

Does More Money Mean More Bank Loans?

By George A. Kahn

Even before the economy slipped into recession last summer, some analysts viewed slow monetary growth as indicating a reduced willingness of banks to increase lending. To these analysts, slow growth of money signaled a “credit crunch” that contributed to the onset and depth of the recession. Those who view monetary growth as a signal of credit availability might also argue that faster monetary growth would signal an easing of credit conditions. Easier credit, in turn, would help strengthen the economic recovery.

Other analysts have pointed out, however, that there is no necessary link between monetary growth and bank lending. Banks can increase their portfolio of loans by selling securities, even as deposit growth slows. As a result, monetary growth can slow without generating a slowdown in bank lending. Conversely, banks create deposits not only when they make loans but also when they buy securities. Thus, a pickup in monetary growth does not necessarily imply an increase in bank lending.

This article examines the relationship between monetary growth and the growth of bank loans. The article first analyzes how monetary growth is related to bank lending, then examines how closely the two variables have been linked historically. The article concludes that a pickup in monetary growth does not necessarily imply a near-term pickup in bank lending. Slow monetary growth did not necessarily cause reduced bank lending last year, and faster monetary growth this year would not necessarily generate an immediate pickup in bank lending.

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How Are Money and Bank Loans Related?

Money and bank loans are related to each other through the banking system's balance sheet. Money—in the form of deposits—is a liability of the banking system, while bank loans are an asset. Money has traditionally served as an indicator of the Federal Reserve's monetary policy, but bank lending has only recently received attention as a monetary policy indicator. This section examines the role of money and bank lending in traditional monetary analysis, explains the special role of bank lending in more recent monetary analysis, and, finally, uses balance-sheet identities to show that an expansionary monetary policy does not necessarily lead to more bank loans.

The traditional role of money and bank lending

Monetary growth has long been a key indicator of the Federal Reserve's monetary policy. The Federal Reserve eases monetary policy by supplying reserves to the banking system. These reserves form the basis for expanding the money supply. According to traditional monetary analysis, an expansion of the money supply results in a decline in interest rates and an expansion of total credit.

Total credit is one of several concepts of credit. Total credit is the sum of credit raised outside the banking system and credit extended by banks. Nonbank sources of credit include the commercial paper market, other domestic securities markets, nonbank financial institutions in the United States, international financial markets, and foreign financial institutions. Bank credit consists of total loans and investments of all domestically chartered commercial banks in the United States, as well as of

U.S. branches and agencies of foreign banks.¹ Bank credit includes all credit extended by these institutions to both domestic and foreign borrowers. While a small part of bank credit takes the form of investments in government and other securities, the bulk of bank credit takes the form of loans.

Traditional monetary analysis largely ignores the question of how a given supply of total credit is divided among bank lending, bank investments, and nonbank sources of credit.² According to the traditional analysis, bank loans are a perfect substitute for other sources of credit. In other words, borrowers are able to obtain credit from banks under the same terms as from other credit sources. Under the traditional analysis, for example, borrowers would be indifferent between, and capable of, borrowing from banks or borrowing through the issuance of bonds.

Moreover, in the traditional analysis, total credit availability always increases when the money supply increases. An expansion of the money supply leads to an increase in bank credit. How banks divide this increase in bank credit between loans and investments in securities does not matter.³ If banks decide to increase securities holdings as a proportion of their total assets, for example, borrowers will simply obtain a greater share of their credit from securities markets. Thus, changes in the money supply lead to similar changes in bank credit and total credit.

Which variable—money, bank credit, or total credit—best serves as *the* indicator of policy depends on which variable the Federal Reserve can best measure and control and on which variable is most reliably related to economic activity. If no one variable proves dependable in all circumstances, the Fed may need to monitor the behavior of all three. But in the traditional analysis, the Fed would not need to monitor narrow credit aggregates such

as bank loans because bank lending plays no special role.

