COMMENTARY

Some Thoughts on the Evolution of the Banking System and the Process of Financial Intermediation

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I will focus my discussion on three areas I believe are important ones when considering the evolution of the financial services industry: consolidation and the economies gained from it; governance issues, which are emerging as the structure of the banking industry has changed and continues to change; and the decline in the benefits gained from the set of contracts we call a "bank." In particular, I'll argue that the decline in relationship lending perhaps reflects a decline in demand for bank liabilities rather than a decline in demand for relationship lending.

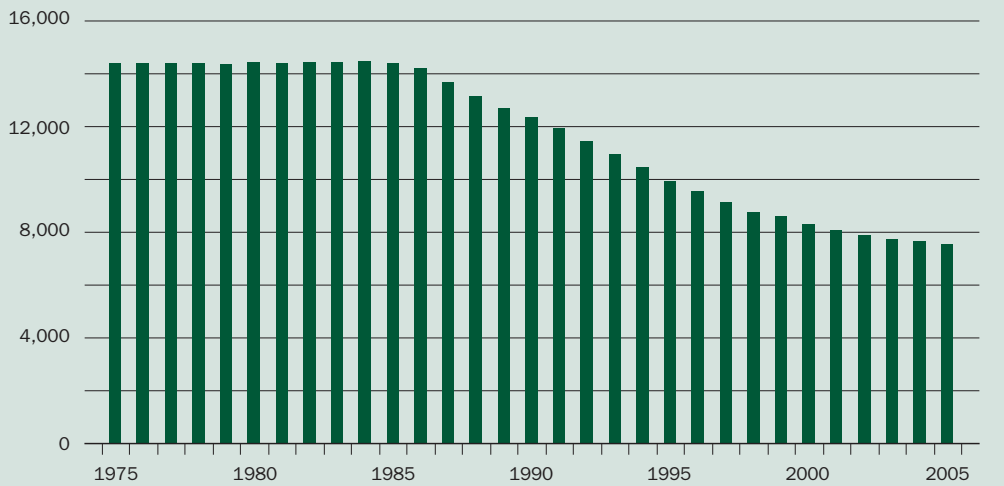
Consolidation

A striking amount of consolidation has occurred in the banking industry over the past twenty years, and it has led to some very large banks. In the United States about 11,500 bank mergers took place from 1980 through 2005, which is an average of about 440 mergers per year. And the size of mergers has risen over time. For example, in January 2004 JPMorgan Chase agreed to buy Bank One, creating a $1.1 trillion bank holding company. In October 2003 Bank of America agreed to buy FleetBoston, creating a $900 billion bank holding company and making Bank of America the second-largest U.S. bank holding company, with $1.4 trillion in assets. (Citigroup is the largest, with $1.6 trillion in assets.)

At the same time, the number of commercial banks in the United States has fallen significantly over the past twenty years (see Figure 1). The number was relatively stable at about 14,000 from about 1975 to 1985 and then started to fall to about 7,500 in 2005. The average asset size of U.S. banks (in real terms) has more than tripled since 1985 and is more than $1.1 billion. Assets are being redistributed from smaller banks to larger banks—now over 75 percent of industry assets are in banks with more then $10 billion in assets (measured in 2005 dollars), compared with 40 percent in 1985 (see Figure 2).

Although the number of institutions has fallen, the number of offices has not (see Figure 3). There were fewer than 14,000 ATMs in 1979, but by 2004 there were more than 380,000, almost thirty times as many.

