

STUDIES

Federal Reserve Bank of Dallas

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1991

1992

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Banks and Mutual Funds:

Implications for Banking and Monetary Policy

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After several years of financial difficulties, the U.S. banking industry appears to be on the road to a solid recovery. In 1992, banks enjoyed record earnings, significant increases in capital ratios, and continued improvement in asset quality—positive trends that continued into 1993. However, despite the dramatic improvement in the banking industry's financial condition, lending activity remains unusually weak. Adjusted for inflation, bank loans have declined for the past three years.

A number of explanations have been offered for this weakness in bank lending. Loan demand has been held in check as the result of deleveraging by both households and businesses, reflecting efforts to restructure balance sheets. Supply-side factors also are affecting bank lending as greater regulatory scrutiny and oversight have increased banks' cost of making loans. These developments make it increasingly difficult for banks to compete with their less regulated counterparts. Finally, the unusually wide spread between short- and long-term interest rates that has characterized the yield curve recently also may be affecting bank lending activity.

Whatever the reasons for the lack of lending activity, banks have responded in

two ways. First, they have sharply increased their holdings of U.S. government securities, possibly because banks lack viable lending opportunities. Banks also may move into securities if the introduction of risk-based capital requirements makes it more costly to extend loans. Second, in an attempt to maintain market share and increase fee income, banks have begun aggressive marketing of mutual funds. From almost no involvement in the mid-1980s, banks' offerings of mutual funds have grown at very rapid rates in the past few years.

These developments in the U.S. banking industry have important implications for both banking and monetary policy. Banks' move into the mutual funds business represents an attempt to diversify the business of banking into less traditional product lines. As with previous efforts to expand their scope, however, the regulatory environment in which banks operate will also need to evolve if they are to compete effectively in an increasingly competitive global financial marketplace. Moreover, as the second article in this issue investigates, banks' entry into new product lines could be a factor affecting money growth, which has important implications for the nation's monetary policy.

U.S. Banks: Recovering but Not Lending Much

Record earnings. After unprecedented difficulties beginning in the mid-1980s, the U.S. banking industry appears to have executed a remarkable turnaround. Record bank earnings of more than \$30 billion were posted in 1992, easily surpassing the previous record of \$25 billion set in 1988. Profitability also reached unprecedented heights in 1992, with an average return on assets for the year of 0.96 percent, the highest since the Federal Deposit Insurance Corporation was created in 1934. Table 1 shows the major contributors to the earnings position of U.S. banks over the three-year period ending with the first half of 1993. Improvements in net interest margins and

Table 1
Major Profitability Components for Insured U.S. Commercial Banks

	1991*	1993*	Effect on profitability (Basis points)
	(Percent of average assets)		
Net interest income	3.57	3.96	39
Noninterest income	1.76	2.08	32
Loss provision	.92	.51	41
Other noninterest expense	3.60	3.98	-38
Gains on securities	.04	.09	5
Taxes	.28	.54	-26
Extraordinary items, net	.04	.11	7
Net income	.61	1.21	60

*All figures are for the year as of June 30, annualized.

DATA SOURCE: Report of Condition and Income.

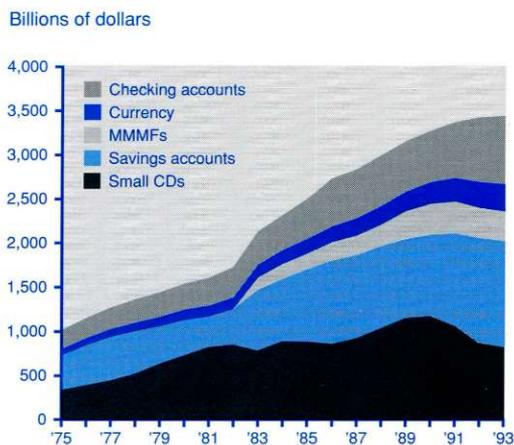
asset quality were major factors behind the strength in bank profitability, along with increases in noninterest income.

However, while banks have benefited from the sustained declines in interest rates and the widening spread between their cost of funds and their lending rates that began in 1990, the current interest rate environment has resulted in some unusual trends in the flow of deposits at banks. After reaching a peak in 1990, small time deposits at banks have fallen more than 20 percent. Some decline in these deposits is to be expected, given the sustained decline in interest rates since spring 1990. However, the magnitude of recent declines in small certificates of deposit at banks and other depository institutions was much larger than expected, based on historical relationships between small time deposits and interest rates. Chart 1 shows the movement of small time deposits and the other components of the M2 measure of the money supply. These recent movements in retail

deposits have been a source of concern to monetary policymakers, because the runoff of small CDs at banks and other depository institutions is considered by many analysts to be a major factor behind the current weakness in the growth rate of M2.¹

Lending remains weak. While lower interest rates can be expected to affect the

Chart 1
Components of M2



NOTE: 1993 data are for July.

DATA SOURCE: CITIBASE.

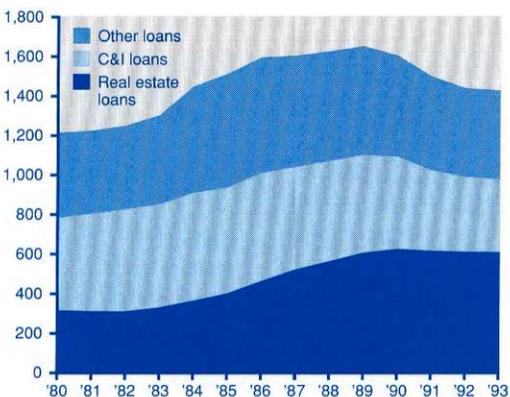
¹ M2 consists of the sum of currency in circulation, checking accounts, savings deposits, small time deposits, and money market mutual funds.

growth of time deposits, developments on the asset side of bank balance sheets may also shed some light on the unusual behavior of time deposits over the past few years. Chart 2 shows how total loans at U.S. banks, adjusted for inflation, reached a peak in 1989 and have declined by 14 percent since that time. Both demand and supply factors could be responsible for the lack of lending activity. Weak demand for bank loans has been cited by several studies as a significant factor in recent movements in bank lending.² Supply-side factors that have increased the cost to banks of extending loans are also at work. These factors—largely the result of the unprecedented banking difficulties of the mid- to late 1980s—include higher capital requirements, higher deposit insurance premiums, and increased regulatory oversight and scrutiny. Finally, the unusually wide spread between short- and long-term interest rates may also be affecting bank lending activity by reinforcing incentives for banks to shift into government securities and away from loans.³

One way banks have responded to this unusual environment is by increasing their holdings of government securities. Chart 3 shows how U.S. banks have restructured

Chart 2
Lending Declines at U.S. Banks

Billions of dollars, adjusted for inflation

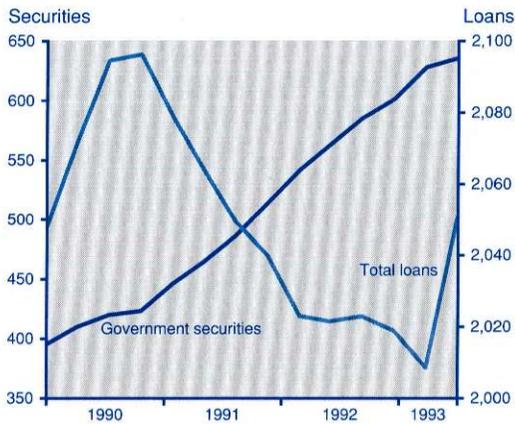


NOTE: 1993 data are for June 30.

DATA SOURCE: Report of Condition and Income.

