

# Chaper 10, section 6 from 3rd edition: Does Credit Matter\*

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## 1 Introduction

This material appeared as section 10.6 of the 3rd. edition. Given the experience of the global financial crisis, the old controversy over whether credit matters seems of limited relevance.

## 2 Does Credit Matter?

Given the global recession triggered by the financial crisis beginning in the United States in 2007, the question posed in the title of this section seems to be easily answered with a resounding yes. However, the role of credit and its importance for understanding macro fluctuations has, historically, been a source of controversy. If credit channels are important for the monetary transmission process, then evolution in financial markets, whether due to changes in regulations or to financial innovations, will change the manner in which monetary policy affects the real economy. It also implies that the level of real interest rates may not provide a sufficient indicator of the stance of monetary policy. And credit shocks may have played an independent role in creating economic fluctuations. In this section, the empirical evidence on the credit channel is reviewed. The coverage will be selective, as a number of recent surveys exist that discuss (and extend) the empirical work in the area (Gertler 1988, Gertler and Gilchrist 1993, Ramey 1993, Kashyap and Stein 1994, [Hubbard \(1995\)](#), Bernanke, Gertler, and Gilchrist 1996).

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In an influential article, Bernanke (1983) provided evidence consistent with an important role for nonmonetary financial factors in accounting for the severity of the Great Depression in the United States. After controlling for unexpected money growth, he found that proxies for the financial crises of the early 1930s contributed significantly to explaining the growth rate of industrial production in his regression analysis.<sup>1</sup> If pure monetary causes were responsible for the decline in output during the Depression, the other measures of financial disruptions should not add explanatory power to the regression.

As Bernanke notes, his evidence is “not inconsistent” with the proposition that the financial crisis in the United States represented a distinct nonmonetary channel through which real output was affected during the Depression. The evidence is not conclusive, however, since an alternative hypothesis is simply that the Depression itself was the result of nonmonetary factors (or at least factors not captured by unanticipated money growth) and that these factors caused output to decline, business to fail, and banks to close. By controlling only for unanticipated money growth, Bernanke’s measures of financial crisis may only be picking up the effects of the underlying nonmonetary causes of the Depression. Still, Bernanke’s results offered support for the notion that the massive bank failures of the 1930s in the United States were not simply a sideshow but were at least partially responsible for the output declines.

Attempts to isolate a special role for credit in more normal business-cycle periods have been plagued by what are essentially similar identification problems. Are movements in credit aggregates a reflection of shifts in demand resulting from effects operating through the traditional money channel or do they reflect supply factors that constitute a distinct credit channel? Most macroeconomic variables behave similarly under either a money view or a credit view, so distinguishing between the two views based on time-series evidence is difficult. For example, under the traditional money channel view, a contractionary shift in monetary policy raises interest rates and reduces investment spending. The decline in investment is associated with a decline in credit demand, so quantity measures of both bank and nonbank financing should fall. The competing theories are not sufficiently powerful to allow us to draw sharp predictions about the timing of interest-rate, money, credit, and output movements that would allow the alternative views to be tested. As a consequence, much of the empirical work has focused on compositional effects, seeking to determine whether there are differential impacts of interest-rate and credit movements that might distinguish between the alternative views. After some of the evidence on the bank lending channel is considered, the evidence on the broad credit channel is discussed.

Discussions of the credit channel often distinguish between a *bank lending channel* and a broader financial-accelerator mechanism.<sup>2</sup> The bank lending channel emphasizes the special nature of bank

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<sup>1</sup>Bernanke employed the real change in the deposits at failing banks and the real change in the liabilities of failing businesses as his measures of the financial crises.

<sup>2</sup>A variety of excellent surveys and overviews of the credit channel are available. These include Gertler (1988), Bernanke (1993), Gertler and Gilchrist (1993), Ramey (1993), Kashyap and Stein (1994), Bernanke and Gertler

credit and the role of banks in the economy's financial structure. In the bank lending view, banks play a particularly critical role in the transmission of monetary-policy actions to the real economy. Policy actions that affect the reserve positions of banks will generate adjustments in interest rates and in the components of the banking sector's balance sheet. Traditional models of the monetary transmission mechanism focus on the impact of these interest-rate changes on money demand and on consumption and investment decisions by households and firms. The ultimate effects on bank deposits and the supply of money are reflected in adjustments to the liability side of the banking sector's balance sheet.

The effects on banking-sector reserves and interest rates also influence the supply of bank credit, the asset side of the balance sheet. If banks cannot offset a decline in reserves by adjusting securities holdings or raising funds through issuing nonreservable liabilities (such as CDs in the United States), bank lending must contract. If banking lending is *special* in the sense that bank borrowers do not have close substitutes for obtaining funds, variation in the availability of bank lending may have an independent impact on aggregate spending. Key then to the bank lending channel is the lack of close substitutes for deposit liabilities on the liability side of the banking sector's balance sheet and the lack of close substitutes for bank credit on the part of borrowers.

