

2 Monetary Policy and the Economy

The Federal Reserve sets the nation's monetary policy to promote the objectives of maximum employment, stable prices, and moderate long-term interest rates. The challenge for policy makers is that tensions among the goals can arise in the short run and that information about the economy becomes available only with a lag and may be imperfect.

Goals of Monetary Policy

The goals of monetary policy are spelled out in the Federal Reserve Act, which specifies that the Board of Governors and the Federal Open Market Committee should seek “to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates.” Stable prices in the long run are a precondition for maximum sustainable output growth and employment as well as moderate long-term interest rates. When prices are stable and believed likely to remain so, the prices of goods, services, materials, and labor are undistorted by inflation and serve as clearer signals and guides to the efficient allocation of resources and thus contribute to higher standards of living. Moreover, stable prices foster saving and capital formation, because when the risk of erosion of asset values resulting from inflation—and the need to guard against such losses—are minimized, households are encouraged to save more and businesses are encouraged to invest more.

Although price stability can help achieve maximum sustainable output growth and employment over the longer run, in the short run some tension can exist between the two goals. Often, a slowing of employment is accompanied by lessened pressures on prices, and moving to counter the weakening of the labor market by easing policy does not have adverse inflationary effects. Sometimes, however, upward pressures on prices are developing as output and employment are softening—especially when an adverse supply shock, such as a spike in energy prices, has occurred. Then, an attempt to restrain inflation pressures would compound the weakness in the economy, or an attempt to reverse employment losses would aggravate inflation. In such circumstances, those responsible for monetary policy face a dilemma and must decide whether to focus on defusing price pressures or on cushioning the loss of employment and output. Adding to the difficulty is the possibility that an expectation of



increasing inflation might get built into decisions about prices and wages, thereby adding to inflation inertia and making it more difficult to achieve price stability.

Beyond influencing the level of prices and the level of output in the near term, the Federal Reserve can contribute to financial stability and better economic performance by acting to contain financial disruptions and preventing their spread outside the financial sector. Modern financial systems are highly complex and interdependent and may be vulnerable to wide-scale systemic disruptions, such as those that can occur during a plunge in stock prices. The Federal Reserve can enhance the financial system's resilience to such shocks through its regulatory policies toward banking institutions and payment systems. If a threatening disturbance develops, the Federal Reserve can also cushion the impact on financial markets and the economy by aggressively and visibly providing liquidity through open market operations or discount window lending.

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How Monetary Policy Affects the Economy

The initial link in the chain between monetary policy and the economy is the market for balances held at the Federal Reserve Banks. Depository institutions have accounts at their Reserve Banks, and they actively trade balances held in these accounts in the federal funds market at an interest rate known as the federal funds rate. The Federal Reserve exercises considerable control over the federal funds rate through its influence over the supply of and demand for balances at the Reserve Banks.

The FOMC sets the federal funds rate at a level it believes will foster financial and monetary conditions consistent with achieving its monetary policy objectives, and it adjusts that target in line with evolving economic developments. A change in the federal funds rate, or even a change in expectations about the future level of the federal funds rate, can set off a chain of events that will affect other short-term interest rates, longer-term interest rates, the foreign exchange value of the dollar, and stock prices. In turn, changes in these variables will affect households' and businesses' spending decisions, thereby affecting growth in aggregate demand and the economy.

Short-term interest rates, such as those on Treasury bills and commercial paper, are affected not only by the current level of the federal funds rate but also by expectations about the overnight federal funds rate over the duration of the short-term contract. As a result, short-term interest rates could decline if the Federal Reserve surprised market participants with a reduction in the federal funds rate, or if unfolding events convinced participants that the Federal Reserve was going to be holding the federal funds rate lower than had been anticipated. Similarly, short-term inter-

est rates would increase if the Federal Reserve surprised market participants by announcing an increase in the federal funds rate, or if some event prompted market participants to believe that the Federal Reserve was going to be holding the federal funds rate at higher levels than had been anticipated.

It is for these reasons that market participants closely follow data releases and statements by Federal Reserve officials, watching for clues that the economy and prices are on a different trajectory than had been thought, which would have implications for the stance of monetary policy.

Changes in short-term interest rates will influence long-term interest rates, such as those on Treasury notes, corporate bonds, fixed-rate mortgages, and auto and other consumer loans. Long-term rates are affected not only by changes in current short-term rates but also by expectations about short-term rates over the rest of the life of the long-term contract. Generally, economic news or statements by officials will have a greater impact on short-term interest rates than on longer rates because they typically have a bearing on the course of the economy and monetary policy over a shorter period; however, the impact on long rates can also be considerable because the news has clear implications for the expected course of short-term rates over a long period.

Changes in long-term interest rates also affect stock prices, which can have a pronounced effect on household wealth. Investors try to keep their investment returns on stocks in line with the return on bonds, after allowing for the greater riskiness of stocks. For example, if long-term interest rates decline, then, all else being equal, returns on stocks will exceed returns on bonds and encourage investors to purchase stocks and bid up stock prices to the point at which expected risk-adjusted returns on stocks are once again aligned with returns on bonds. Moreover, lower interest rates may convince investors that the economy will be stronger and profits higher in the near future, which should further lift equity prices.

Furthermore, changes in monetary policy affect the exchange value of the dollar on currency markets. For example, if interest rates rise in the United States, yields on dollar assets will look more favorable, which will lead to bidding up of the dollar on foreign exchange markets. The higher dollar will lower the cost of imports to U.S. residents and raise the price of U.S. exports to those living outside the United States. Conversely, lower interest rates in the United States will lead to a decline in the exchange value of the dollar, prompting an increase in the price of imports and a decline in the price of exports.