The Fed has at times monitored various broad credit aggregates in addition to monetary aggregates. In the 1970s, for example, the Federal Reserve set growth ranges for bank credit to supplement the target ranges for growth of the monetary aggregates. Moreover, growth of bank credit was sometimes mentioned directly in the operating instructions that governed Federal Reserve purchases and sales of securities, a key policy instrument. More recently, the Federal Reserve has set monitoring ranges for growth of total domestic nonfinancial debt, a broader credit measure that is more closely related to total credit. All of the major components of bank credit are included in total domestic nonfinancial debt, along with government and corporate securities, mortgages, and loans by nonbank financial institutions. At no time, however, has the Federal Reserve monitored bank loans by setting formal monitoring ranges.

The special role of bank lending

With the breakdown of the relationship between various monetary and credit aggregates and economic activity in the 1980s, economists have begun to examine more closely the role of bank lending in monetary policy. In particular, economists have begun to question whether faster monetary growth necessarily results in an increase in the availability of loans to all prospective borrowers, especially those who rely solely on banks for credit. In other words, economists question the traditional assumption that bank loans are perfect substitutes for other sources of credit.

One reason bank loans may not be perfect substitutes for other sources of credit is that not all borrowers have access to national financial markets. Although large businesses can

raise funds directly through auction markets, such as the market for commercial paper, other borrowers must rely predominantly on banks for credit.⁴ To these borrowers—typically consumers and small to medium-size businesses—auction-market credit is not a substitute for bank credit. As a result, if these borrowers cannot obtain a loan from a bank, they often cannot finance spending with credit. In contrast, if a large corporation cannot borrow from a bank, it can often obtain credit by issuing securities in national capital markets. In fact, many large businesses prefer to borrow directly from capital markets, leaving banks to specialize in lending to other, smaller customers.

Banks, in contrast to auction markets, allocate credit not only with interest rates, but also with various nonprice terms. These nonprice terms of lending potentially make banks a “special” source of credit, qualitatively different from auction markets.⁵ Specifically, banks set terms of lending that raise the probability that a borrower will repay a loan. Banks, for example, maintain long-term relationships with their customers, screen loan applicants for creditworthiness, require collateral for loans, and prefer short-term to long-term lending.⁶ Banks impose these and other nonprice terms, rather than simply charging the highest interest rate a customer is willing to pay, to reduce the likelihood that a customer will default on a loan.⁷ As a result of these nonprice terms, bank customers may not be able to borrow as much as they want from a bank even though they may be willing to pay a market interest rate or higher.⁸

The special nature of bank loans, along with the exclusion of some borrowers from markets that auction credit, makes changes in the growth of bank loans a possible source of economic fluctuations.⁹ A decision by banks to reduce their holdings of loans, for example,

could lead to a decline in economic activity. Banks might decide to substitute securities for loans if they become concerned about the riskiness of their loan portfolio—as many banks allegedly were before the start of the current recession—or if they wanted to increase liquidity. As banks reduce loans and increase securities, businesses without access to auction-market credit would have to reduce spending on investment projects. Likewise, consumers' purchases of houses and consumer durables might fall. Thus, a decision by banks to reduce loans could reduce economic activity.

But how important is bank lending to the conduct of monetary policy? Bank loans are important to the extent they are the only source of credit for a significant share of the economy as a whole.¹⁰ A limited amount of evidence suggests that bank loans may be an important source of credit, even though many large businesses have come to rely increasingly on auction markets for credit. On the basis of 1988 Commerce Department data, for example, Radecki estimates that between 56 and 70 percent of bank loans to manufacturing firms represent lending to firms with no alternative source of credit. Moreover, the net sales revenues of these firms is between 32 and 44 percent of the sales revenues of all manufacturing firms.¹¹ Thus, bank loans to firms lacking alternative sources of credit are possibly a significant share of total credit in the economy.