Figure 1
Number of Commercial Banks in the United States



Source: Federal Deposit Insurance Corporation

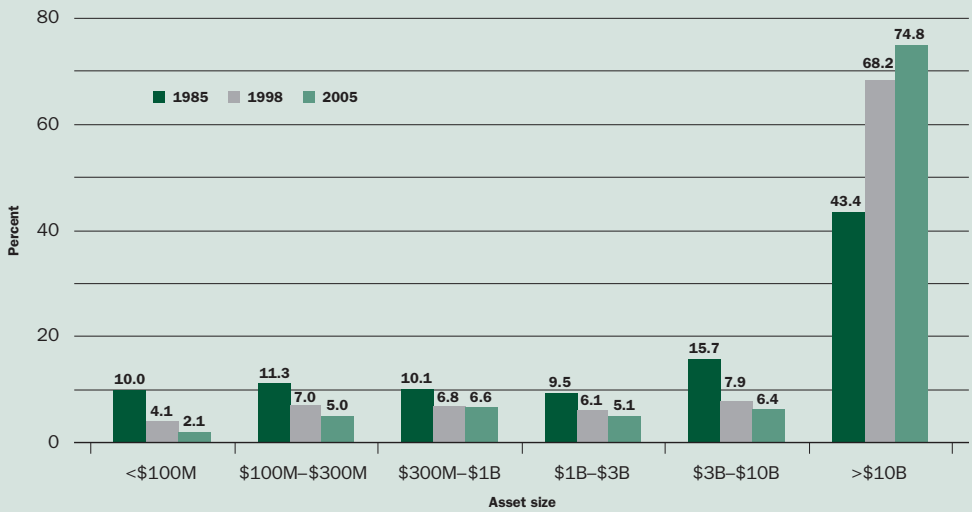
Also, there has been new bank entry even as consolidation has occurred. Nonetheless, by several measures, banking is becoming more concentrated (see Figure 4). The top ten banks in terms of asset size are holding over 50 percent of industry assets, compared with about 25 percent in 1985.

The question is, What has consolidation meant for competition in the industry? Here, it is important to consider the drivers of the consolidation. Consolidation need not imply that the industry is less competitive. Banking is subject to the usual antitrust safeguards: The Riegle-Neal Act of 1994 and amended Bank Holding Company Act set deposit concentration limits on proposed mergers (that is, no merger can result in an institution with more than 10 percent of the deposits in the nation or more than 30 percent of deposits in any state [but states can set their own limits, and initial entry into the state is not subject to the 30 percent limit]). And merger applications are examined for their potential effects on competition.

Note also that consolidation is a global phenomenon, which means deregulation in the United States was not the only important driver. (According to a 2001 Group of Ten study of consolidation in thirteen countries in the 1990s, the number of banks fell in almost every country. Japan was an exception, but that is because the country changed the definition of "bank"; Belgium gained just two banks; Australia gained ten banks, with the number rising from 34 in 1990 to 44 in 1999, but the industry remained concentrated with the five largest banks holding 74 percent of deposits.)

The drivers of consolidation have led to increases in competition at the same time consolidation has occurred. Two important drivers have been deregulation and technological change. The removal of geographic restrictions on branching was one of the drivers of consolidation. Regulations that restricted the geographic extent of banking led to fewer banks and smaller banks than would have arisen in equilibrium without the regulations. Geographic deregulation also increased the contestability of markets.

Figure 2
Distribution of Banks in the United States by Asset Size



Note: Size categories are based on total assets (domestic and foreign) and are in 2005 dollars. Data exclude credit card banks.

Source: Quarterly Reports of Condition and Income, Federal Reserve System

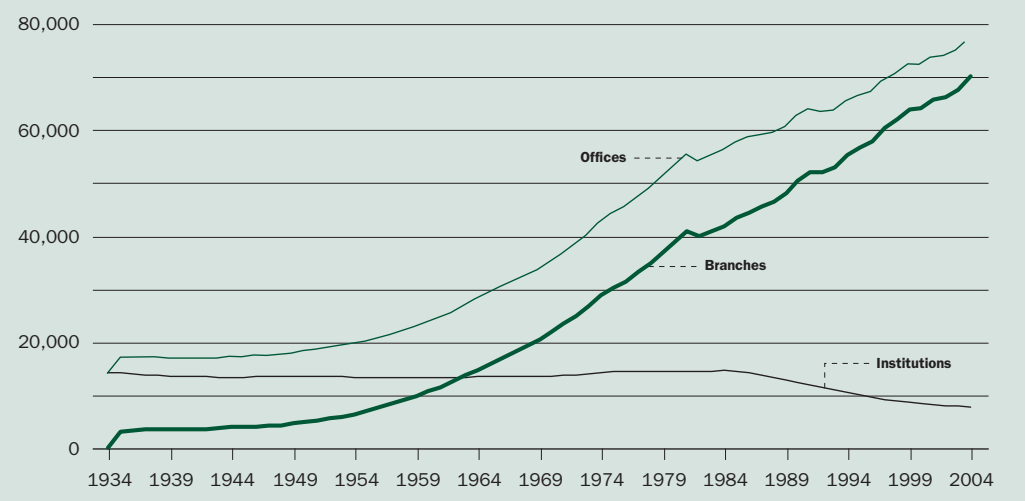
Technological change also helped enable consolidation. By technological change I mean not only changes afforded to the delivery of financial services by computers and telecommunications but also financial innovation—for example, risk-management models. Technological and financial innovation allowed for the commoditization of financial services and in turn led to increased competition; new competitors that were able to produce only a piece of the banks' output could enter and compete with banks for that piece. Technology also increased the geographic scope of markets.