Chart 3
U.S. Banks' Holdings of Government Securities and Loans

Billions of dollars



DATA SOURCE: Report of Condition and Income.

their assets away from loans and into government securities, with the portfolio share of securities increasing by more than 5 percentage points over the past two years.

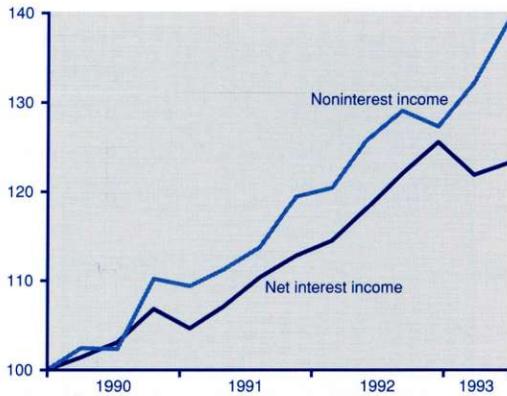
Banks also have responded to the current environment with attempts to bolster their noninterest income. In fact, as shown in Chart 4, over the past three years, noninterest income has grown at a fairly steady rate. Banks' traditional source of earnings—net interest income, or interest income less interest expense—also has increased but at a slightly slower pace. The divergence in the growth rates between noninterest income and net interest income at banks in recent years may indicate that U.S. banks are relying less on lending and more on nonlending activities to generate income. One example of this is the extra fee income earned from the increasing presence of banks in the mutual funds

² See Bermanke and Lown (1991) and Gunther, Lown, and Robinson (1991).

³ For more on how the yield spread may affect bank lending activity, see Short, Gunther, and Moore (1993).

Chart 4
Noninterest Income and Net Interest Income
at U.S. Insured Commercial Banks

Index, 1990:1 = 100



DATA SOURCE: Report of Condition and Income.

business. Mutual funds have grown quite rapidly over the past few years, with banks becoming important players in this industry. Banks' involvement in offering mutual funds is representative of the type of expanded powers that many analysts argue banks will need to compete effectively in the global financial marketplace.

Mutual Funds: A Brief Overview

A mutual fund is a company that pools the funds of its investors by selling shares to many individuals and then uses the proceeds to purchase a diversified portfolio of stocks and bonds. Mutual funds have been available to investors since the first fund was organized in Boston in 1924. In 1936, the Securities and Exchange Commission

⁴ An open-end investment company continuously issues and redeems its shares. Another type of investment company is the closed-end fund, which does not redeem its shares but usually offers a fixed number of nonredeemable shares that are bought and sold on a stock exchange.

⁵ For a description of the types of mutual funds available, see Investment Company Institute (1993).

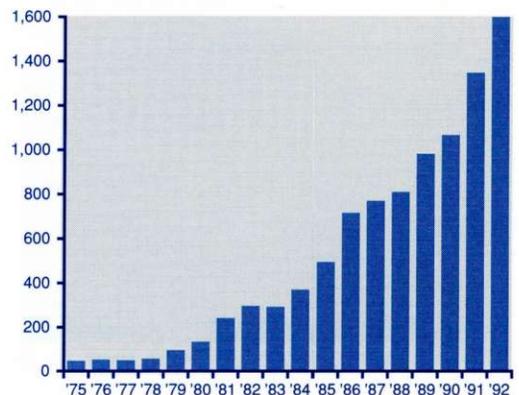
was directed by Congress to conduct a study of investment companies (or mutual funds). That study culminated in the Investment Company Act of 1940, which set the stage for the rules and regulations under which mutual funds could operate.

The number of shares in a mutual fund changes daily as the fund issues new shares when more money is invested in it and as the fund redeems shares from its investors.⁴ Mutual funds offer the advantages of diversification to their shareholders, as well as the benefit of lower transaction costs that result from buying large blocks of stocks and bonds. Originally, mutual funds invested only in common stocks, but many now specialize in a wide range of debt instruments as well. In addition, some funds may invest in a particular industry or may invest in particular segments of the economy, such as small businesses.⁵

In 1940, total mutual fund assets were \$448 million, with 296,000 shareholder accounts. Mutual funds reached \$1 billion in assets in 1945 and 1 million accounts in 1951. Since then, mutual funds have recorded impressive growth rates, especially over the past twenty years. Chart 5 shows the growth in mutual fund assets since the mid-1970s. Assets grew from a total of

Chart 5
Mutual Fund Assets

Total net assets, billions of dollars



DATA SOURCE: Investment Company Institute.

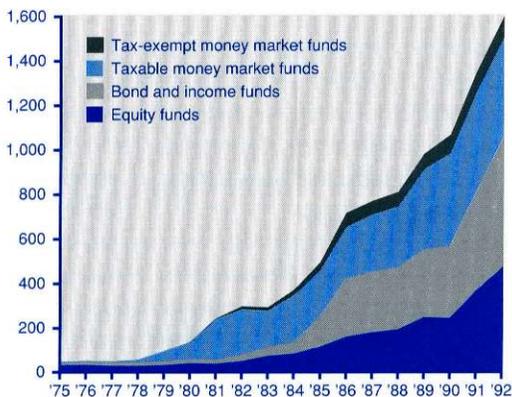
about \$50 billion in 1975 to more than \$1.5 trillion in 1992. The mutual fund industry is now the third largest financial industry in the nation, behind commercial banks and life insurance companies.

Initially, mutual funds only offered investors an opportunity to invest in the stock and bond markets. These so-called long-term funds are composed of equity funds that invest in stocks, and bond and income funds that invest in either corporate bonds or government bonds. In the early 1970s, though, an important variation—the money market mutual fund—was introduced. This type of mutual fund invests in short-term debt instruments of very high quality, such as U.S. Treasury bills, commercial paper, or bank CDs. A key feature of these funds is that their shareholders may write checks on the value of their holdings, although there generally are restrictions on both the minimum denomination and the number of transactions allowed. Tax-exempt money market funds, whose income is exempt from federal income taxes, were introduced in 1976.

Chart 6 shows the total net assets in these four major categories of mutual funds since 1975. All of these categories of mutual funds have enjoyed rapid growth over the

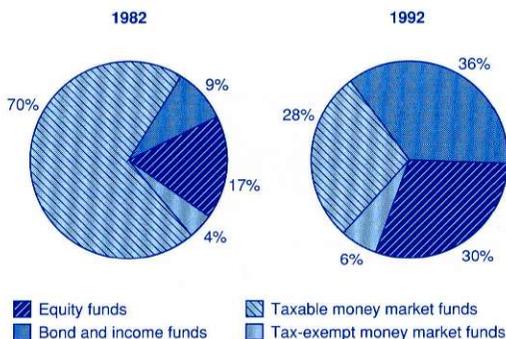
Chart 6
Mutual Fund Industry Total Net Assets

Billions of dollars



DATA SOURCE: Investment Company Institute.

Chart 7
Distribution of Mutual Fund Assets
by Type of Fund



DATA SOURCE: Investment Company Institute.

past two decades. Over the past ten years, though, there has been a significant shift in the distribution of mutual fund assets. In 1982, more than two-thirds of the assets in mutual funds were in taxable money market funds (*Chart 7*), while the longer-term mutual funds accounted for approximately one-fourth of total assets in mutual funds. By 1992, however, equity funds and bond and income funds together accounted for two-thirds of total net mutual fund assets, with the bond and income funds proving the most popular with investors and the taxable money market funds declining in relative importance.