Imperfect information plays an important role in credit markets, and bank credit may be special, that is, have no close substitutes, because of information advantages banks have in providing both transactions services and credit to businesses. Small firms in particular may have difficulty obtaining funding from nonbank sources, so a contraction in bank lending will force these firms to contract their activities.

The broad credit channel is not restricted to the bank lending channel. Credit-market imperfections may characterize all credit markets, influencing the nature of financial contracts, raising the possibility of equilibria with rationing, and creating a wedge between the costs of internal and external financing. This wedge arises because of agency costs associated with information asymmetries and the inability of lenders to monitor borrowers costlessly. As a result, cash flow and net worth become important in affecting the cost and availability of finance and the level of investment spending. A recession that weakens a firm's sources of internal finance can generate a *financial-accelerator* effect; the firm is forced to rely more on higher-cost external funds just at the time the decline in internal finance drives up the relative cost of external funds. Contractionary monetary policy that produces an economic slowdown will reduce firm cash flow and profits. If this policy increases the external finance premium, there will be further contractionary effects on spending. In this way, the credit channel can serve to propagate and amplify an initial monetary contraction.

Financial-accelerator effects can arise from the adjustment of asset prices to contractionary monetary policy. Borrowers may be limited in the amount they can borrow by the value of their assets that can serve as collateral. A rise in interest rates that lowers asset prices reduces the

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(1995), Cecchetti (1995), Hubbard (1995), and Bernanke, Gertler, and Gilchrist (1999).

market value of borrowers' collateral. This reduction in value may then force some firms to reduce investment spending as their ability to borrow declines.

## 2.1 The Bank Lending Channel

Banks play an important role in discussions of the monetary transmission mechanism, but the traditional approach stresses the role of bank liabilities as part of the money supply. Part of the reason for the continued focus on the liabilities side is the lack of convincing empirical evidence that bank lending plays a distinct role in the transmission process through which monetary policy affects the real economy. As Romer and Romer (1990) summarized this literature: "A large body of recent theoretical work argues that the Federal Reserve's leverage over the economy may stem as much from the distinctive properties of the loans that banks make as from the unique characteristics of the transaction deposits that they receive. . . Examining the behavior of financial variables and real output in a series of episodes of restrictive monetary policy, we are unable to find any support for this view." (pp. 196-197)

One of the first attempts to test for a distinct bank lending channel was that of S. King (1986). He found that monetary aggregates were better predictors of future output than were bank loans. More recently, Romer and Romer (1990) and Ramey (1993) have reached similar conclusions. Unfortunately, our theories are usually not rich enough to provide sharp predictions about timing patterns that are critical for drawing conclusions from evidence on the predictive content of macro variables. This is particularly true when behavior depends on forward-looking expectations. Anticipations of future output movements can lead to portfolio and financing readjustments that will affect the lead-lag relationship between credit measures and output. Because a decline in output may be associated with inventory buildups, the demand for short-term credit can initially rise, and the existence of loan commitments will limit the ability of banks to alter their loan portfolios quickly. These factors make money-credit-output timing patterns difficult to interpret.

In part, Romer and Romer's negative assessment quoted above reflects the difficult identification problem mentioned earlier. A policy-induced contraction of bank reserves will lead to a fall in both bank liabilities (deposits) and bank assets (loans and securities). With both sides of the banking sector's balance sheet shrinking, it is clearly difficult to know whether to attribute a subsequent decline in output to the money channel, the credit channel, or both.<sup>3</sup> Kashyap, Stein, and Wilcox (1993) address this problem by examining the composition of credit between bank and nonbank sources. Under the money view, a contractionary policy raises interest rates, lowering aggregate demand and the total demand for credit. Consequently, all measures of outstanding credit should

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<sup>3</sup>The identification problems are not quite so severe in attempting to estimate the role of credit-supply versus credit-demand shocks on the economy. A contractionary bank credit-supply shock would generally lower loan quantity and raise loan interest rates; a contraction in loan quantity caused by a demand shock would lower loan interest rates.

decline. Under the bank lending view, the contractionary policy has a distinct effect in reducing the supply of bank credit. With bank credit less available, borrowers will attempt to substitute other sources of credit, and the relative demand for nonbank credit should rise. Thus, the composition of credit should change if the bank lending view is valid, with bank credit falling more in response to contractionary monetary policy than other forms of credit.

Kashyap, Stein, and Wilcox do find evidence for the bank lending channel when they examine aggregate U.S. data on bank versus nonbank sources of finance, the latter measured by the stock of outstanding commercial paper. Using the Romer and Romer (1989) dates to identify contractionary shifts in monetary policy,<sup>4</sup> Kashyap, Stein, and Wilcox find that the financing mix shifts away from bank loans following a monetary contraction. However, this occurs primarily because of a rise in commercial paper issuance, not a contraction in bank lending.