Consolidation and Scale Economies

While we understand some of the forces driving the industry toward consolidation, consolidation does present some conundrums. Consolidation has created some very large banks, and bank managers often cite the desire to capture scale economies as one of their motivations for mergers and acquisitions. But much of the empirical literature on banking says these economies are exhausted at relatively small sizes. For example, in his conference presentation, Bob DeYoung argues that there are two types of banking: relationship banking and transactions banking. The first is low volume. The second is high volume, which suggests there are scale economies in the second type, but much of the literature doesn't find them. Another puzzle is why the official government statistics suggest that productivity in banking rose at a slower rate from 1994 to 2002 than in the rest of the corporate sector, despite the technological advances in banking.

My answer to these conundrums is that much of the literature has not adequately evaluated scale economies and productivity because it has not adequately accounted for the endogenous choice of risk by banks. At its heart, banking is about handling risk, and the amount of risk to take on is a choice of bank management. Thus, to my mind the changing nature of banking is a risk-management story and not just a deregulation story. Technology is important to the extent that it enables new types of risk

Figure 3
Number of FDIC-Insured Commercial Banks, Branches, and Offices in the United States



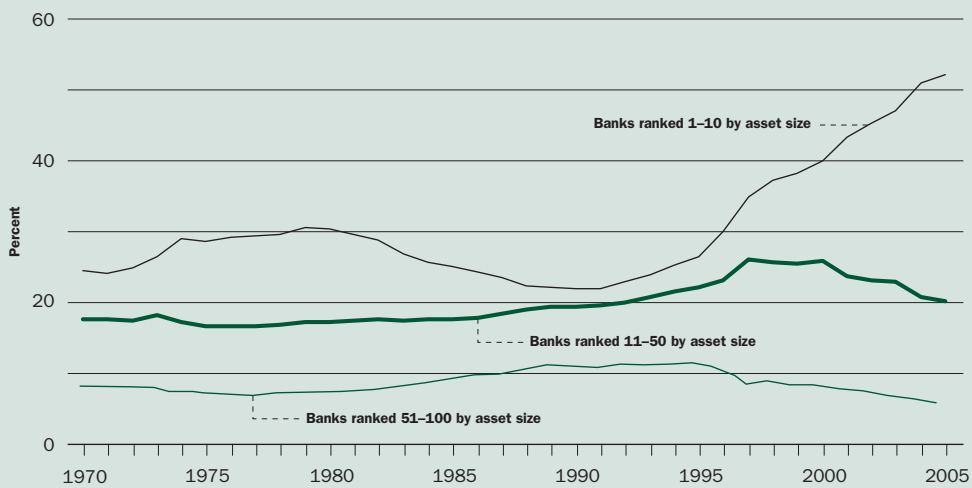
Source: Federal Deposit Insurance Corporation

management (more diversification at less cost, more effective risk-management models at a given cost, etc.). But the next chapter of the banking story is a capital and systemic risk story (for example, Basel II, financial stability), and bank management becomes an important player in the story (and, therefore, so does corporate governance).