Balance-sheet relationships

Because of the possibility that bank loans are both special and important in the economy, understanding their relationship to bank reserves and monetary growth could be vital for the conduct of monetary policy. While the Federal Reserve has direct control over the supply of reserves and, through reserves, indirect control over monetary growth, the

Fed does not control the availability of bank loans. Unexpected changes in the desired mix of loans and securities in banks' portfolios may partly or completely offset Federal Reserve actions to restrain or stimulate the economy. For example, an economic slowdown accompanied by a reduction in the supply of bank loans could require a more forceful monetary policy response than a slowdown with no change in loan supply.

Examining the banking system's balance sheet shows that changes in the money supply do not necessarily lead to changes in bank loans. In fact, the relationship is rather loose. In a simplified balance sheet, the assets of the banking system consist of reserves, loans, and securities. Balancing the banking system's assets are deposit liabilities and the banking system's net worth or capital. Holding bank capital constant, any change in the money supply in the form of deposits must result in an equal change in some combination of reserves, loans, and securities. Changes in monetary policy, therefore, affect both sides of the banking system's balance sheet.

An easing of policy, for example, leads to an increase in deposits and some combination of higher reserves, loans, and securities. When the Federal Reserve eases policy, the Fed injects reserves into the banking system by buying Treasury securities from securities dealers. As a result of the transaction, the Fed credits the reserve accounts of the dealers' banks, and dealers increase their bank deposits. After setting aside reserves needed to meet legal reserve requirements, banks can use the remainder of the new reserves to increase loans or to buy securities. As funds from these transactions are deposited back into the banking system, banks can again choose either to increase their holdings of securities or make new loans.

As a result of the Fed's initial injection of

reserves, a multiple expansion occurs in the banking system's holdings of deposits, loans, and securities.¹² At each stage of the process, banks choose how to allocate increases in assets between loans and securities.¹³ If banks choose to increase only their holdings of securities, for example, an injection of reserves will result in an increase in deposits and the money supply but no increase in bank loans. Banks might make this choice if they want to reduce the overall riskiness of their assets. Thus, an increase in the money supply does not necessarily lead to an increase in bank loans.

Why should we care? If bank loans are perfect substitutes for other sources of credit, a change in the composition of banks' assets from loans to securities does not matter. Any spending that would have been carried out with bank loans will be carried out using other sources of credit. On the other hand, if bank loans are not perfect substitutes for other sources of credit, a change in the composition of banks' assets away from loans would result in an overall decline in spending in the economy. Thus, to the extent bank loans are the only source of credit for a large part of the economy, monetary policy will be more potent when monetary expansion results in an expansion in bank loans than when it does not. Accordingly, the Federal Reserve might need to monitor the relationship between the money supply and bank loans if bank loans are both special and important as a source of credit.

Is There a Predictable Relationship Between Money and Bank Loans?

If bank loans are both special and important, monetary policymakers would need to understand the relationship between the money supply and the supply of bank loans. As previously argued, banks largely determine how they will allocate an increase in deposits

between loans and securities. If bank behavior can be predicted, policymakers can estimate how policy actions will affect bank loans, and through bank loans, the economy. Using this information, along with information about the more traditional channels of monetary policy, policymakers can potentially design policies to moderate economic fluctuations.