Mutual funds have grown rapidly over the past two decades. And within this time span, investors seemed to prefer the long-term funds that invest in equities and bonds. Many analysts argue that much of the growth in mutual funds over the past few years can be traced to developments in the banking industry. The sharp decline in rates on retail deposits at banks has probably encouraged savers to seek higher yields through investments in mutual funds.⁶ At the same

⁶ It is also possible that the activities of the Resolution Trust Corporation in resolving insolvent thrift institutions contributed to the flow of deposits out of CDs and into mutual funds. See Duca (1992).

time, the weakness in lending activity may have altered banks' investment strategies. To maintain their market share and retain customer relationships, banks themselves developed avenues to offer mutual funds.

Banks' Offerings of Mutual Funds

Regulatory issues. The entry of banks into the mutual funds business involves several legal and regulatory issues. Shares in mutual funds are considered securities, not deposits. Therefore, both the courts and regulators have tended to restrict banks and bank holding companies from certain activities associated with mutual funds because of the Glass–Steagall Act.⁷ Over the past several years, as banks and their holding companies have increasingly sought entry into the mutual funds industry, some of these restrictions have been relaxed, while others have been maintained. The result is a rather complicated and still-evolving set of arrangements that govern bank involvement in the mutual funds industry.

Banks' recent move into mutual funds does not represent the first time they have sought an interest in this area of financial services. A 1971 Supreme Court ruling (*Investment Company Institute v. Camp*)

held that banks cannot organize an investment company (or what is commonly referred to as a mutual fund). This ruling precluded banks from providing these companies with either initial capital or management interlocks.

Despite these restrictions, banks and bank holding companies were able to become increasingly active in the mutual funds business. In 1972, amendments to certain Federal Reserve regulations authorized bank holding companies to act as investment advisors to mutual funds (later upheld by a 1981 Supreme Court decision, *Board of Governors of the Federal Reserve System v. Investment Company Institute*). The Office of the Comptroller of the Currency also has authorized national banks to act as investment advisors to mutual funds.⁸

Later decisions by both the courts and regulators expanded the scope of banks' brokerage activities by allowing banks and bank holding companies to establish discount brokerage services that enabled them to sell mutual fund shares, along with other types of securities.⁹ In 1987, the Comptroller authorized national banks to provide investment advice to their customers regarding mutual funds that are advised by affiliated investment advisors. In 1992, the Federal Reserve Board of Governors allowed bank holding companies or their subsidiaries to provide investment advice and other services to customers that invest in any bank-advised mutual fund. In allowing these activities, however, the Board requires that a number of disclosures be made to customers, including the nature of the bank holding company's relationship to the mutual fund and the fact that mutual funds are uninsured investment products.¹⁰

Characteristics of bank mutual funds.

Banks have managed to offer mutual funds while still adhering to the restrictions in the Glass–Steagall Act. Two types of mutual funds are available through banks. Nonproprietary funds are those offered by a bank that is serving as a broker or middleman for a single fund or a number of different funds. These types of mutual funds are

⁷ The Glass–Steagall Act, or the Banking Act of 1933, prohibits commercial banks from underwriting or dealing in corporate securities. The act, in effect, separated the activities of commercial and investment banks.

⁸ An investment advisor is employed by a mutual fund to offer professional advice on the fund's investments and asset-management practices.

⁹ In 1982, the Office of the Comptroller of the Currency authorized Security Pacific National Bank to establish a discount brokerage subsidiary with no geographic restrictions imposed on it. In 1983, the Federal Reserve Board granted similar authority to bank holding companies by permitting BankAmerica Corporation to acquire the discount brokerage firm of Charles Schwab and Company. These rulings by regulators were upheld by subsequent Supreme Court decisions.

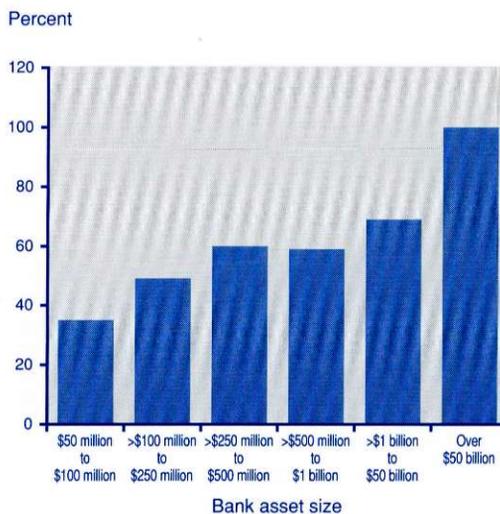
¹⁰ For more on these issues, see Mack (1993).

created by nonbank organizations that organize, underwrite, and provide investment advice to the fund. A bank's involvement in offering nonproprietary mutual funds can range from renting lobby space to an unaffiliated broker to selling the shares through a brokerage firm affiliated with the bank. By offering nonproprietary funds, banks are able to supplement their income by receiving a portion of any sales commission.

The second category of mutual funds available through banks is known as proprietary mutual funds. In this class of mutual funds, the bank or an affiliate actually serves as an advisor and administrator of a fund, but the fund itself is underwritten by an unaffiliated distributor and organized by an unaffiliated third party. The bank then markets these mutual funds through the bank's brokerage subsidiary or affiliate. The officers of these mutual funds cannot be associated with the bank, although they may be associated with nonbank affiliates of the bank holding company.

Despite some regulatory restrictions, commercial banks have become very aggressive participants in the mutual fund markets. Federal regulatory agencies do not collect any official data on banks' offerings of mutual funds. However, it has been estimated that in 1992, commercial banks accounted for approximately one-third of all net sales of mutual fund shares, and that mutual funds offered through banks held 11 percent of mutual fund assets, up from 2 percent in 1987.¹¹ Chart 8 indicates how banks' offerings of mutual funds varied by bank asset size. Based on a 1992 survey of almost 7,000 banks across the United States, banks' offerings of mutual funds appear to be positively related to the size of the bank.¹² About 35 percent of banks in the sample with assets of \$50 million to \$100 million offer mutual funds, while virtually all banks with assets exceeding \$50 billion offered either proprietary or nonproprietary mutual funds. Chart 9 reveals that smaller banks tend to offer a greater proportion of nonproprietary funds, while

Chart 8
Proportion of Banks Offering
Mutual Funds, 1992



DATA SOURCE: American Brokerage Consultants.

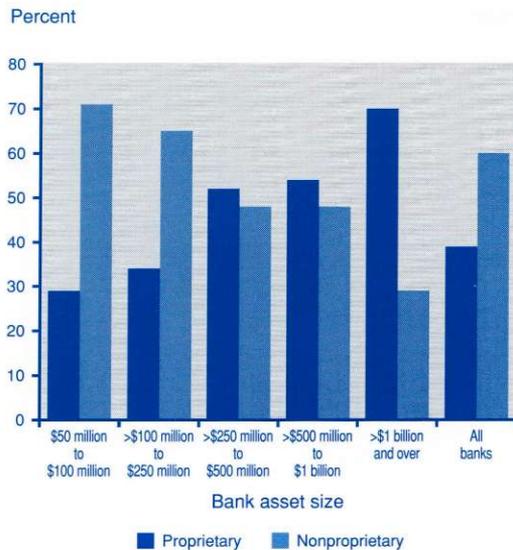
the larger institutions appear to favor the proprietary mutual funds.

From very little involvement several years ago, banks are emerging as important providers of mutual funds. Part of the push by banks into mutual funds represents an attempt to maintain market share and to boost earnings in the face of continued relative declines in the role of commercial bank lending in U.S. financial markets. Whether the source of these lending declines is related to a lack of demand for bank loans or to increases in the cost of supplying loans, many analysts have expressed concern that given the current structure of the U.S. banking system, banks may continue to play a smaller role in the direct provision of credit to businesses. If these trends

¹¹ *The Economist* (1993, 74).