Hughes, Mester, and Moon (2001) investigate whether economies of scale in banking are illusive (that is, do not exist) or elusive (that is, evade detection by the methods used in the literature). We conclude that the scale economies are real but that the usual methods used to find them fail because they do not adequately view banks as risk-management operations. The paper lays out an approach to measuring scale economies based on the role of the bank as an intermediary. Larger scale may mean better diversification, which leads to reduced liquidity risk on the liability side of the balance sheet and reduced credit risk on the asset side. Thus, larger scale can lead to reduced marginal cost of risk taking and reduced marginal cost of risk management, all else being equal. But all else is not necessarily equal because risk taking is endogenous. If banks respond to the lower cost of risk management by taking on more risk, then we would see two effects of increased scale of operations. The fact that scale-related diversification reduces cost, all else being equal, we call the *diversification effect*. But risk taking can increase cost, all else being equal, if banks have to spend more to manage increased risk. This effect, which we call the *risk-taking effect*, might mask scale economies that derive from better diversification unless we incorporate risk into the analysis.

In Hughes, Mester, and Moon (2001) we find constant returns to scale in our sample of large bank holding companies when we estimate a standard cost-function model. However, when we estimate our more general model, we find significant returns to scale. Our general model incorporates capital structure into the production model and generalizes managers' objectives from profit maximization to value maximization. (If bank managers care about risk, then they care about more than just

Figure 4
Market Share of Bank Assets by Rank of Firm



Note: Rank is determined by total assets.

Source: Quarterly Reports of Condition and Income, Federal Reserve System

expected return. In their utility function they may trade off higher expected profit for lower risk. So the maximization problem from which scale economies are derived should account for this.) Our findings suggest that large bank holding companies (BHCs) are using less than the cost-minimizing level of capital and that small BHCs are using more than the cost-minimizing level. We find increasing returns to scale, with estimates ranging from 1.19 to 1.24. We find evidence of the diversification effect: An increase in diversification and asset size from the minimum to maximum value in the sample implies an increase in scale economies of 0.16. (Diversification is the degree of macroeconomic diversification in a BHC's geographic operations, measured by the correlation in unemployment rates over states in which a BHC operates.) We find evidence of the risk-taking effect: An increase in risk implies a decrease in scale economies. And we also find evidence of an inefficiency effect: An increase in inefficiency implies a decrease in scale economies. Thus, the results of this paper support the conclusion that scale economies exist, but the usual method cannot find them because it ignores the fact that bank risk taking is endogenous. Larger scale means a lower cost per unit of risk—a scale economy—but larger scale means that banks have the capacity to take on more risk.

Other research (Hughes, Lang, Mester, and Moon 1999, 1996) has found that geographic diversity is positive for banks' performance and safety. Thus, consolidation has led to real benefits for the industry. These studies look at within-state, regional interstate, and interstate consolidation strategies and their effects on banks' expected profit, profit risk, and insolvency risk and find that geographic diversity was positive for performance and safety and that the gains are priced by capital markets as shown by improved market value. The clearest gains come from expansion across state lines, especially when the expansion diversifies macroeconomic risk, which lowers systemic risk. The studies find that larger banks, all else being equal, tend to take on greater risk, but, holding size constant, geographic diversity is related to lower

risk. Thus, consolidation that is accompanied by greater geographic diversification significantly offsets the tendency of larger banks to take on more risk. Hughes, Lang, Mester, and Moon (1996) find that geographic expansion is also associated with lower deposit volatility, higher expected return and risk for efficient banks (that is, movement along the expected return-risk frontier), and higher efficiency (that is, movement toward the frontier) for inefficient banks.

Consolidation and Corporate Governance

Consolidation has positive aspects—scale economies and risk diversification—but are all motivations benign? In my view, consolidation means that corporate governance issues in banking will become increasingly important. Evidence from the bank merger literature raises the question of whether bank mergers are value enhancing or driven by empire building. Corporate control problems in banking can exist because the relationship between bank owners (stockholders) and bank managers is a principal-agent relationship and their goals are not always aligned. Some mechanisms exist that help control the behavior of bank managers, but they may not be totally effective. These mechanisms include labor market controls (compensation, reputation) and capital market controls (stockholders' meetings, interbank loan and CD markets, market monitoring for large deposits, bank supervision, takeovers). The takeover market in banking is not necessarily effective in controlling bank management since informational problems may limit this control and restrictions on bank ownership (for example, prohibitions against the mixing of banking and commerce) can limit potential buyers.

