almost Ideal Demand System: An Application to U.S. Banking," *Journal of Financial Services Research*, forthcoming.

Hunter, William C. 1995. "Internal Organization and Economic Performance: The Case of Large U.S. Commercial Banks," Federal Reserve Bank of Chicago, *Economic Perspectives*, September/October: 10-20.

Hunter, William C. 2001. "The Internet and the Commercial Banking Industry: Strategic Implications from a U.S. Perspective," in *Financial Intermediation in the 21st Century*, Zuhayr Mikdashi, ed., Palgrave.

Hunter, William C., and Stephen Timme. 1986. "Technical Change, Organizational Form and the Structure of Bank Production," *Journal of Money, Credit and Banking* 18 (May): 152-166.

Hunter, William C., and Stephen Timme. 1991. "Technological Change in Large U.S. Commercial Banks," *Journal of Business* 64: 206-245.

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: 504-525.

Jones, Jonathan, William W. Lang, and Peter J. Nigro. 2001. "Recent Trends in Loan Syndications: Evidence for 1995 to 1999," Office of the Comptroller of the Currency, manuscript.

Kane, Edward J. 2000. "Incentives for Banking MegaMergers: What Motives Might Regulators Infer from Event-Study Analysis?," Boston College, manuscript.

Keeton, William R. 2000. "Are Mergers Responsible for the Surge in New Bank Charters?" Federal Reserve Bank of Kansas City, *Economic Review*, pp. 21-41.

Peek, Joe, and Eric S. Rosengren. 1998. "Bank Consolidation and Small Business Lending: It's Not Just Bank Size That Matters." *Journal of Banking and Finance* 22 (August): 799–819.

Penas, Maria F., and Haluk Unal. 2001. "Too-Big-To-Fail Gains in Bank Mergers: Evidence from the Bond Market," University of Maryland, working paper.

Petersen, Mitchell A., and Raghuram Rajan. 2002. "The Information Revolution and Small Business Lending: Does Distance Still Matter?" *Journal of Finance* (forthcoming).

Rossi, Clifford V. 1998. "Mortgage Banking Cost Structure: Resolving an Enigma," *Journal of Economics and Business* 50: 219-234.

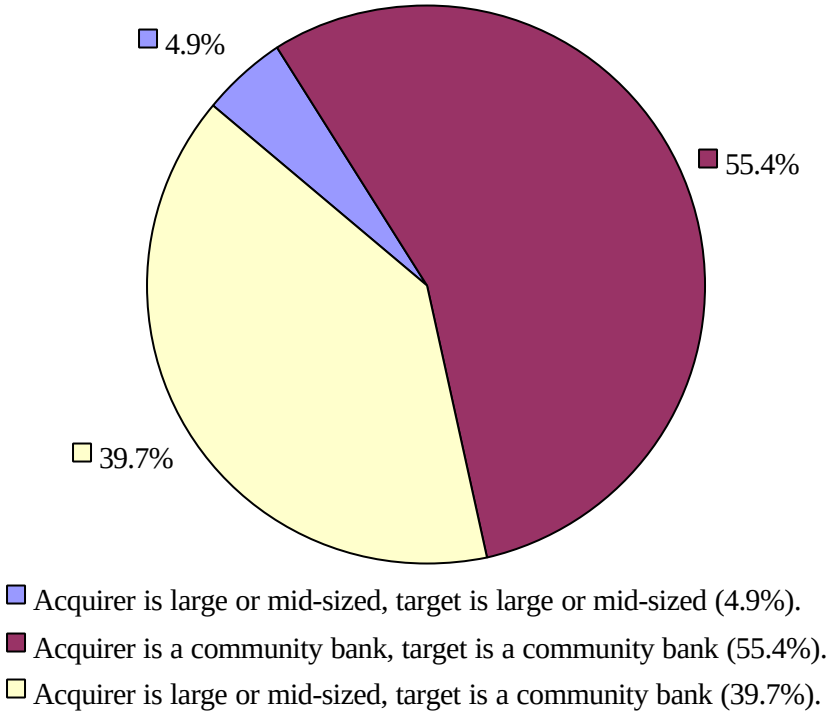
Strahan, Philip E., and James P. Weston. 1998. "Small Business Lending and the Changing Structure of the Banking Industry." *Journal of Banking and Finance* 22 (August): 821–45.

Sullivan, Richard J. 2000. "How Has the Adoption of Internet Banking Affected Performance and Risk at Banks? A Look at Internet Banking in the Tenth Federal Reserve District." Federal Reserve Bank of Kansas City, *Financial Industry Perspectives*, December: 1-16.