¹² Thrift institutions can also offer mutual funds. However, their involvement has been substantially less than that of banks. For example, almost half of the banks in this sample offer mutual funds, while slightly less than one-fifth of thrift institutions surveyed offer these services.

Chart 9
Proportion of Banks Offering Proprietary and Nonproprietary Mutual Funds, 1992



DATA SOURCE: American Brokerage Consultants.

continue, they could present important challenges for economic policymakers with regard to both banking and monetary policy.

Some Implications for Banking and Monetary Policy

Bank regulation and bank competitiveness. The competitive structure of the entire financial system has undergone radical change over the past two decades. Chart 10 shows one aspect of the changing nature of U.S. financial markets. The proportion of total private-sector debt financed

by bank loans has declined fairly steadily since its peak in the mid-1970s. Increases in both national and international competition, brought about in large part by regulatory restrictions and by advances in technology, have hurt U.S. banks' profitability and competitive position. Glauber (1993, 34) summarizes this process:

Twenty-five years ago, banks had the financial services playing field pretty much to themselves. Today it is very crowded. Automobile companies through finance subsidiaries (for example, GMAC, Ford Credit) offer auto loans to consumers nationwide. Fidelity and other mutual fund groups offer nationwide deposit and checking accounts through money market mutual funds. Merrill Lynch offers mortgages nationwide, while General Electric, through General Electric Credit Corporation, makes small business loans nationwide. And Goldman, Sachs offers commercial paper—the equivalent of bank loans for large, high-quality corporations—nationwide. Confronting this competition, banks are prohibited from operating branches across state lines and generally from dealing in securities....Structural changes such as these require structural reform.

Structural reform efforts have been undertaken recently. The Federal Deposit Insurance Corporation Improvement Act (FDICIA) was passed in December 1991 for the dual purposes of recapitalizing the deposit insurance fund and strengthening bank supervision to prevent a replay of the banking difficulties of the 1980s. However, FDICIA has been the source of much controversy. Industry analysts and the academic community have expressed concern that the act will further erode the U.S. banking industry's competitive position by sharply increasing banks' regulatory burdens in an effort to constrain risk-taking at federally insured depository institutions.¹³

Prior to the passage of FDICIA, the U.S. Department of the Treasury offered a reform package designed to improve the competitiveness of the banking system. Included in the recommendations were three fundamental structural changes.¹⁴ The first was

¹³ For more on the FDICIA, see Kaufman and Litan (1993) and Short and Robinson (1992).

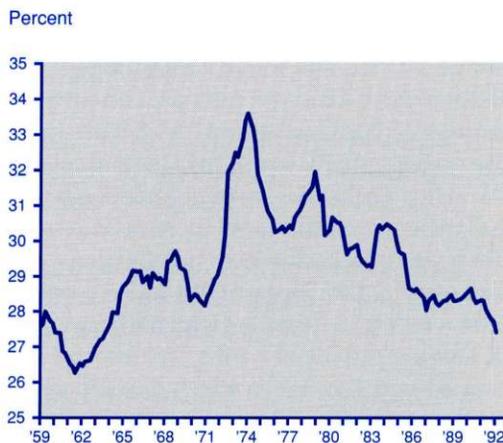
¹⁴ See U.S. Department of the Treasury (1991). The Treasury report was mandated by the Financial Institutions Reform, Recovery, and Enforcement Act of 1989. The proposal also contained other, related issues, including the overextension of deposit insurance, a fragmented regulatory system, and an undercapitalized deposit insurance fund.

the repeal of the McFadden Act restrictions on interstate branching so that banks could enjoy the efficiency gains and geographic diversification benefits associated with opening branches across state lines. The second structural change recommended was repeal of the Glass–Steagall Act and modification of the Bank Holding Company Act of 1956 to permit a bank, through the holding company structure, to affiliate with firms engaged in offering a broad array of financial services. Safety and soundness concerns would be addressed through a system of “fire walls” that would be erected between the federally insured bank and these affiliates. Moreover, only well-capitalized banks would be allowed to engage in such activities. Finally, the Treasury recommended allowing commercial ownership of banks as a way to introduce even more diversification into the banking industry, which would create strong financial services companies capable of competing on more equal footing with financial firms around the world. Once again, Glauber provides a succinct summary of what these reform measures might achieve.¹⁵

The combination of reforms [was] intended to have two broad effects. First, they would resize and reshape an industry that is strikingly and dysfunctionally fragmented. The 11,500 banks in the United States, compared with 200–300 in Britain and Germany, amount to fifty banks per million people, versus six banks per million people in the other two countries. For the United States this has meant recurrent excess capacity and operating inefficiencies leading to destructive competition in lending to ever less credit-worthy customers. Second, the reforms would allow banks to compete with other financial services companies for the profitable business they have lost, including securities underwriting, mutual fund management, and insurance product sales.

The Treasury’s reform proposals would have offered banks greater opportunities to compete on a more level playing field with their nonbank competitors. Although FDICIA did not implement these proposals, recent

Chart 10
Ratio of Bank Debt to Total Private Debt



DATA SOURCE: CITIBASE.

statements by the comptroller of the currency indicate that legislation may be introduced that includes proposals for interstate branching and some expanded powers for banks.¹⁶ Continued efforts to address the secular decline in the nation’s banking industry should serve to increase the flow of credit, especially to small businesses, whose primary source of financing is banks. Moreover, attempts to strengthen the competitive position of the nation’s banks may have important implications for monetary policy, because it is possible that a less competitive banking system has presented some difficulties in the Federal Reserve’s conduct of monetary policy.

Bank competitiveness and monetary policy. For the past several years, growth in the M2 measure of the money supply has been unusually weak. Until recently, the Federal Reserve has used this measure of the money supply as its guide to conducting monetary policy, because it bore a close relationship to overall economic activity. However, that relationship now

¹⁵ See Glauber (1993, 36).

¹⁶ See Rehm (1993).

appears to have broken down in the sense that M2 growth has been much weaker than what would be expected based on historical relationships between M2, economic activity, and interest rates. Many analysts have cited the unusual conditions in the U.S. banking industry as factors in the puzzling behavior of M2. In particular, the sharp decline in small time deposits and the concomitant rapid increase in mutual funds are factors that may be affecting monetary policy. Because these developments reflect, at least in large part, the lack of lending activity at banks, interest has increased in the extent to which developments on the asset side of banks' balance sheets can affect monetary policy. The next article in this issue addresses this topic.

Conclusions

In many respects, 1992 was a banner year for the U.S. banking industry. Banks earned record profits and strengthened their capital positions, while at the same time recording large reductions in their

troubled assets. But despite these healthy trends, bank lending activity remains depressed. Both demand- and supply-side factors lie behind these lending declines, which appear to have accelerated the relative decline in the importance of banks in financial markets. In an attempt to maintain market share, banks have responded by offering mutual funds to their customers. Despite a somewhat cumbersome regulatory structure that makes it more difficult for banks than other institutions to offer these types of financial services, banks' role in the mutual funds industry appears to be growing quite rapidly. These developments call attention once again to efforts to reform the U.S. banking industry, with the goal of maintaining safety and soundness while enhancing banks' competitiveness in an increasingly integrated financial marketplace. Moreover, these developments in the banking sector appear to have played a role in affecting the course of money growth, making it more difficult to interpret movements in current measures of the money supply.

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The Relationship Between Bank Lending and Money Growth:

Were Things Different in the 1980s?