We call managers who can resist market discipline entrenched. Entrenched managers can consume agency goods, including perquisites, avoiding effort (shirking), avoiding risk, engaging in discrimination, and/or empire building. Hughes, Lang, Mester, Moon, and Pagano (2003) look for evidence of managerial entrenchment in the relationship between ownership structure and financial performance of the highest-level bank holding companies and for evidence of empire building in the relationship between asset size, asset acquisitions, and asset sales and financial performance. The paper identifies entrenched management with poor bank performance and finds that entrenchment is associated with higher managerial ownership, better growth opportunities, worse financial performance, and smaller asset size. Selling assets is associated with better performance at all banks. Larger asset size obtained by internal growth (not by acquisition) is associated with better performance at all banks whether or not management is entrenched, which is evidence of scale economies. However, while acquiring assets is associated with better performance at banks without entrenched managers, it is associated with worse performance at banks with entrenched managers. Thus, while research suggests consolidation is associated with better performance on average, not all consolidation is value enhancing. Managerial incentives and good corporate governance need to be considered.

Regulatory oversight of consolidation is still warranted. None of the research results suggest that regulators should stop considering market power when considering whether to approve mergers since the results are based on those mergers that have been approved. Our research indicates that managerial entrenchment can lead to inefficient consolidation strategies by banks. This problem occurs particularly at banks that have high levels of managerial ownership and better growth opportunities. Thus, regulation should help ensure good governance. Supervisory oversight is likely needed to contain systemic risk. And regulatory oversight is perhaps needed to ensure that all market segments are served.

Table
Relative Shares of Total Financial Intermediary Assets

	1960	1970	1980	1990	2000	2003	2005
Insurance companies							
Life insurance	20.6	15.0	10.9	11.5	9.4	9.6	9.4
Property and casualty	3.0	2.7	3.5	3.5	2.5	2.4	2.6
Pension funds							
Private	3.9	3.2	4.3	4.7	3.2	2.7	2.2
Public (federal, state, and local government)	3.7	4.3	4.2	4.1	4.1	3.4	2.6
Finance companies and ABS issuers	4.8	4.7	5.1	7.5	12.2	12.9	14.0
Mutual funds							
Stock and bond	1.1	1.3	0.8	6.4	8.5	9.2	10.2
Money market	0.0	0.0	1.2	3.8	6.3	5.4	4.6
GSEs, REITs, mortgage companies	2.5	5.1	9.0	14.8	21.2	23.8	22.2
Depository institutions (banks)							
Commercial banks	39.1	42.1	39.1	30.2	25.4	23.7	24.6
Savings and loans and mutual savings banks	20.4	20.4	20.5	11.9	5.3	5.0	5.5
Credit unions	0.9	1.3	1.5	1.7	1.8	2.0	2.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Shares are shown in percent. Totals may not sum to 100 percent because of rounding.

Source: Federal Reserve System Flow of Funds Accounts

The Changing Nature of Bank Intermediation

As the banking industry has consolidated, despite the improved performance of U.S. banks, they have been losing market share to other types of financial intermediaries, perhaps as a result of increased competition. (See the table.) Commercial banks started losing market share to other intermediaries in the mid-1980s (or maybe even before). The market share of commercial banks has declined from almost 40 percent of financial intermediary assets in 1960 to under 25 percent in 2005. (The share of total assets in depositories, which include commercial banks, savings and loans, mutual savings banks, and credit unions, fell from 60 percent in 1960 to 32 percent in 2005.) Savers now place a larger share of their savings in mutual funds and pension funds—intermediaries that hold securities rather than loans as assets—and put less of their savings in the bank. Larger firms have been moving away from commercial bank loans toward open market securities like commercial paper or long-term bonds. The junk bond market is a source of open market financing for firms that could have borrowed only from banks before the 1980s. Houston and James (2001) constructed a panel data set documenting the declining share of bank loans in larger firms' balance sheets between 1980 and 1993. Their data show a constant share of bank debt and an increasing share of public debt as firms' leverage increased over the latter part of the period.