Whalen, Gary. 2001. "The Impact of the Growth of Large, Multistate Banking Organizations on Community Bank Profitability," Office of the Comptroller of the Currency, manuscript.

Figure 1

U.S. Bank Mergers, 1985-1999.

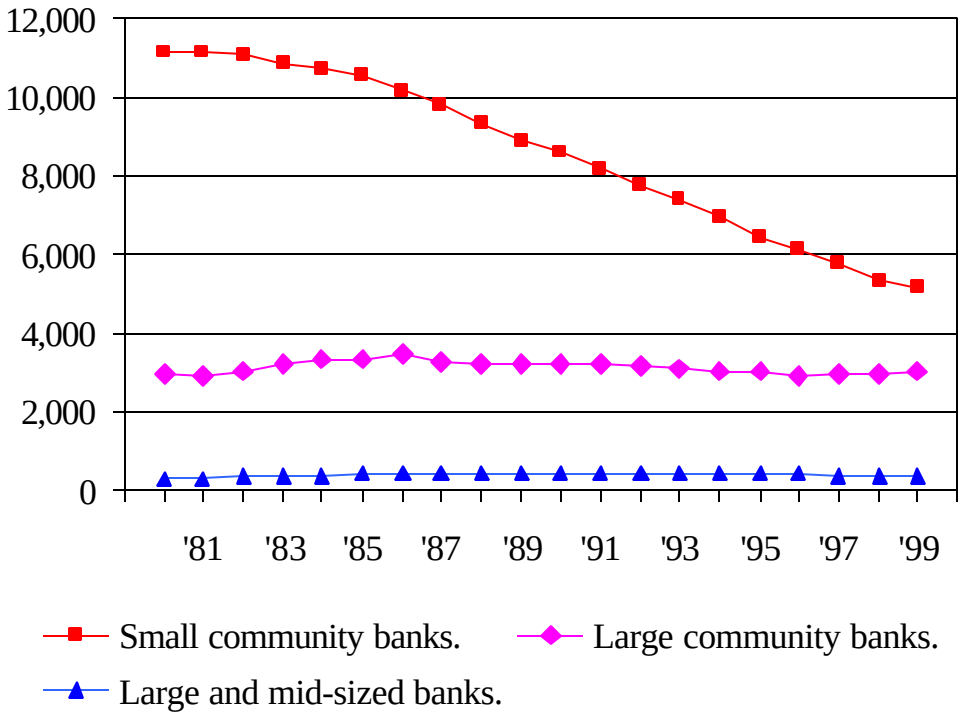


Source: FDIC.

Notes: Large banks have more than $10 billion in assets. Mid-sized banks have between $1 billion and $10 billion in assets. Community banks have less then $1 billion in assets. Assets are in 1999 dollars.

Figure 2

Number of U.S. Commercial Banks, 1980-1999.



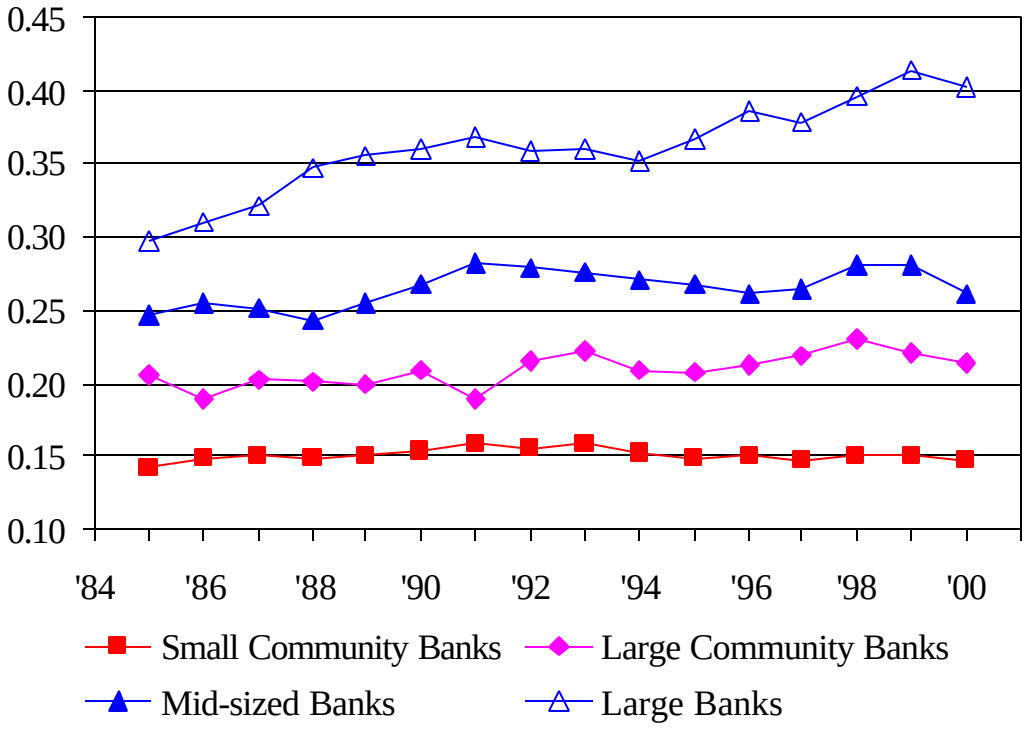
Source: FDIC.