Evidence based on aggregate credit measures can be problematic, however, if borrowers are heterogeneous in their sensitivity to the business cycle and in the types of credit they use. For example, the sales of small firms fluctuate more over the business cycle than those of large firms, and small firms are more reliant on bank credit than large firms that have greater access to the commercial paper market. Contractionary monetary policy that causes both small and large firms to reduce their demand for credit will cause aggregate bank lending to fall relative to nonbank financing as small firms contract more than large firms. This could account for the behavior of the debt mix even in the absence of any bank lending channel. Oliner and Rudebusch (1995, 1996b) argue that this is exactly what happens. They use disaggregate data on large and small firms and show that, in response to a monetary contraction, there is no significant effect on the mix of bank/nonbank credit used by either small or large firms. Instead, the movement in the aggregate debt mix arises because of a general shift of short-term debt away from small firms and toward large firms. They conclude that the evidence does not support the bank lending channel as an important part of the transmission process of monetary policy. Similar conclusions are reached by [Gertler and Gilchrist \(1994\)](#) in an analysis also based on disaggregated data.

While the bank lending channel as part of the monetary policy transmission process may not be operative, it might still be the case that shifts in bank loan supply are a cause of economic fluctuations. In the United States, the 1989-1992 period generated a renewed interest in credit channels and monetary policy.<sup>5</sup> An unusually large decline in bank lending and stories, particularly from New England, of firms facing difficulty borrowing, led many to seek evidence that credit markets played an independent role in contributing to the 1990-1991 recession. One difficulty in attempting to isolate the impact of credit supply disturbances is the need to separate movements caused by a shift in credit supply from movements due to changes in credit demand.

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<sup>4</sup>Romer and Romer (1989) base their dating of monetary policy shifts on a reading of FOMC documents. See chapter 1.

<sup>5</sup>See, for example, Bernanke and Lown (1992), the papers collected in Federal Reserve Bank of New York (1994), and Peek and Rosengren (1995).

Walsh and Wilcox (1995) estimate a monthly VAR in which bank loan supply shocks are identified with innovations in the prime lending rate. They show that their estimated loan supply innovations are related to changes in bank capital ratios, changes in required reserves, and the imposition of credit controls. This provides some evidence that the innovations are actually picking up factors that affect the supply of bank loans. While prime rate shock are estimated to lower loan quantity and output, they were not found to play a major causal role in U.S. business cycles, although their role was somewhat atypically large during the 1990-1991 recession.

## 2.2 The Broad Credit Channel

The broad credit channel for the transmission of monetary policy is based on the view that credit market imperfections are not limited to the market for bank loans but instead are important for understanding all credit markets. With agency costs creating a wedge between internal and external finance, measures of cash flow, net worth, and the value of collateral should affect investment spending in ways not captured by traditional interest-rate channels. The evidence in support of a broad credit channel has recently been surveyed by Bernanke, Gertler, and Gilchrist (1996), who conclude: “we now have fairly strong evidence—at least for the case of firms—that downturns differentially affect both the access to credit and the real economic activity of high-agency-cost borrowers” (p. 14).

Hubbard (1995) and Bernanke, Gertler, and Gilchrist (1996) list three empirical implications of the broad credit channel. First, external finance is more expensive for borrowers than internal finance. This should apply particularly to uncollateralized external finance. Second, because the cost differential between internal and external finance arises from agency costs, the gap should depend inversely on the borrower’s net worth. A fall in net worth raises the cost of external finance. Third, adverse shocks to net worth should reduce borrowers’ access to finance, thereby reducing their investment, employment, and production levels.

If, as emphasized under the broad credit channel, agency costs increase during recessions and in response to contractionary monetary policy, then the share of credit going to low-agency-cost borrowers should rise. Bernanke, Gertler, and Gilchrist characterize this as the *flight to quality*. Aggregate data are likely to be of limited usefulness in testing such a hypothesis, since most data on credit stocks and flows are not constructed based on the characteristics of the borrowers. Because small firms presumably are subject to higher agency costs than large firms, much of the evidence for a broad credit channel has been sought by looking for differences in the behavior of large and small firms in the face of monetary contractions.

Gertler and Gilchrist (1994) document that small firms do behave differently than large firms over the business cycle, being much more sensitive to cyclical fluctuations. Kashyap et al. (1994) find that inventory investment by firms without access to public bond markets appears to be

affected by liquidity constraints.<sup>6</sup> Oliner and Rudebusch (1996) assess the role of financial factors by examining the behavior of small and large firms in response to changes in monetary policy. Interest rate-increases in response to a monetary contraction lower asset values and the value of collateral, increasing the cost of external funds relative to internal funds. Since agency problems are likely to be more severe for small firms than for large firms, the linkage between internal sources of funds and investment spending should be particularly strong for small firms after a monetary contraction. Oliner and Rudebusch do find that the impact of cash flow on investment increases for small firms, but not for large firms, when monetary policy tightens.

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<sup>6</sup>They focus on the 1981-1982 recession in the United States, a recession typically attributed to tight monetary policy.