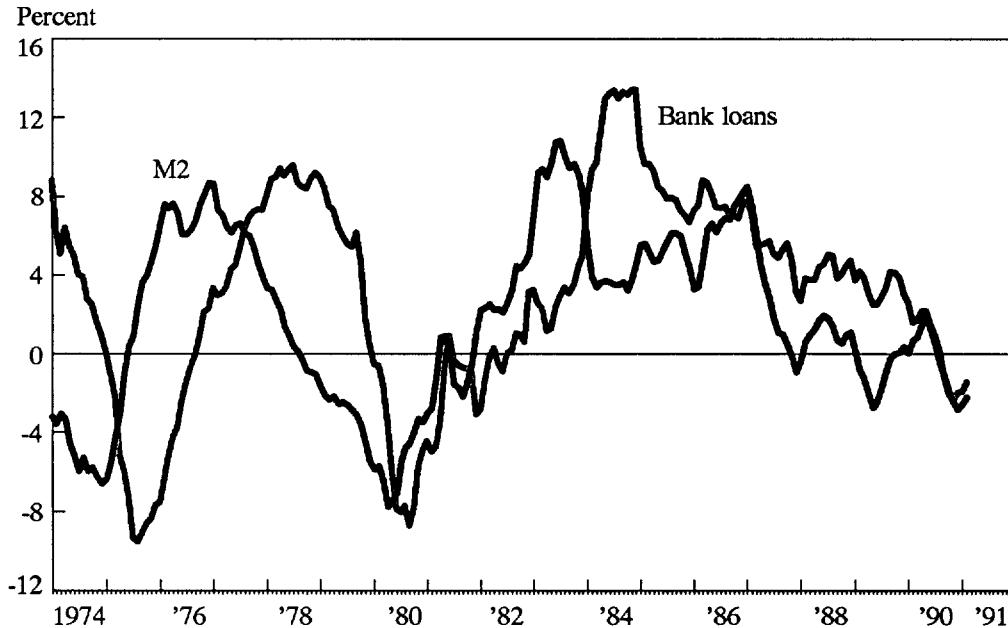
This section examines the historical relationship between monetary growth and growth in bank loans, starting with simple atheoretical evidence and moving toward more complex evidence. The evidence generally shows that an increase in monetary growth often precedes an increase in bank loan growth. However, the relationship changes over time. As a result, policymakers cannot predict with much precision the effect their actions will have on bank lending. Policymakers might therefore need to examine direct evidence on bank lending—in addition to information on monetary growth—to determine the effectiveness of policy actions.

Simple evidence

Monetary growth and growth in bank loans declined simultaneously from mid-1990 to early 1991. This common behavior of the two variables contributed to concern that the economy was experiencing a "credit crunch." Such common behavior, while not without precedent, does not typify the historical relationship between monetary growth and bank loan growth in the last two decades.

Simple plots. The relationship between monetary growth and bank lending has varied over time.¹⁴ Growth in M2, for example, has moved together with, as well as in opposite directions to, growth in bank loans (Chart 1). From 1981 to 1983 and from 1987 to 1991, M2 growth and bank loan growth generally moved in the same direction. In contrast, from

Chart 1
Growth of Money and Bank Loans



Note: Variables are expressed as 12-month rates of change and deflated by the consumer price index. Bank loans include loans at all domestic and foreign-related commercial banks in the U.S. and exclude interbank loans.

Sources: Federal Reserve and Department of Commerce.

1974 to 1978 and from 1983 to 1985, M2 growth and bank loan growth generally moved in opposite directions. Growth of other monetary aggregates, both broader and narrower, displays similarly complex relationships.

Simple statistics. Correlation coefficients also reveal a relatively loose relationship between monetary and bank loan growth. Correlation coefficients measure the degree to which two variables move together over time, taking the value 1.0 if there is a perfect positive relationship and zero if the variables are unrelated. Correlation coefficients are presented for a sample of monthly data from 1973 to 1991 and for a subsample of data from 1982 to 1991. Coefficients from the subsample—a period of substantial financial market

deregulation—provide evidence on the stability of the correlations over time.

Several measures of monetary growth, ranging from broad to narrow, are used in constructing correlation coefficients between monetary growth and bank loan growth. Broad measures include M2 and M3.¹⁵ Those who believe slow monetary growth restricts the availability of bank loans look to the behavior of these aggregates for information about credit availability. But because M2 and M3 contain components that are not liabilities of the banking system, narrower measures of money might also be useful in assessing the availability of bank loans.¹⁶ Narrower measures of money that are composed entirely of bank liabilities, such as total deposits at banks,

Table 1

Correlation of bank loan growth and monetary growth

<u>Monetary variable</u>	<u>1973:2 - 1991:2</u>	<u>1982:11 - 1991:2</u>
M3	.48	.51
M2	.24	.30
Total deposits at banks	.48	.46

Note: Before calculating correlation coefficients, each variable was expressed as a growth rate and deflated by the rate of CPI inflation (see footnote 14). Each variable was then regressed on a constant term and 11 monthly dummy variables. Residuals from these regressions were used as data in calculating correlation coefficients. Based on t-statistics, all correlation coefficients are significant at the 95 percent confidence level.