Notes: Large banks have more than $10 billion in assets. Mid-sized banks have between $1 billion and $10 billion in assets. Large community banks have between $500 and $1 billion in assets. Small community banks have less then $500 million in assets. Assets are in 1999 dollars.

Figure 3

Noninterest Income-to-Net Revenue.

Annual averages for various sized U.S. Commercial Banks, 1985-2000.

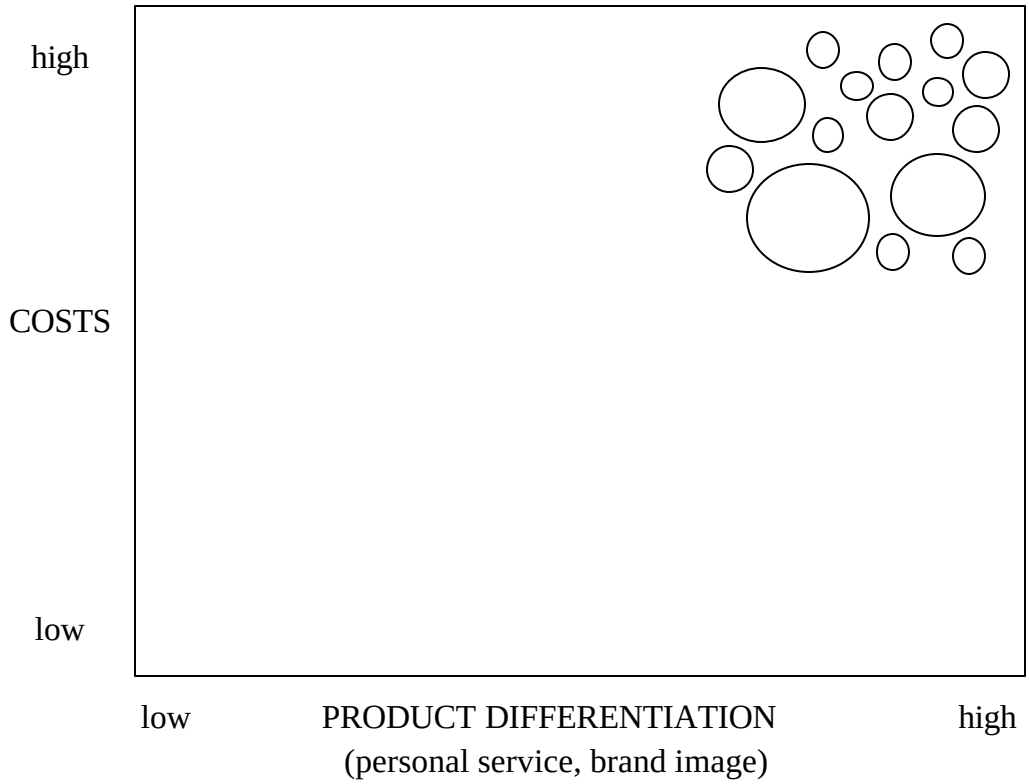


Source: Authors' calculations using data from the Reports of Condition and Income (FDIC).

Notes: Large banks have more than $10 billion in assets. Mid-sized banks have between $1 billion and $10 billion in assets. Large community banks have between $500 and $1 billion in assets. Small community banks have less then $500 million in assets. Assets are in 1999 dollars.

