Monetary Policy and the Economy

Policy Formulation

The basic link between monetary policy and the economy is through the market for bank reserves, more commonly known as the federal funds market. In that market, banks and other depository institutions trade their non-interest-bearing reserve balances held at the Federal Reserve with each other, usually on an overnight basis. On any given day, depository institutions that are below their desired reserve positions borrow from others that are above their desired reserve positions. The benchmark interest rate charged for the short-term use of these funds is called the federal funds rate. The Federal Reserve's monetary policy actions have an immediate effect on the supply of or demand for reserves and the federal funds rate, initiating a chain of reactions that transmit the policy effects to the rest of the economy.

The Federal Reserve can change reserves market conditions by using three main instruments: reserve requirements, the discount rate and open market operations. The Board of Governors of the Federal Reserve System (hereafter frequently referred to as the Board) sets reserve requirements, under which depository institutions must hold a fraction of their deposits as reserves. At present, as described in the next chapter, these reserve requirements apply only to checkable or transactions deposits, which include demand deposits and interest-bearing accounts that offer unlimited checking privileges. Directors of the Reserve Banks set the discount rate and initiate changes in it, subject to review and determination by the Board of Governors. The Reserve Banks administer discount window lending to depository institutions, making short-term loans.

The Federal Open Market Committee (FOMC) directs the primary and, by far, the most flexible and actively used instrument of monetary policy—open market operations—to effect changes in reserves. The Chairman of the Board of Governors presides over FOMC meetings, currently eight per year, in which the Chairman, the six other governors, and the 12 Reserve Bank presidents assess the economic outlook and plan monetary policy actions. The voting members of the FOMC include the seven members of the Board of

Governors, the president of the Federal Reserve Bank of New York—designated, by tradition, as the vice chairman of the FOMC—and four other Reserve Bank presidents who serve in annual rotation. There is sometimes discussion as well at the FOMC meetings of reserve requirements and the discount rate, although these tools are outside the FOMC's jurisdiction.

Under the Federal Reserve Act as amended by the Full Employment and Balanced Growth Act of 1978 (the Humphrey-Hawkins Act), the Federal Reserve and the FOMC are charged with the job of seeking "to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates." The Humphrey-Hawkins Act requires that, in the pursuit of these goals, the Federal Reserve and the FOMC establish annual objectives for growth in money and credit, taking account of past and prospective economic developments. This provision of the Act assumes that the economy and the growth of money and credit have a reasonably stable relationship that can be exploited toward achieving policy goals. The law recognizes, however, that changing economic conditions may necessitate revisions to, or deviations from, monetary growth plans.

The Federal Reserve's monetary policy actions have an immediate effect on the supply of or demand for reserves and the federal funds rate.

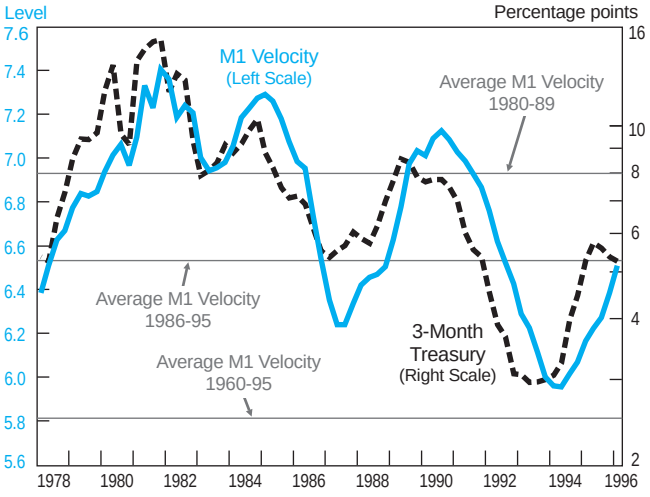
Since about 1980, far-reaching changes in the financial system have caused considerable instability in the relationship of money and credit to the economy. In particular, monetary velocities—ratios of nominal GDP (gross domestic product) to various monetary aggregates—have shown frequent and marked departures from their historical patterns, making the monetary aggregates unreliable as indicators of economic activity and as guides for stabilizing prices. Velocities of M1 (currency, checkable deposits and travelers checks of nonbank issuers) and M2 (M1 plus saving and small time deposits and retail-type money market mutual fund balances) have fluctuated widely in recent years, and their average values over the last five to ten years have been much different from their long-run averages (Figure 2-1). For example, until the late 1980s, M2 velocity had been relatively stable over longer periods, while its short-run movements were positively correlated to interest rate changes. In the early 1990s, however, M2 velocity departed from its historical pattern and drifted upward even as interest rates were declining.

