

it will on large firms, which can get funds directly through stock and bond markets (and not only through banks).

Though this result has been confirmed by researchers, doubts about the bank lending channel have been raised in the literature, and there are reasons to suspect that the bank lending channel in the United States may not be as powerful as it once was.¹⁸ The first reason this channel is not as powerful is that current U.S. regulations no longer impose restrictions on banks that hinder their ability to raise funds (see Chapter 9). Prior to the mid-1980s, certificates of deposit (CDs) were subjected to reserve requirements and Regulation Q deposit rate ceilings, which made it hard for banks to replace deposits that flowed out of the banking system during a monetary contraction. With these regulatory restrictions abolished, banks can more easily respond to a decline in bank reserves and a loss of retail deposits by issuing CDs at market interest rates that do not have to be backed up by required reserves. Second, the worldwide decline of the traditional bank lending business (see Chapter 10) has rendered the bank lending channel less potent. Nonetheless, many economists believe that the bank lending channel played an important role in the slow recovery in the U.S. from the 1990–1991 recession.

Balance Sheet Channel. Even though the bank lending channel may be declining in importance, it is by no means clear that this is the case for the other credit channel, the balance sheet channel. Like the bank lending channel, the balance sheet channel arises from the presence of asymmetric information problems in credit markets. In Chapter 8, we saw that the lower the net worth of business firms, the more severe the adverse selection and moral hazard problems in lending to these firms. Lower net worth means that lenders in effect have less collateral for their loans, so their potential losses from adverse selection are higher. A decline in net worth, which raises the adverse selection problem, thus leads to decreased lending to finance investment spending. The lower net worth of businesses also increases the moral hazard problem because it means that owners have a lower equity stake in their firms, giving them more incentive to engage in risky investment projects. Because taking on riskier investment projects makes it more likely that lenders will not be paid back, a decrease in businesses' net worth leads to a decrease in lending and hence in investment spending.

Monetary policy can affect firms' balance sheets in several ways. Expansionary monetary policy, which causes a rise in stock prices ($P_s \uparrow$) along the lines described earlier, raises the net worth of firms and so leads to higher investment spending ($I \uparrow$) and aggregate demand ($Y \uparrow$). because of the decrease in adverse selection and moral hazard problems. This leads to the following schematic for one balance sheet channel of monetary transmission:

$$\text{Expansionary monetary policy} \Rightarrow P_s \uparrow \Rightarrow \text{net worth} \uparrow \Rightarrow \text{adverse selection} \downarrow, \\ \text{moral hazard} \downarrow \Rightarrow \text{lending} \uparrow \Rightarrow I \uparrow \Rightarrow Y \uparrow \quad (7)$$

Cash Flow Channel. Another balance sheet channel operates by affecting cash flow, the difference between cash receipts and cash expenditures. Expansionary monetary policy, which lowers nominal interest rates, also causes an improvement in firms' balance sheets because it raises cash flow. The rise in cash flow causes an improvement in the balance sheet because it increases the liquidity of the firm (or household) and

¹⁸For example, see Valerie Ramey, "How Important Is the Credit Channel in the Transmission of Monetary Policy?" *Carnegie-Rochester Conference Series on Public Policy* 39 (1993): 1–45; and Allan H. Meltzer, "Monetary, Credit (and Other) Transmission Processes: A Monetarist Perspective," *Journal of Economic Perspectives* 9 (Fall 1995): 49–72.