Figure 4

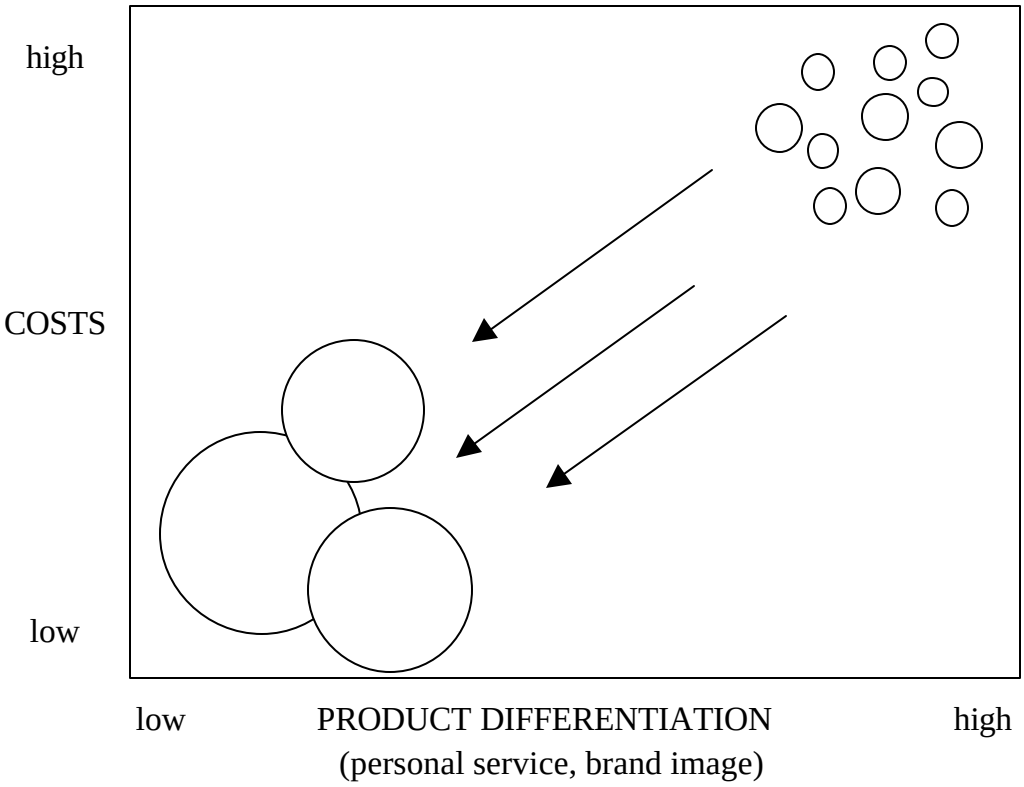
Strategic Map of Commercial Banking (pre-deregulation).



Source: DeYoung (2000).

Figure 5

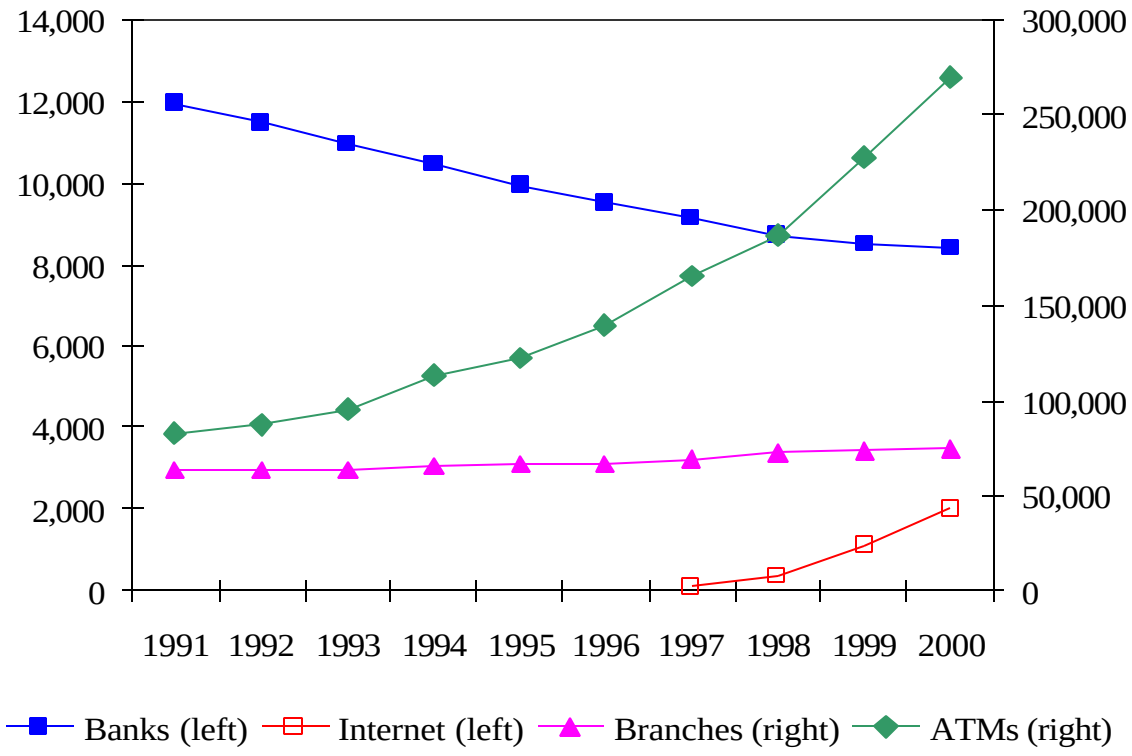
Strategic Map of Commercial Banking (post-deregulation).