Source: Author's calculations, based on Federal Reserve and Department of Commerce data.

are potentially more closely related to bank assets such as loans. Finding a relationship between total deposits and bank loans may therefore be easier than between broad measures and bank loans. Moreover, like M2 and M3, data on total deposits are available to policymakers on a timely basis.

Correlation coefficients show a weak, positive correlation between bank loan growth and both broad and narrow measures of monetary growth (Table 1). The correlation is greater for M3 and total deposits than it is for M2. Correlations between loans and the broad measures of monetary growth increase slightly in the latter part of the sample period as indicated by larger correlation coefficients in the 1982-91 sample relative to the full sample. The small increase in these correlation coefficients after 1982 is consistent with the visual evidence on M2 and bank loans presented in Chart 1. The correlation between loans and total deposits, however, falls slightly in the post-1982 period.

Complex evidence

While correlation coefficients show a weak contemporaneous association of monetary growth and bank loan growth, simple correlations cannot provide evidence on leading or lagging relationships. That is, simple correlations may fail to detect a relationship in which increases in monetary growth precede increases in bank loan growth. Although bank loan growth in a given month is not highly correlated with monetary growth in the same month, bank loan growth may be highly correlated with past monetary growth. Banks, for example, might initially purchase securities as a result of an increase in deposit growth, and later sell securities to expand loans. If so, monetary growth would lead bank loan growth.

Another shortcoming of the evidence presented so far is that it fails to account for possible inertia in bank-loan and monetary data. For example, a large part of the variation

Table 2

Does past monetary growth help explain bank loan growth?

<u>Monetary variable</u>	<u>1974:2 - 1991:2</u>	<u>1982:11 - 1991:2</u>
M3	Yes (.021)	No (.857)
M2	Yes (.016)	No (.552)
Total deposits at banks	No (.104)	Maybe (.076)

Note: This table reports the results of bivariate Granger causality tests on whether past values of various monetary variables “help explain” bank loan growth. All tests are based on regressions containing 12 lags of the dependent variable (bank loan growth), 12 lags of a monetary variable, and a constant and 11 monthly dummy variables. All variables are expressed in growth rates and deflated by the rate of CPI inflation (see footnote 14). Numbers in parentheses give the marginal significance level of F tests on the joint significance of the 12 lagged monetary variables. “Yes” indicates rejection, at the 5 percent level, of the null hypothesis that the 12 lagged monetary variables are jointly insignificant. “Maybe” indicates rejection of the null hypothesis at the 10 percent level. “No” indicates a failure to reject the null hypothesis.

Source: Author’s calculations, based on Federal Reserve and Department of Commerce data.

in bank loans may be explained by past fluctuations in bank loans. If banks commit to loaning funds to businesses over several months on demand, the current growth rate of loans may reflect past bank loan growth.¹⁷ Moreover, if banks find it costly to adjust their portfolio of loans quickly, bank loan growth would change only gradually over time. Any factor that affects banks’ desired portfolio of loans—including, but not limited to, changes in bank liabilities—would lead to a gradual adjustment of bank loans.

Likewise, a large part of the variation in monetary growth may be explained by past monetary growth. If consumers and businesses change their holdings of monetary assets only slowly in response to changes in income or interest rates, current monetary growth would at least partly reflect past monetary growth.