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Growth of M2 has been unusually weak in recent years. In fact, this broad monetary aggregate has been either at or below the lower level of its targeted growth path since early 1992 (*Chart 1*).¹ At the same time, bank lending activity has also exhibited unprecedented weakness. In inflation-adjusted terms, the total value of bank loans has declined by about 7 percent since the end of 1989. Bank loans have continued to decline even though the U.S. recession ended in the spring of 1991. Many analysts have pointed to these bank lending declines as evidence of a credit crunch that stems from the difficulties experienced by the banking sector from the mid-1980s until fairly recently. The unusual weakness in bank lending activity, coupled with continued weak growth in the M2 measure of the money supply, has raised the possibility of a connection between these two economic variables. Has the lack of bank lending activity affected the course of money growth in the U.S. economy?

Two contrasting views about the effect of bank lending on money growth have emerged. One view states that increases in bank lending are not a causal factor in M2 growth but rather, just the opposite. In the traditional monetarist view, increases in economic activity that are generated by

increases in money growth ultimately lead to an increase in bank lending activity. Therefore, increases in lending do not lead to increases in M2 but are instead the result of prior increases in the money supply.

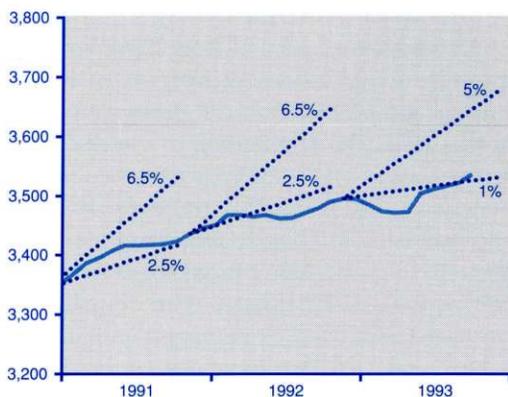
An alternative view of how bank lending activity and money growth are related stresses the role of financial deregulation. In this view, the elimination of interest rate restrictions on various types of consumer deposits in the late 1970s and early 1980s allowed bank lending to affect money growth. In particular, a large share of the components of M2—small time deposits—can now be treated as managed liabilities in the same way that large time deposits (those over \$100,000) have been since their interest rate restrictions were removed in the early 1970s. By varying the yield offered on small time deposits, banks can now actively manage components of M2 in response to their funding needs. If banks are now using components of M2 as part of their managed liabilities, then the supply of M2 could be affected by the amount of bank lending activity. In addition, the emergence of widespread banking difficulties in the mid-1980s could be expected to heighten this effect of bank lending on M2. An adverse financial shock to the U.S. banking system may have made banks increasingly unable or unwilling to extend loans, leading banks to bid less aggressively for deposits. In this deregulated environment, then, monetary policy could be affected by developments on the asset side of the banking system's balance sheet.

The periods before and after financial deregulation provide an opportunity to investigate these two viewpoints about bank lending activity's effect on money growth. We might expect that before the advent of deregulation in the early 1980s, bank lending activity would not have

¹ M2 consists of the sum of currency in circulation, checking accounts, savings deposits, small (less than \$100,000) time deposits, and money market mutual funds.

Chart 1
M2 and Target Growth Cones

Billions of dollars



DATA SOURCE: Federal Reserve Statistical Release H.6.

played an important role in M2 growth. Banks, at least in the short run, would be more or less forced to accept the deposits that their customers chose to supply at the regulated rates. If, however, banks now use components of M2 as managed liabilities, then we might expect to find bank lending to be a significant factor in affecting M2 growth after the early 1980s. Moreover, the relationship between bank lending and the narrow monetary aggregate M1 should not be affected by financial deregulation, because M1 does not contain any managed liability components.²

Monthly data for 1959–92 are used in an attempt to estimate the impact of bank lending on money growth, measured as M1 and M2. I first examine the relationship between bank lending and M2 growth in the period before financial deregulation and then look for any changes in this relationship following deregulation. I also examine movements in bank lending and

money growth since the onset of banking difficulties to judge whether this development heightened any impact of bank lending activity on M1 or M2 growth.

The results indicate that before deregulation, bank lending did not greatly affect money growth. Even after the phase-in of financial deregulation, I do not find bank lending affecting M2 growth significantly. However, I find some evidence that after the onset of widespread banking difficulties, bank lending activity emerged as an important factor in M2 growth. Finally, in none of the periods I examine is M1 growth affected by bank lending activity. These results suggest that the combination of banking-sector difficulties and the increase in banks' ability to compete for funds in M2 may have had an impact on the growth rate of the M2 measure of the money supply. But, as expected, developments on the asset side of the banking system's balance sheet do not appear to be a factor in M1 growth.

Bank Lending and Money Growth

Two views regarding the relationship between bank lending and money growth can be identified. The first of these views is a traditional monetarist interpretation of the connections between money growth and bank lending activity. According to this view, the Federal Reserve's ability to control the growth rate of the money supply is not related to banks' lending activity. As Friedman (1992) points out, even in an extreme case in which banks use reserves provided by the Federal Reserve only to purchase government securities, these securities are matched by increases in deposits on the liability side of the balance sheet, just as an increase in loans would be matched by increases in deposits. Friedman sums up this view by stating that "banks' unwillingness or inability to make loans does not hinder the Fed from increasing M2. (To give a historical example: M2 rose by 26 percent from 1934 to 1936; loans by commercial banks fell a trifle.) In any event, increases in loans by banks are

² M1 consists of currency in circulation plus checkable deposits, which are not generally used by banks as part of their managed liabilities. See Boyd and Gertler (1993) for a discussion of the characteristics of bank deposits.

generally a result of increases in spending stimulated by higher monetary growth, rather than a cause of the greater spending.” Thus, under this interpretation, bank lending would not be expected to play much of a role in explaining money growth. Rather, money growth is viewed as the cause of bank loan growth, because increases in the money supply lead to increases in overall spending, which then lead to an increase in loan demand.³

A contrasting explanation of the relationship between money growth and bank lending stresses that the financial deregulation of the late 1970s and early 1980s has altered the relationship between lending activity and M2. Before mid-1978, all of the time and savings deposits included in M2 were subject to Regulation Q restrictions in the form of ceilings on the interest rates banks could offer on these deposits. Then, beginning in mid-1978, banks were allowed to offer small certificates of deposit with interest rates tied to the U.S. Treasury bill rate. The Depository Institutions Deregulation and Monetary Control Act of 1980 hastened the deregulation process by calling for the gradual phase-out of Regulation Q ceilings on all deposit accounts (with the exception of demand deposits). Thus, by the early 1980s, the deregulation of deposits included in M2 was in full swing. Some economists have found evidence that banks then began to treat retail deposits in M2 more like managed liabilities, or more like large CDs have been treated since their interest rate restrictions were removed in the early 1970s. That is, banks began to actively manage their small time deposits to fund lending activity, rather than passively accept the amount depositors chose to offer at regulated yields.⁴ As a result, M2 growth in the postderegulation environment may now be more affected by developments on the asset side of the banking system's balance sheet than was the case prior to elimination of Regulation Q interest rate ceilings.

Banking difficulties experienced beginning in the mid-1980s could also be ex-

pected to enhance the effects of bank lending on M2 growth. Since the mid-1970s, there has been a sustained downward trend in the amount of intermediation through banks, with little discernible effect on M2 growth. However, the declining role of banks in the intermediation process was accelerated by the banking difficulties of the 1980s and has manifested itself in a marked slowdown in bank lending activity.