Some observers believe that ongoing, rapid financial changes will continue to cause instability in the financial linkages of the economy, undermining the usefulness of money and credit aggregates as guides for policy. Others expect the financial innovation process to settle down, leading to a restoration, at least to some

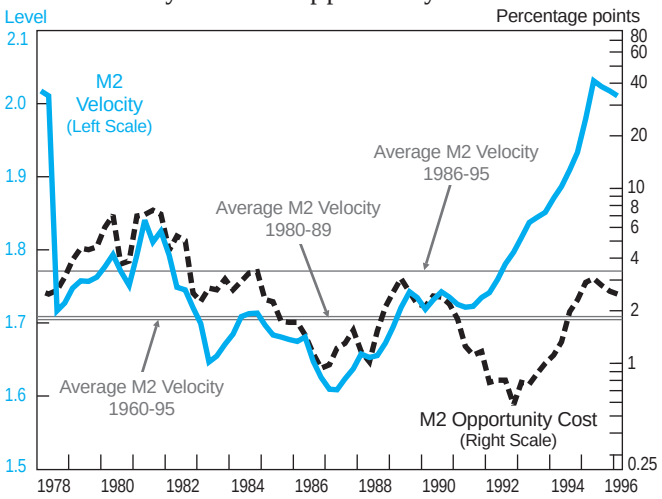
Figure 2-1

Monetary Velocities and Interest Rates

M1 Velocity and 3-Month Treasury Bill Rate



M2 Velocity and M2 Opportunity Cost



Notes: (1) Quarterly observations.
(2) Velocities are ratios of nominal GDP to M1 or M2.
(3) M2 opportunity cost is the difference between the 3-month Treasury bill rate and the average rate paid on M2 components.

extent, of the usefulness of money and credit as policy guides. Whatever the future outcome of these controversies, the Federal Reserve has been obliged, for some time now, to reduce its reliance on numerical targets for money and credit in formulating monetary policy. In recent years, the FOMC has used a wide range of financial and nonfinancial indicators in judging economic trends and the appropriateness of monetary and financial conditions, and in making monetary policy plans. In effect, under this eclectic approach, the FOMC's strategy for changing bank reserve levels aims at inducing broad financial conditions that it believes to be consistent with final policy goals.

In making monetary policy plans, the Federal Reserve and the FOMC are involved in a complex, dynamic process in which monetary policy is only one of many forces affecting employment, output and prices. The government's budgetary policies influence the economy through changes in tax and spending programs. Shifts in business and consumer confidence and a variety of other market forces also affect saving and spending plans of businesses and households. Changes in expectations about economic prospects and policies, through their effects on interest rates and financial conditions, can have significant influence on the outcomes for jobs, output and prices. Natural disasters and commodity price shocks can cause significant disruptions in output supply and the economy. Shifts in international

trade rules and regulations and in economic policies abroad can lower or raise the contribution of the external sector to the U.S. economy.

The FOMC also must estimate when, and to what extent, its own policy actions will affect money, credit, interest rates, business developments and prices. Since the state of knowledge about the way the economy works is quite imperfect, policymakers' understanding of the effects of various influences, including the effect of monetary policy, is far from certain. Moreover, the working of the economy changes over time, leading to changes in its response to policy and nonpolicy factors. On top of all these difficulties, policymakers do not have up-to-the-minute, reliable information about the economy, because of lags in the collection and publication of data. Even preliminary published data are frequently subject to significant errors that become evident in subsequent revisions.