Accounting for the possibility of lagged responses and inertia in bank loans and money

gives mixed evidence on the relationship between monetary and bank loan growth (Table 2). Broad monetary variables help explain bank loan growth over the full sample, but not over the post-1982 subsample. With the possible exception of total deposits in the post-1982 sample, narrow monetary variables do not explain bank loan growth. This evidence suggests that the correlation coefficients, which generally supported a weak relationship between monetary and bank loan growth, may be measuring the effect of bank loan growth on monetary growth and not the other way around. In other words, money may respond to an increase in bank loans as much as or more than bank loans respond to an increase in money. As loans increase, the economy strengthens, causing an increase in the demand for money.

The breakdown in the ability of M2 and M3 to explain bank loans after 1982—a break-

down not evident in simple correlation coefficients—may reflect financial market deregulation. Since the removal of interest rate ceilings on deposit accounts in the early 1980s, a greater proportion of the monetary aggregates pay a market-related rate of interest. As a result, monetary growth has become less sensitive to interest rate changes. If the interest-sensitivity of bank loan growth were unaffected by financial market deregulation, a given increase in interest rates would reduce bank loan growth just as much as in the past. But the same interest rate increase would have less effect in reducing monetary growth. Thus, bank loans might fluctuate more than money, causing an apparent breakdown in the estimated effect on bank loan growth of a change in monetary growth.¹⁸

Conclusions

One way faster monetary growth can

stimulate the economy is by increasing the availability of bank loans. Evidence presented in this article, however, suggests that faster monetary growth does not guarantee increased availability of bank loans. Banks decide how to allocate an increase in deposits between loans and securities purchases. At times in the past, banks have increased loans when monetary growth increased. But more recently, the tendency for increased monetary growth to stimulate bank loans may have diminished. Thus, just as slow monetary growth did not necessarily cause reduced bank lending last year, so faster monetary growth this year would not necessarily generate an immediate pickup in bank lending. As a result, to the extent bank loans play a special and important role in the allocation of credit, the Federal Reserve might need to monitor direct evidence on bank loans in addition to growth in the monetary aggregates.

Endnotes

¹ For more information about bank credit, see Wurtz.

² See, for example, the IS/LM model in a macroeconomics textbook such as Gordon 1990.

³ The traditional analysis typically assumes that banks hold little or no excess reserves.

⁴ Smaller borrowers can sometimes obtain credit from other financial intermediaries such as finance companies or obtain trade credit.

⁵ Some auction-market credit, however, does have non-price features such as the covenants often found in bonds.

⁶ Because of restrictive lending practices, banks turn away some potential customers and loan other customers less than they are willing to borrow at the going interest rate. As a result, bank lending does not necessarily rise when the Federal Reserve's policy actions cause market interest rates to fall. Moreover, at any given interest rate, banks may change the nonprice terms of lending. Market interest rates, therefore, might be an unreliable guide to the availability of credit to some parts of the economy. If bank loans are the only source of credit to many potential borrowers, the overall thrust of monetary policy would depend not only on the level of interest rates and rate of

monetary growth, but also the terms of bank lending. Further complicating monetary policy is the possibility that interest rate movements reflect credit needs as well as credit availability. In an economic downturn, for example, declining interest rates may signal declining credit needs. See Radecki for more information on the special nature of bank loans. See Keeton for information on how banks use nonprice terms to allocate credit and how this practice affects monetary policy.

⁷ Banks restrict the availability of credit because of the difficulty of assessing the creditworthiness of their main customers—consumers and small to medium-size businesses. Customers with the riskiest borrowing needs may have the greatest incentive to seek bank loans. Banks try to limit this adverse selection problem by carefully screening their customers and imposing restrictive terms of lending. Banks do not simply charge the highest interest rate a customer is willing to pay because higher rates require higher returns on investment projects and increase the risk of default (Stiglitz and Weiss; Jaffee and Stiglitz).

⁸ On the other hand, bank credit commitments guarantee some, usually large, businesses continued access to bank