Weak loan demand has been an important factor behind the recent sharp slowdown in lending activity by U.S. banks.⁵ But higher capital requirements, higher deposit insurance premiums, and increased regulatory oversight and scrutiny—all outgrowths of the unprecedented banking problems of the 1980s—have frequently been cited as important factors in banks' declining role in financial markets.

If banks are playing a lesser role in the credit channeling process, due to either supply-side or demand-side factors, then they would tend to depress deposit rates and issue fewer deposit liabilities.⁶ The Federal Reserve summarized this process in its 1993 *Monetary Policy Report to the Congress*. “Banks' unaggressive pricing of deposits reflected substantial paydowns of

³ For an examination of the relationship between the money supply and economic activity, see Friedman and Schwartz (1963). Mishkin (1992) provides an overview of the role of banks in the money-supply creation process.

⁴ See Judd and Trehan (1987), Motley (1988), and Higgins (1992) for the changing nature of small time deposits in M2 before and after deregulation.

⁵ See Gunther, Lown, and Robinson (1991) and Bernanke and Lown (1991) for the role of economic activity in explaining bank lending declines.

⁶ One factor that could lie behind weak money growth is anemic reserve growth. However, reserves have grown at a considerable pace. Since our current economic recovery began in spring 1991, total reserves have increased at a compound annual rate of more than 10 percent, while the monetary base has increased more than 8 percent, much faster than in previous economic recoveries.

bank debt by households and businesses, which kept loan demand low and banks' need for funds to finance them quite limited. In addition, banks and thrift institutions have been discouraged from going after deposits by the rising cost of issuing deposits to make loans; among the factors accounting for this increase have been increases in deposit insurance rates and higher capital ratios occasioned by market and regulatory forces."⁷

The periods before and after the introduction of deposit interest rate deregulation provide an opportunity to test whether the asset side of the banking system's balance sheet can affect money growth. To investigate this issue, I examine the relationship between bank lending activity and money growth, after accounting for other factors—such as economic activity and interest rates—that may affect these two variables. If the traditional monetarist proposition holds, then bank lending should not be important in explaining subsequent money growth either before or after deregulation, because according to this view, money growth is the cause of bank loan growth. However, if variations in bank lending are found to be important in accounting for

movements in the money supply after the period of financial deregulation, then this would be consistent with the view that banks are treating components of M2 more as managed liabilities, which implies that bank lending can affect a broad monetary aggregate such as M2.

The effect of the banking sector's difficulties on M2 growth can also be examined by investigating the relationship between bank lending and M2 growth since the emergence of banking difficulties in the mid-1980s. The effects of developments on the asset side of banks' balance sheets on M2 growth could be enhanced during a period of unusual financial-sector distress. Finally, as a check on the robustness of my results, I estimate the relationship between bank lending activity and M1 growth. Because the accounts in M1 are not used as managed liabilities, I do not expect to find a significant effect on M1 from bank lending in either the prederegulation or postderegulation period. For the same reason, I do not expect bank lending to affect M1 growth during the period associated with banking-sector difficulties.

Empirical Results

Sample periods analyzed. I investigate the relationship between money supply growth and bank lending activity using monthly data for the period 1959–92.⁸ Following Judd and Trehan (1987), I estimate this relationship over two different time periods. The prederegulation period is 1959–77, because during this period Regulation Q ceilings were in place on the components of M2. The postderegulation period extends from July 1981 through 1992 and includes the period when Regulation Q ceilings were being eliminated on various types of deposit accounts.⁹ I also examine how M2 and bank lending might be related since the onset of banking difficulties, using the period 1985–92. It was during this period that U.S. banks began to experience increased financial difficulties, first on a regional basis in the Southwest, then on

⁷ Board of Governors (1993b, 186). Duca (1993) presents a theoretical argument of how a less competitive banking system can affect money growth.

⁸ Lending activity at thrift institutions would also be expected to play a role in the money supply process in a manner analogous to bank loans. However, data on thrift loans were not available until relatively recently.

⁹ As in Judd and Trehan (1987), the postderegulation sample begins in July to avoid the portfolio readjustments that might have arisen due to the introduction of nationwide NOW accounts. Also, dummy variables were included in the estimation for the time period December 1982–February 1983 to account for the introduction of money market deposit accounts and Super-NOW accounts. Starting the postderegulation period in July 1981 also avoids the possible distortions arising from the change in Federal Reserve operating procedure in 1979 and the imposition of credit controls in March–July 1980.

a more widespread basis as difficulties surfaced in the Northeast and on the West Coast. The number of banks on the FDIC's "problem list" peaked in 1987 at 1,575, representing 11 percent of insured U.S. banks. Problems at larger institutions also emerged during this time, with the assets of commercial banks on the problem list topping out at \$610 billion in 1991.¹⁰ Recently, these problems have abated, and the U.S. banking industry has been enjoying a sustained recovery.

Statistical model: Does money predict loans or vice versa? In an effort to investigate the relationship between the money supply and bank lending, I construct statistical models designed to estimate the extent to which past movements in bank loans are important in accounting for money supply growth and, conversely, the extent to which past movements in the money supply are important in explaining bank lending activity.

If the strict monetarist position holds, then in both the prederegulation and post-deregulation periods, prior money growth, as measured by M2, should be important in explaining bank lending activity, since monetarists believe increases in the money supply stimulate economic activity and loan demand. However, I would not expect to find that prior growth in bank loans is important in predicting M2 growth. Alternatively, because of regulations in place during the prederegulation period that prohibited the components of M2 from being used as managed liabilities, I would not expect developments on the asset side of banks' balance sheets to affect M2. However, if, in the postderegulation period, banks are using the components of M2 (especially small time deposits) as managed liabilities, then I would expect to find that bank lending activity is an important factor in explaining subsequent M2 growth. I also expect that bank lending activity is important in accounting for M2 growth during the period of banking-sector difficulties. Finally, an examination of the relationship between lending and the narrow monetary

aggregate M1 might also shed some light on the role of financial deregulation in money growth. I would not expect the relationship between money growth, as measured by M1, and bank lending activity to be affected by the ability of banks to offer market rates on deposits, because banks do not tend to use M1 as part of their managed liabilities.

In estimating the relationship between bank lending activity and money growth, I also need to control for other factors that may affect these two variables. In the statistical tests that follow, I include a measure of economic activity and interest rates, in addition to bank lending and the money supply. The economic activity measure is U.S. personal income, while the interest rate used is the federal funds rate.¹¹ The top panel of Table 1 shows the statistical significance of these variables in predicting M2 growth. The entries in the table are marginal significance levels derived from the results of testing the hypothesis that past values of the variable in question are not important in explaining current money growth. A small number implies that I am fairly confident, in a statistical sense, that the hypothesis is rejected. A marginal significance level of 0.05 or less is usually indicative of statistical significance. For example, in the prederegulation period, 1959–77, the marginal significance level of lagged values of M2 in predicting current M2 is less than 0.01. This implies that I am more than 99 percent confident that I can reject the hypothesis that lagged values of M2 are not important in helping to predict current M2. This result is not too surpris-

¹⁰ Duca (1992) examines how the activities of the Resolution Trust Corporation in resolving insolvent thrifts may have affected M2 growth.

¹¹ Augmented Dickey–Fuller tests indicate that each variable used in the statistical tests is difference-stationary. Therefore, all variables are expressed as the first-difference in the logs of the series, with the exception of the interest rate variables, which are expressed as the difference in levels. The lag length for each equation is determined using a chi-square test suggested by Sims (1980).