In all of this, there is no escape from forecasting and from using judgment to deal with the uncertainties of data and the policy process. Indeed, monetary policy formulation is not a simple technical matter; it is clearly an art in that it greatly depends on experience, expertise and judgment.

Operational Approaches

Determining the appropriate reserve market conditions—that is, the desired degree of monetary policy restraint—also is very complicated. In choosing an operating strategy, the FOMC attempts to achieve a desired degree of monetary policy restraint, ease or tightness, by focusing on the reserve supply relative to demand, and the associated level of the federal funds rate. The Domestic Open Market Desk at the Federal Reserve Bank of New York can come reasonably close to meeting short-term objectives for nonborrowed reserves—supply of reserves excluding discount window borrowing. The contemplated reserve levels are based, of course, on the FOMC's desire to induce short-run monetary and financial conditions that will help to achieve policy goals for the economy.

In principle, the FOMC can aim for direct control of the quantity of reserves by not accommodating observed fluctuations in the demand for reserves. However, this will result in free movements in the federal funds rate. Alternatively, the FOMC can control the federal funds rate by adjusting the supply of reserves to meet all changes in the demand for reserves; this will allow the quantity of reserves to vary freely. Over the years, the actual approach has been adapted to changing circumstances. Sometimes the emphasis has been on controlling the quantity of reserves; other times, the federal funds rate.

While the FOMC generally has not aimed at precise control of the quantity of reserves, the operating strategy from October 1979 to late 1982 was closely

consistent with this approach. Concerned over rapidly accelerating inflation in the late 1970s, the Committee sought changes in its operating procedures in order to control money stock growth more effectively. In October 1979, the Committee began targeting nonborrowed reserves, allowing the federal funds rate to fluctuate freely within a wide and flexible range. Under this approach, the targeted path for nonborrowed reserves was based on the FOMC's growth objectives for M1—currency, checkable deposits and travelers checks of nonbank issuers. M1 growth in excess of the Committee's objectives would cause the depository institutions' demand for reserves to outstrip the nonborrowed reserves target, putting upward pressures on the funds rate and other short-term rates. The rise in interest rates, in turn, would reduce the growth in checkable deposits and other low-yielding instruments, bringing money stock growth back toward the Committee's objectives.

The reserve targeting procedure from 1979 to 1982 gradually came to provide assurance to financial markets and the public at large that the Federal Reserve would not underwrite a continuation of high and accelerating inflation. Reinforcing this procedure's built-in effects on money market conditions were judgmental changes in nonborrowed reserve objectives and in the discount rate. Monetary policy contributed importantly to lowering the inflation rate sharply, albeit not without a significant increase in interest rate volatility and a period of marked decline in output.

The historical relationship between M1 and the economy broke down in the early 1980s, leading the FOMC to de-emphasize its control of M1 during 1982. In late 1982, the Committee abandoned the formal reserve targeting procedure and moved toward accommodating short-run fluctuations in the demand for reserves, while limiting their effects on the federal funds rate. Subsequently, ongoing deregulation and financial innovation precluded a return to the use of numerical objectives for M1 and the nonborrowed reserve targeting procedure.

Monetary policy formulation is not a simple technical matter; it is clearly an art in that it greatly depends on experience, expertise and judgment.

As a consequence, since 1982, the Federal Reserve's operating procedures have focused on achieving a particular degree of tightness or ease in reserve market conditions rather than on the quantity of reserves. Specifically, the FOMC expresses its operating directives in terms of a desired degree of reserve pressure—that is, the costs and other conditions for the availability of reserves to the banking system—which is associated with an average level of the federal funds rate. The approach for evaluating the degree of reserve pressure, however, has

changed over time. As discussed in detail in Chapter 5, discount window borrowing targets were used as the main factor for assessing reserve availability conditions during 1983-87, but they have not played a significant role through much of the subsequent period.