Source: DeYoung (2000)

Figure 6

Distribution Channels for U.S. Commercial Banks, 1990-2000.

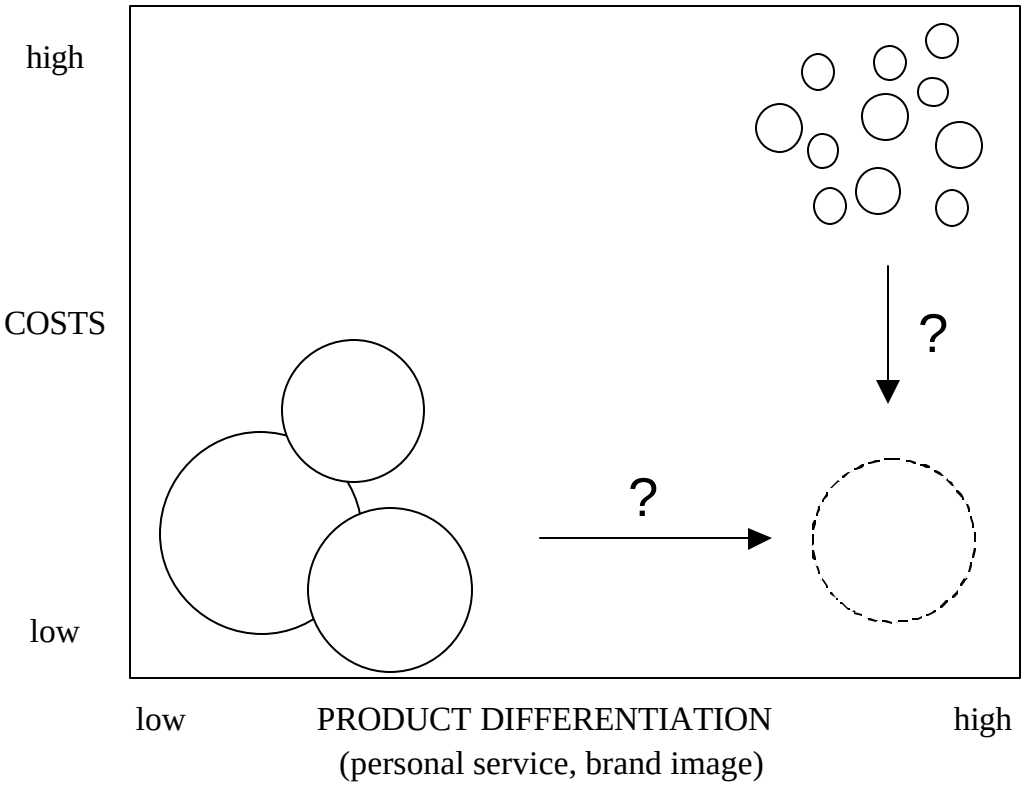


Source: DeYoung (2001).

Notes: Internet includes only fully transactional websites.

Figure 7

Strategic Map of Commercial Banking (post-Internet).