Table 1
Relationship Between Bank Lending and M2

Variables	Marginal significance levels of variables predicting M2		
	1959-77	1981-92	1985-92
Income	.58	.37	.46
M2	.00	.00	.00
Loans	.91	.57	.00
Fedfunds	.00	.00	.00

Variables	Marginal significance levels of variables predicting loans		
	1959-77	1981-92	1985-92
Income	.12	.27	.71
M2	.00	.11	.13
Loans	.00	.02	.08
Fedfunds	.03	.00	.00

Lag lengths: 1959-77 = 8 lags
 1981-92 = 8 lags
 1985-92 = 4 lags

NOTES: Income is total U.S. personal income; M2 is the broad monetary aggregate. Loans are total loans and leases at commercial banks, and fedfunds is the federal funds rate. All data are obtained from *Citibase*, with the exception of the loans series prior to 1973, which was obtained from the *Statistical Abstract of the United States*.

ing, because it is often the case that one of the best predictors of a current economic variable is prior values of that very series. The first column of numbers in Table 1 also shows that movements in the federal funds rate are statistically significant in predicting M2, while income is not. More important for our purposes, as expected, prior movements in bank lending activity are not statistically significant in accounting for M2 growth during this prederegulation period.

The bottom panel of Table 1 shows the marginal significance levels of these same variables in predicting bank lending. In the prederegulation period, prior movements in loans, M2, and the federal funds rate are important in predicting lending activity, with at least a 95 percent certainty or greater. Thus, in the 1959-77 period, bank lending was not an important factor in subsequent M2 growth. Rather, as Friedman suggests,

during this period, it was increases in M2 that contributed to lending activity.

The second column of numbers in Table 1 shows marginal significance levels of those variables in predicting M2 and loans in the postderegulation period. Because banks could offer market interest rates on the components of M2 during this period, it might be expected that the broad monetary aggregate would be more influenced by bank lending activity. However, the marginal significance level of loans in predicting M2 is only 0.57, indicating that lending activity was not a statistically important factor in predicting subsequent M2 growth during this period. Also, from the bottom panel, I am now only about 90 percent confident that past values of M2 are significant in explaining bank lending activity. These results do not offer much support for the hypothesis that the ability to

treat components of M2 as managed liabilities has significantly affected M2 growth. But it also appears that the causal role of M2 growth in loan activity was diminished during the postderegulation period.¹²

Did banking difficulties play a role?

Bank lending activity is not found to be statistically significant in affecting M2 growth in the postderegulation environment. I can make use of these same statistical techniques to judge the extent to which the emergence of banking difficulties may have heightened bank lending's role in money growth. Whatever the underlying causes of lending declines at banks, even though banks are now free to offer market rates on their retail deposits, with a smaller volume of lending activity to fund banks have not pursued retail deposits as aggressively as in previous periods, possibly making M2 more susceptible to variations in bank loans.

The third column of numbers in Table 1 reveals which variables are statistically significant in explaining M2 and loans with the onset of banking difficulties.¹³ In this period, we see that lagged values of M2 and the federal funds rate are statistically significant in explaining current M2. Even more importantly, we can see that past bank lending activity is now a significant factor in predicting subsequent M2 growth. That is, I am more than 99-percent confident that prior movements in bank loans are a significant factor in predicting current M2 growth during the period associated with banking-sector distress. In the bottom panel, prior movements in the federal funds rate, and possibly in loans, would be considered statistically important in explaining lending at banks. These results suggest that the onset of banking difficulties in a period in which banks can bid for retail deposits has resulted in a statistically significant effect of bank lending on growth in the broad monetary aggregate.

I can also estimate the same model, but with an interest rate spread variable in place of the federal funds rate. The spread variable is defined as the difference between the rate on ten-year Treasury bonds and

three-month Treasury bills. Some analysts argue that the term structure of interest rates may affect growth in the broad monetary aggregate. This may be especially true in the recent past, given the unusually wide spread between long- and short-term interest rates. It is also possible that this steep yield curve may be an important factor in bank lending activity if it encourages banks to substitute long-term government securities for loans.¹⁴ Table 2 reports marginal significance levels of the variables that might predict M2 growth and bank loans, but with this spread variable used as the interest rate measure. As before, from the top panel of Table 2, prior growth in loans is not statistically significant in predicting M2 growth in either the prederegulation or postderegulation environment. However, in contrast to the prior results, in the period coinciding with banking-sector difficulties, lending is not a statistically significant variable in M2 growth. Questions about the importance of the spread variable, though, arise from the fact that this variable is insignificant in this period, although it is significant in the earlier time

¹² The introduction of money market certificates in June 1978 and small saver certificates in July 1979, with interest rates tied to short-term U.S. Treasury securities, represented the first time that banks could bid for retail deposits. These instruments proved very popular when introduced, especially among medium- and small-sized commercial banks (Simpson and Parkinson 1984). However, deregulation continued into the early 1980s through such avenues as lower minimum denominations and shorter maturities. By October 1983, all interest rate restrictions and minimum denomination requirements on time deposits of more than seven days were eliminated. Therefore, I also estimated the models beginning in November 1983, but could not find a statistically significant effect of bank lending on money growth.

¹³ To judge the robustness of the results with regard to banking difficulties, I also estimated the models beginning in 1987 and 1988, which did not affect the conclusions.

¹⁴ See Feinman and Porter (1992) and Short, Gunther, and Moore (1993).

Table 2
Relationship Between Bank Lending and M2

Variables	Marginal significance levels of variables predicting M2		
	1959-77	1981-92	1985-92
Income	.88	.12	.15
M2	.00	.00	.00
Loans	.85	.46	.37
Spread	.00	.03	.43

Variables	Marginal significance levels of variables predicting loans		
	1959-77	1981-92	1985-92
Income	.20	.53	.95
M2	.00	.22	.02
Loans	.00	.00	.01
Spread	.43	.07	.10

Lag lengths: 1959-77 = 8 lags
 1981-92 = 7 lags
 1985-92 = 3 lags

NOTES: Spread is the difference between the yield on ten-year Treasury bonds and the yield on three-month Treasury bills. For other variables, see notes to Table 1.

periods.¹⁵ And, from the bottom panel of Table 2, the spread variable is not statistically significant in the conventional sense in any of the time periods.

How are bank loans and M1 related?

I find some evidence that financial deregulation coupled with banking difficulties appears to have provided an avenue for lending activity at banks to affect money growth, as measured by M2. Further evidence on the robustness of my results can be obtained by examining the relationship between bank lending activity and the narrow monetary aggregate, M1. Although Regulation Q ceilings no longer apply to most accounts in M1, because the components of the narrow

monetary aggregate are mostly transactions-type deposits and less sensitive to interest rate variations, I would not expect banks to use M1 as part of their managed liabilities. As a result, lending activity should not be a factor in affecting M1 growth, either before or after deregulation or in periods of financial-sector difficulty.

Table 3 reports marginal significance levels from statistical tests of the relationship between bank lending and M1 growth. As before, I also control for economic activity and interest rates in these tests. From the top panel of Table 3, prior movements in bank loans are not an important factor in predicting growth in the narrow monetary aggregate, either before or after the introduction of deregulation. Moreover, in the period coinciding with banking difficulties, I do not find that lending activity played a significant factor in accounting for M1 growth. The bottom panel of Table 3 shows that in the 1959-77 period, prior M1 growth was

¹⁵ I also estimated the same models found in Tables 1 and 2, but with the addition of total reserves in the statistical models. My conclusions are not affected, as revealed in the tables in the Appendix. The same conclusions are reached if the monetary base rather than reserves is included in the statistical tests.