Under the current approach, the FOMC uses the federal funds rate as the principal guide for evaluating reserve availability conditions and indicates a desired level of the federal funds rate. This judgmental approach involves estimating the demand for and supply of reserves, and accommodating all significant changes in the demand for reserves through adjustments in the supply of nonborrowed reserves. It allows for only modest day-to-day variations in the funds rate around the level intended by the Committee.

Financial Markets

The money market—which includes the federal funds market—provides the natural point of contact between the Federal Reserve and the financial system. The money market is a term used for wholesale markets in short-term credit or IOUs, comprising debt instruments maturing within one year. The market is international in scope and helps in economizing on the use of cash or money. Borrowers who are the issuers of short-term IOUs—generally, the U.S. Treasury, banks, business corporations and finance companies—can bridge differences in the timing of receipts and payments or can defer long-term borrowing to a more propitious time. The market allows the lenders—businesses, households or governmental units—to offset uneven flows of funds by allowing them to invest in short-term interest-earning assets that can be readily converted into cash with little risk of loss. They can also time their purchases of bonds and stocks to their particular views of long-term interest rates and stock prices.

The main instruments of the money market are federal funds, Treasury bills, repurchase agreements (RPs), Eurodollar deposits, certificates of deposits (CDs), bankers acceptances, commercial paper, municipal notes and federal agency short-term securities (see Figure 2-2 for definitions of instruments). The stock-in-trade of the market includes a large portion of the U.S. Treasury debt and federal agency securities. The daily dollar volume in this market is very large, several times that of the most active trading days on the New York Stock Exchange.

Banks are at the center of the money market, with their customer deposits and their own reserve balances at the Federal Reserve serving as the core element in the flow of funds. Large banks borrow and lend huge sums of money, on a daily basis, through the federal funds market. They are also particularly active in the markets for RPs, Eurodollars and bankers acceptances. Many banks act as dealers in money market securities, while many others offer short-term investment services.

Like other financial institutions, banks invest in short-term instruments such as Treasury bills and commercial paper. Banks also supply much of the short-term credit that allows nonbank dealers in money market paper to buy and hold an inventory.

Changes in borrowing and lending in the money market are reflected more or less continuously in the demand for nonborrowed reserves relative to the available supply, with immediate consequences for the federal funds rate. Thus, if the Federal Reserve increases the reserve supply relative to demand—i.e. eases reserve market conditions—the funds rate will fall quickly, and vice versa. Sustained movements of the federal funds rate are transmitted almost fully to yields on Treasury bills, commercial paper and other money market instruments.

The transmission of monetary policy actions to capital markets—markets for Government securities and corporate bonds and stocks with maturities exceeding one year—and the foreign exchange market is more complex and less predictable. Insurance companies, pension funds and other investors in capital market instruments seek rates of return that will compensate them, not only for expected future inflation, but also for

Figure 2-2

Glossary: Common Money Market Instruments

Federal Funds
Non-interest-bearing deposits held by banks and other depository institutions at the Federal Reserve; these are immediately available funds that institutions borrow or lend, usually on an overnight basis.

Treasury Bills
Short-term debt obligations of the U.S. Treasury that are issued to mature in 3 to 12 months.

Repurchase Agreements
Short-term loans—normally for less than two weeks and frequently for one day—arranged by selling securities to an investor with an agreement to repurchase them at a fixed price on a fixed date.

Eurodollar Deposits
Dollar deposits in a U.S. bank branch or a foreign bank located outside the United States.

Certificate of Deposit
A time deposit with a specific maturity date shown on a certificate; large-denomination certificates of deposits can be sold before maturity.

Bankers' Acceptances
A draft or bill of exchange accepted by a bank to guarantee payment of the bill.

Commercial Paper
An unsecured promissory note with a fixed maturity of one to 270 days; usually it is sold at a discount from face value.