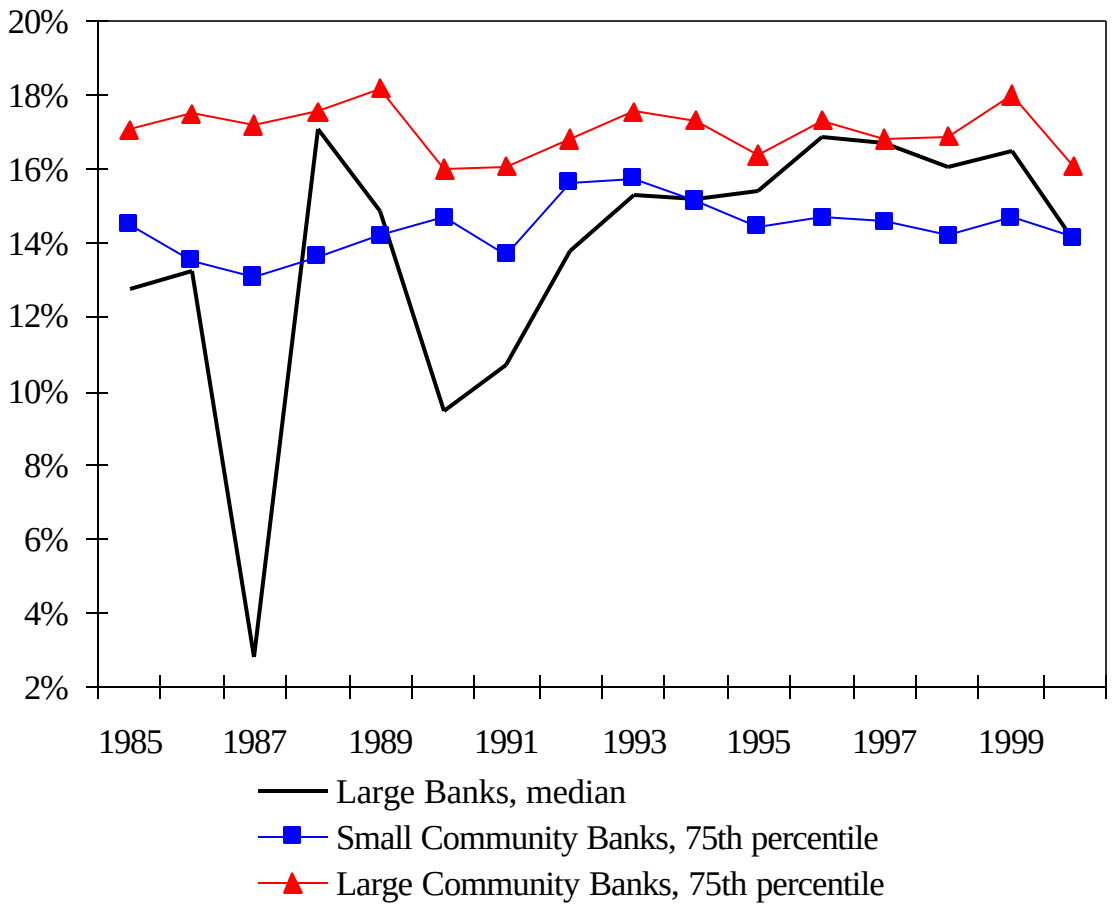


Source: DeYoung (2000).

Figure 8

Return-on-equity.

Best-practices community bank averages versus large bank averages.



Source: Authors' calculations using data from the Reports of Condition and Income (FDIC).

Notes: Large banks have more than $10 billion in assets. Mid-sized banks have between $1 billion and $10 billion in assets. Large community banks have between $500 and $1 billion in assets. Small community banks have less then $500 million in assets. Assets are in 1999 dollars.

Table 1

Community banks versus large banks.

Selected financial ratios, mean values over 1996-2000 period.

	Large banks	Small community banks		Large community banks	
		All	Above median ROE	All	Above median ROE
Return-on-Equity	0.1653	0.1267 HHH	0.1748 **	0.1431 HHH	0.1832 ***
Loans-to-Assets	0.6469	0.6207 HHH	0.6426	0.6304 H	0.6342
Noninterest Expense-to-Net Revenue	0.6013	0.6133	0.5646 HHH	0.6040	0.5776 HHH
Core Deposits-to-Assets	0.4749	0.7286 ***	0.7387 ***	0.6785 ***	0.7258 ***
Noninterest Income-to-Net Revenue	0.3967	0.1684 HHH	0.1800 HHH	0.2192 HHH	0.2229 HHH

Source: Authors' calculations using data from the Reports of Condition and Income (FDIC).

Notes: Large banks have more than $10 billion in assets. Large community banks have between $500 and $1 billion in assets. Small community banks have less then $500 million in assets. Assets are in 1999 dollars. The superscripts ***, **, or * (**HHH**, **HH**, or **H**) indicate that the community bank mean is significantly higher (significantly lower) than the large bank mean at the 1%, 5%, or 10% levels.