Table 3
Relationship Between Bank Lending and M1

Variables	Marginal significance levels of variables predicting M1		
	1959-77	1981-92	1985-92
Income	.00	.15	.60
M1	.00	.00	.00
Loans	.53	.41	.68
Fedfunds	.00	.00	.03

Variables	Marginal significance levels of variables predicting loans		
	1959-77	1981-92	1985-92
Income	.48	.61	.82
M1	.00	.36	.76
Loans	.00	.00	.00
Fedfunds	.79	.00	.05

Lag lengths: 1959-77 = 6 lags
 1981-92 = 4 lags
 1985-92 = 7 lags

NOTES: M1 is the narrow monetary aggregate. For other variables, see notes to Table 1.

important in predicting loan growth, as were past values of bank loans. However, the importance of M1 disappears in the later time periods. As expected, financial deregulation did not appear to alter the effect of bank lending activity on M1 growth.¹⁶ Comparing Tables 1 and 3 though, reveals that the impact of M1 growth on loan activity did appear to change more dramatically after deregulation than was the case with M2, perhaps reflecting the changing relationship between M1 and overall economic activity beginning in the early 1980s.¹⁷

Policy Implications

Some of the statistical tests employed for this article suggest that a combination of financial deregulation and banking-sector difficulties altered the relationship between bank lending activity and M2 growth. I find some evidence consistent with the hypothesis that adverse shocks to the banking system, coupled with the ability to treat

retail deposits in M2 as managed liabilities, have been factors in the slowdown in M2 growth.¹⁸ Until recently, the Federal Reserve has emphasized the use of the M2 measure of the money supply as a guide in its conduct of monetary policy. M2 was the primary information variable for monetary policy because its overall relationship with economic activity was fairly stable and predictable, at least until several years ago. Recently, that relationship has become

¹⁶ I also estimated the same model as in Table 3, but with the addition of total reserves. My conclusions are not affected, as revealed in Appendix Table A3.

¹⁷ For more on the changing relationship between M1 and economic activity, see Friedman (1988).

¹⁸ A more conclusive test of this hypothesis would entail examining how M2 would have responded to banking difficulties in the period before deregulation. However, no comparable banking-sector shocks occurred during this earlier time period, making such an investigation impossible.

much more problematic.¹⁹ While growth in M2 has been very weak, overall economic activity has continued to expand. Thus, the current slow rate of M2 growth does not appear to reflect a moderation or tightening in the overall flow of credit to the economy. Rather, it is likely that weak M2 growth has resulted from the continued diversion of credit flows from banks and other intermediaries to the capital markets, through which households appear to be investing a larger share of their wealth.²⁰

Some of the factors that have affected the growth rate of M2 may be temporary in nature. The banking system now appears to be recovering. Portfolio adjustments by both households and businesses to the debt buildups of the last decade are proceeding. These developments would be expected to lead to increases in lending activity in the future and to increases in M2. However, if the U.S. banking system finds itself at a competitive disadvantage in the provision of credit, it could continue to see its role in the intermediation process decline. In such a scenario, the value of M2 as a policy guide would continue to be questionable. In light of these potential developments, several proposals to alter the definition of the broad

monetary aggregate have been made. One proposal is to add components of mutual funds to M2 to account for the importance of nonbank intermediaries in the provision of credit.²¹ Comparing the quarterly growth rates of M2 with the sum of M2 and bond and stock funds over the past two and a half years reveals that the latter variable has grown at nearly a 5-percent annual rate, compared with less than a 2-percent annual rate for the current M2 measure. However, even after making this adjustment, the new total remains volatile, indicating that other forces are also at work affecting either M2 or mutual funds or both.²²

Another proposal is to classify the components of the money supply based on the distinction between those components that have a stated maturity term versus those that do not. This proposal would alter the M2 definition by excluding small time deposits from M2 and combining them with the large time deposits found in M3 (plus other accounts in M3 such as term repurchase agreements and term Eurodollars) to create a new aggregate "term M3." In an era of deregulated deposit interest rates, this new combination of monetary assets could be a more reliable guide for monetary policy because it contains a more similar grouping of financial assets—those primarily used by banks as managed liabilities.²³

During the 1980s, financial deregulation and adverse banking-sector conditions combined to make the M2 measure of the money supply more sensitive to developments on the asset side of the banking system's balance sheet. As a result, a number of serious empirical difficulties have arisen in attempting to predict the growth rate of M2 and also in the use of M2 as a guide for the conduct of monetary policy. Unfortunately, it is still not known whether these developments are temporary in nature or are due to fundamental changes in the financial structure, with a diminishing role for banks. For these reasons, the Federal Reserve has placed less emphasis on M2, while economists continue to search for a reliable guide for monetary policy.

¹⁹ Prior to the early 1980s, the Federal Reserve concentrated on the M1 monetary aggregate in its conduct of monetary policy. By 1987, however, increasingly difficult to interpret movements in the narrow monetary aggregate led the Federal Reserve to discontinue setting a target range for M1. Moreover, in congressional testimony in July 1993, Federal Reserve Chairman Alan Greenspan stated that the Federal Reserve was temporarily downgrading measures of the money supply as guides to its policy formulations and instead would rely on a variety of data, including real interest rates, in setting monetary policy.

²⁰ Board of Governors (1993a). One example of this type of household behavior is the explosive growth of mutual funds, especially those now being offered by banks.

²¹ For more on this proposal, see Duca (1992).

²² Board of Governors (1993a, 843).

²³ Motley (1988) and Judd and Trehan (1987).

Appendix Table A1

Relationship Between Bank Lending and M2

**Marginal significance levels of variables
predicting M2**

Variables	1959-77	1981-92	1985-92
Income	.21	.54	.37
M2	.00	.00	.00
Loans	.72	.62	.02
Fedfunds	.00	.01	.00
Reserves	.53	.85	.16

**Marginal significance levels of variables
predicting loans**

Income	.26	.41	.61
M2	.00	.15	.24
Loans	.00	.02	.11
Fedfunds	.62	.01	.02
Reserves	.66	.88	.57

Lag lengths: 1959-77 = 6 lags

1981-92 = 8 lags

1985-92 = 4 lags

NOTES: Reserves are total reserves of depository institutions. For other variables, see notes to Table 1.

Appendix Table A2
 Relationship Between Bank Lending and M2

Variables	Marginal significance levels of variables predicting M2		
	1959-77	1981-92	1985-92
Income	.88	.16	.34
M2	.00	.00	.00
Loans	.84	.58	.56
Spread	.00	.06	.53
Reserves	.59	.86	.56

Variables	Marginal significance levels of variables predicting loans		
	1959-77	1981-92	1985-92
Income	.26	.67	.54
M2	.00	.19	.17
Loans	.00	.00	.04
Spread	.44	.14	.12
Reserves	.90	.76	.18

Lag lengths: 1959-77 = 8 lags

1981-92 = 7 lags

1985-92 = 4 lags

NOTES: See notes to Appendix Table A1.

Appendix Table A3

Relationship Between Bank Lending and M1

Variables	Marginal significance levels of variables predicting M1		
	1959-77	1981-92	1985-92
Income	.00	.46	.53
M1	.00	.18	.16
Loans	.64	.77	.89
Fedfunds	.00	.01	.00
Reserves	.32	.97	.81

Variables	Marginal significance levels of variables predicting loans		
	1959-77	1981-92	1985-92
Income	.42	.39	.66
M1	.02	.26	.63
Loans	.00	.00	.03
Fedfunds	.72	.02	.09
Reserves	.80	.76	.55

Lag lengths: 1959-77 = 6 lags

1981-92 = 8 lags

1985-92 = 8 lags

NOTES: See notes to Appendix Table A1.

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