Municipal Notes
Short-term notes issued by municipalities in anticipation of tax receipts or other revenues.

Federal Agency Short-Term Securities
Short-term securities issued by federally sponsored agencies such as the Farm Credit System, the Federal Home Loan Bank and the Federal National Mortgage Association.

uncertainty and forgone real return. In making investment decisions, such investors take into account recent experience with inflation and inflation expectations, as well as numerous other factors, including the federal budget deficit, long-term prospects for the economy, expectations about short-term interest rates and the credibility of monetary policy. These same considerations are also important in the transmission of monetary policy to the foreign exchange market.

Given the wide variety of influences on capital markets, long-term interest rates do not respond one-for-one to changes in the federal funds rate. In general, sustained changes in the federal funds rate (and other money market rates) lead to significant, but usually smaller, changes in long rates. Such interest rate changes also may tend to strengthen or weaken the dollar against other currencies, other things remaining the same. For example, a rise in U.S. interest rates relative to interest rates abroad will tend to make dollar assets more attractive to hold, increasing the foreign exchange value of the dollar as long as U.S. inflation trends and other forces are not working to offset the upward pressures on the dollar.

Economic Effects of Monetary Policy

By causing changes in interest rates, financial markets and the dollar exchange rate, monetary policy actions have important effects on output, employment and prices. These effects work through many different channels, affecting demand and economic activity in various sectors of the economy. Figure 2-3 shows the main contours of the transmission of monetary policy to the economy (see Box for a brief description of the transmission channels).

Private Spending and Output

Changes in the cost and availability of credit, reflecting changes in interest rates and credit supply conditions, are the most important sources of monetary policy effects on the economy. Higher interest rates tend to reduce demand and output in interest-sensitive sectors: higher corporate bond rates increase borrowing costs, restraining the demand for additional plant and equipment; higher mortgage rates depress the demand for housing; higher auto and consumer loan rates reduce purchases of cars and other consumer durables. Other (non-rate) restrictive provisions of loan agreements and lower supplies of credit also restrain the demand for investment goods and consumer durables, especially by those businesses and households particularly dependent on bank credit.

Consumption demand also is affected by changes in the value of household assets such as stocks and bonds. In general, asset values are inversely related to movements of interest rates—higher interest rates tend to reduce the value of household assets, other things remaining the same.

Monetary Policy Influence on the Economy

Figure 2-3 indicates that monetary policy actions influence output, employment and prices through a number of complex channels. These channels involve a variety of forces in financial markets that cause changes in (1) the cost and availability of funds to businesses and households, (2) the value of household assets or net worth, and (3) the foreign exchange value of the dollar with direct consequences for import/export prices. All these changes, in due course, affect economic activity and prices in various sectors of the economy.

When the Federal Reserve tightens monetary policy— for example, by draining bank reserves through open market sales of Government securities—the federal funds rate and other short-term interest rates rise more or less immediately, reflecting the reduced supply of bank reserves in the market. Sustained increases in short-term interest rates lead to lower growth of deposits and money as well as higher long-term interest rates. Higher interest rates raise the cost of funds, and, over time, have adverse consequences for business investment demand, home buying and consumer spending on durable goods, other things remaining the same. This is the conventional money or interest rate channel of monetary policy influence on the economy.

A firming of monetary policy also may reduce the supply of bank loans through higher funding costs for banks or through increases in the perceived riskiness of bank loans. Similarly, non-bank sources of credit to the private sector may become more scarce because of higher lending risks (actual or perceived) associated with tighter monetary conditions. The reduced availability—as distinct from costs—of loans may have negative effects on aggregate demand and output. This is the so-called "credit channel" that may operate alongside the interest rate channel.