The decline in the market share of banking implies that the synergies between the liability and asset sides of the bank balance sheet have fallen. But the decline in banks' market share does not necessarily start on the asset side of the bank's balance sheet—it might start on the liability side. That is, it might be a result of a decline in demand for deposits, rather than a decline in demand for relationship lending. Berlin and Mester (1999) find empirical evidence of an explicit link between banks' liability structure and their distinctive lending behavior. Relationship lending is associated with lower loan rates, less stringent collateral requirements, a lower likelihood of credit rationing, more contractual flexibility, and reduced costs of financial distress for borrowing firms. Core deposits (which are rate inelastic) enable banks to offer relationship lending by insulating banks' cost of funds from economic shocks. So core deposits are a foundation of relationship lending that enables banks to insulate borrowers from economic shocks through multiperiod contracts that insure borrowers against adverse credit shocks. As banks lose access to core deposits (as savers move to mutual funds), they can offer less insurance (loan-rate smoothing) to borrowers. So banks lose market share to intermediaries that hold securities rather than loans. This process helps explain why we do not just see banks losing market share to entities offering close substitutes to bank loans and instead see a rise in entities that issue securities. The declining demand for deposits not only raises banks' cost of funds—banks have to pay market rates for funds (directly reducing the supply of bank loans)—but also reduces the feasibility of relationship lending by banks, reducing firms' demand for bank loans as they become less distinctive. In other words, the banking sector has been shrinking since banks loans have become less "special."

This specialness of banking can also be found in asset-based lending that a bank does, that is, operating loans. Mester, Nakamura, and Renault (forthcoming) show that deposits and asset-based lending are linked. Namely, deposits give banks an informational advantage. The paper shows empirically that information on the cash flows into and out of a borrower's transactions account can help a bank monitor the changing value of collateral that a commercial borrower has posted for an operating loan. We find that monthly changes in accounts receivable are reflected in changes in transaction account balances when the borrower has an exclusive banking relationship with the lender; that the number of prior borrowings in excess of collateral is an important predictor of credit downgrades and loan write-downs and the lender uses this information promptly; and that the lender intensifies monitoring as loans deteriorate—that is, loan reviews become lengthier and are more frequent.

Transactions account information is most readily available to commercial banks. So our results provide a rationale for the coexistence of deposit taking and lending within a single institution (that is, the commercial bank). But the "specialness" of commercial banks has likely fallen over time since declines in the cost of information processing and communication have lowered the cost of the duplication of bank services. Indeed, finance company lending has increased substantially relative to commercial bank lending to businesses over the past thirty years—from 17 percent in 1975 to 43 percent in 2005. According to Udell (2004), finance companies and other asset-based lenders typically require their borrowers to establish special bank accounts (cash collateral accounts) to keep track of loans collateralized by accounts receivable. This deposit account is used strictly for the purpose of receiving all remittances on collected receivables. If the asset-based lender is not a bank, then the account is set up at a bank that works with the asset-based lender. Remittances are sent to this bank and typically are held for several days by the bank to cover deposit collectability. Then the asset-based lender draws down these funds and applies them

to reducing the loan. The borrower sets up a separate checking account from which it makes disbursements. The asset-based lender can monitor the cash flows into and out of these accounts to obtain the same kind of information on its borrowers that a commercial bank lender can obtain from the borrower's checking account.

An asset-based lender needs to contract with another intermediary to maintain the transactions accounts while a bank maintains the checking account on its own, so the asset-based lender faces higher costs than a bank. But these costs have declined as information processing and communication costs have declined. The shrinking cost advantage of banks means less of an offset to the higher regulatory costs banks face when lending to riskier borrowers. This decline in the bank's cost advantage may help explain why finance companies specialize in lending to riskier borrowers, particularly more leveraged borrowers, as shown by Carey, Post, and Sharpe (1998), while banks lend to relatively less risky borrowers.

The implication of the studies by Berlin and Mester (1999) and Mester, Nakamura, and Renault (forthcoming) is that the decline in traditional commercial bank lending (that is, relationship lending) relative to transactions lending (securitization) may not reflect anything about a decline in demand for relationship lending. Instead, it may reflect a decline in demand for traditional commercial bank liabilities (core deposits), which makes relationship lending less feasible, or a decline in the information advantage inherent on the liability side of the commercial bank's balance sheet.

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