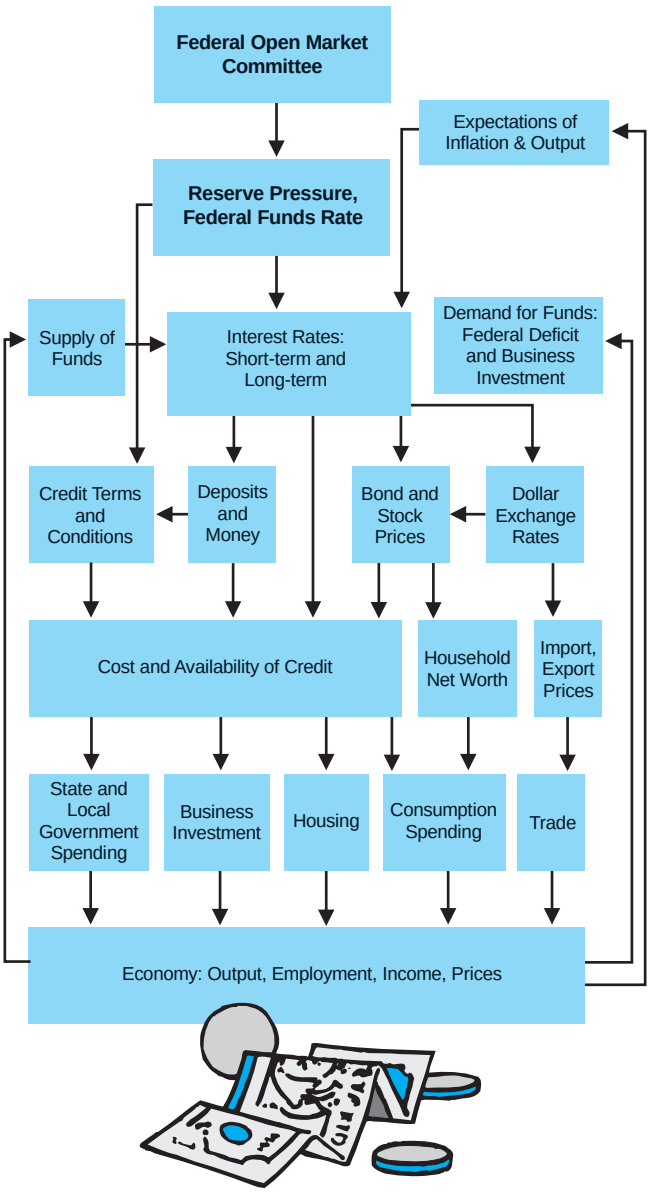
Higher interest rates and lower monetary growth also may influence economic activity through the "wealth channel" by lowering actual or expected asset values. For example, rising interest rates generally tend to lower bond and stock prices, reducing household net worth and weakening business balance sheets. As a consequence, business and household spending may suffer.

Finally, a monetary policy tightening affects economic activity by raising the foreign exchange value of the dollar—the exchange rate channel. By making U.S. imports cheaper and by increasing the cost of U.S. exports to foreigners, the appreciation of the dollar reduces the demand for U.S. goods, and, therefore, has adverse consequences for the trade balance and output. On the positive side, lower import prices help in improving the U.S. inflation performance.

Needless to say, all these effects work in the opposite direction when the Federal Reserve eases monetary policy.

Figure 2-3

The Transmission of Monetary Policy



The outlook for the economy and expectations of households and businesses play a central role in the magnitude and timing of monetary policy effects on the economy. Households' own experience with the cyclical rise and fall in interest rates may affect their actions. A sustained sharp rise in interest rates, for example, may suggest more uncertain prospects for employment and incomes, resulting in greater household caution toward spending on consumer goods and house purchases. Conversely, a significant fall in interest rates during a period of weak economic activity may encourage greater consumer spending by increasing the value of household assets. Lower mortgage rates, together with greater availability of mortgage credit, also may stimulate the demand for housing.

Businesses plan their inventories and additions to productive capacity (i.e. capital spending) to meet future customer demands and their own sales expectations. Since internal resources—retained earnings and depreciation allowances—do not provide all of their cash requirements, businesses often are obliged to use the credit markets to finance capital spending and inventories.

During business cycle expansion, the business sector's need for external financing rises rapidly, as firms accumulate inventories to ensure that sales will not be lost because of shortages. At the same time, businesses attempt to finance additions to capacity. Greater business demand for funds tends to bid up interest rates in

financial markets, but higher rates do not pose serious problems for businesses so long as sales are growing and the economy is expanding at a rapid pace. In this environment, monetary policy tightening will dampen capital spending and inventory building only slowly, if the strong outlook for business sales and the economy persists. Eventually, however, higher interest costs and reduced credit availability contribute to a tempering of the optimistic outlook, leading to weaker business sales, unwanted accumulation of inventories and lower output.

With lower capital spending, business credit demands fall during periods of business slowdown, putting downward pressure on market interest rates. Actual and expected easing of monetary policy work in the same direction, accelerating the speed of decline in rates and increasing credit availability to businesses. These conditions gradually build up expectations of stronger demand and economic activity, setting the stage for an end to the inventory runoff. Eventually, production levels needed to meet current sales are restored.

Monetary policy has significant effects on employment and output in the short run, but in the long run, it affects primarily prices.

Government Sector

Monetary policy has only a modest direct effect on capital spending by state and local governments. Rising interest rates tend to trim or postpone some state and local government capital spending projects, as private investors bid away financial resources from other users. Conversely, a fall in interest rates tends to make some state and local Government projects viable.

In contrast, the discretionary spending and revenue decisions of the federal Government are largely immune to monetary restraint or ease. The U.S. Treasury is, in fact, a major independent force in financial markets, competing with other borrowers. To some extent, federal credit demands tend to run counter to private credit demands: they rise during recessions, when tax receipts go down and cyclically induced Government spendings go up; they fall during expansions, reflecting favorable effects on tax receipts and cyclical Government spendings. Since the early 1980s, however, federal credit demands have tended to remain very high, even in good times, because of a sharp rise in structural deficits. Recent Government budget initiatives may reverse this trend by reducing future structural deficits.

External Sector

U.S. monetary policy exercises significant effects on the economy through the external sector. For example, the appreciation of the dollar associated with higher interest

rates reduces the demand for U.S. goods by lowering the cost of imports to Americans and increasing the cost of U.S. exports to foreigners. With Americans substituting cheaper imports for domestically produced goods and people abroad buying fewer American goods, U.S. production suffers and the trade balance worsens.

Other countries have to weigh the benefits and costs of changes in exchange rates resulting from U.S. monetary policy changes for their own economies. A country may welcome the stimulus from the depreciation of its currency—the appreciation of the dollar—if its economy is facing considerable slack and inflation is not a serious problem. On the other hand, if a country is experiencing significant inflationary pressures at home, it may attempt to offset the depreciation of its currency by tightening monetary policy. Of course, the feedback on U.S. exports and trade depends, not only on changes in foreign and U.S. monetary policies, but also on the pace of economic growth here and abroad.

Inflation

The drop in demand and output induced by tighter monetary policy tends to relieve pressures on economic resources. Such relief is necessary to curb inflation in an overheating economy. By contrast, in a depressed economy, monetary ease helps increase employment of labor and other economic resources by generating higher demand and output. Monetary policy has significant effects on employment and output in the short run, but in the long run, it affects primarily prices. To sustain non-inflationary economic growth over time, therefore, the Federal Reserve must aim at maintaining price stability or low inflation. Indeed, price stability is necessary, though not sufficient, to maximize the long-run growth potential of an economy.

Monetary restraint or ease affects the economy with considerable time lags that differ among sectors and, perhaps more importantly, between demand/output and prices. Normally, sales and production respond to monetary policy changes more quickly than do wages and prices. The economy is characterized by many formal and informal contracts and other rigidities that limit changes in prices and wages in the short run. In addition, inflation expectations, which influence decisions to set wages and prices, tend to adjust rather slowly. Over a longer period, however, monetary policy changes are transmitted more fully to wages and prices as adjustment of inflation expectations is completed and contracts are renegotiated.