Changes in the value of financial assets, whether the result of an actual or expected change in monetary policy, will affect a wide range of spending decisions. For example, a drop in interest rates, a lower exchange value of

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the dollar, and higher stock prices will stimulate various types of spending. Investment projects that businesses believed would be only marginally profitable will become more attractive with lower financing costs. Lower consumer loan rates will elicit greater demand for consumer goods, especially bigger-ticket items such as motor vehicles. Lower mortgage rates will make housing more affordable and lead to more home purchases. They will also encourage mortgage refinancing, which will reduce ongoing housing costs and enable households to purchase other goods. When refinancing, some homeowners may withdraw a portion of their home equity to pay for other things, such as a motor vehicle, other consumer goods, or a long-desired vacation trip. Higher stock prices can also add to household wealth and to the ability to make purchases that had previously seemed beyond reach. The reduction in the value of the dollar associated with a drop in interest rates will tend to boost U.S. exports by lowering the cost of U.S. goods and services in foreign markets. It will also make imported goods more expensive, which will encourage businesses and households to purchase domestically produced goods instead. All of these responses will strengthen growth in aggregate demand. A tightening of monetary policy will have the opposite effect on spending and will moderate growth of aggregate demand.

If the economy slows and employment softens, policy makers will be inclined to ease monetary policy to stimulate aggregate demand. When growth in aggregate demand is boosted above growth in the economy's potential to produce, slack in the economy will be absorbed and employment will return to a more sustainable path. In contrast, if the economy is showing signs of overheating and inflation pressures are building, the Federal Reserve will be inclined to counter these pressures by tightening monetary policy—to bring growth in aggregate demand below that of the economy's potential to produce—for as long as necessary to defuse the inflationary pressures and put the economy on a path to sustainable expansion.

While these policy choices seem reasonably straightforward, monetary policy makers routinely face certain notable uncertainties. First, the actual position of the economy and growth in aggregate demand at any point in time are only partially known, as key information on spending, production, and prices becomes available only with a lag. Therefore, policy makers must rely on estimates of these economic variables when assessing the appropriate course of policy, aware that they could act on the basis of misleading information. Second, exactly how a given adjustment in the federal funds rate will affect growth in aggregate demand—in terms of both the overall magnitude and the timing of its impact—is never certain. Economic models can provide rules of thumb for how the economy will respond, but these rules of thumb are subject to statistical error. Third, the growth in aggregate supply, often called the growth in potential

output, cannot be measured with certainty. Key here is the growth of the labor force and associated labor input, as well as underlying growth in labor productivity. Growth in labor input typically can be measured with more accuracy than underlying productivity; for some time, growth in labor input has tended to be around the growth in the overall population of 1 percentage point per year. However, underlying productivity growth has varied considerably over recent decades, from approximately 1 percent or so per year to somewhere in the neighborhood of 3 percent or even higher, getting a major boost during the mid- and late 1990s from applications of information technology and advanced management systems. If, for example, productivity growth is 2 percent per year, then growth in aggregate supply would be the sum of this amount and labor input growth of 1 percent—that is, 3 percent per year. In which case, growth in aggregate demand in excess of 3 percent per year would result in a pickup in growth in employment in excess of that of the labor force and a reduction in unemployment. In contrast, growth in aggregate demand below 3 percent would result in a softening of the labor market and, in time, a reduction in inflationary pressures.

Limitations of Monetary Policy

Monetary policy is not the only force acting on output, employment, and prices. Many other factors affect aggregate demand and aggregate supply and, consequently, the economic position of households and businesses. Some of these factors can be anticipated and built into spending and other economic decisions, and some come as a surprise. On the demand side, the government influences the economy through changes in taxes and spending programs, which typically receive a lot of public attention and are therefore anticipated. For example, the effect of a tax cut may precede its actual implementation as businesses and households alter their spending in anticipation of the lower taxes. Also, forward-looking financial markets may build such fiscal events into the level and structure of interest rates, so that a stimulative measure, such as a tax cut, would tend to raise the level of interest rates even before the tax cut becomes effective, which will have a restraining effect on demand and the economy before the fiscal stimulus is actually applied.

Other changes in aggregate demand and supply can be totally unpredictable and influence the economy in unforeseen ways. Examples of such shocks on the demand side are shifts in consumer and business confidence, and changes in the lending posture of commercial banks and other creditors. Lessened confidence regarding the outlook for the economy and labor market or more restrictive lending conditions tend to curb business and household spending. On the supply side, natural disasters, disruptions in the oil market that reduce supply, agricultural losses, and slowdowns in

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productivity growth are examples of adverse supply shocks. Such shocks tend to raise prices and reduce output. Monetary policy can attempt to counter the loss of output or the higher prices but cannot fully offset both.

In practice, as previously noted, monetary policy makers do not have up-to-the-minute information on the state of the economy and prices. Useful information is limited not only by lags in the construction and availability of key data but also by later revisions, which can alter the picture considerably. Therefore, although monetary policy makers will eventually be able to offset the effects that adverse demand shocks have on the economy, it will be some time before the shock is fully recognized and—given the lag between a policy action and the effect of the action on aggregate demand—an even longer time before it is countered. Add to this the uncertainty about how the economy will respond to an easing or tightening of policy of a given magnitude, and it is not hard to see how the economy and prices can depart from a desired path for a period of time.

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The statutory goals of maximum employment and stable prices are easier to achieve if the public understands those goals and believes that the Federal Reserve will take effective measures to achieve them. For example, if the Federal Reserve responds to a negative demand shock to the economy with an aggressive and transparent easing of policy, businesses and consumers may believe that these actions will restore the economy to full employment; consequently, they may be less inclined to pull back on spending because of concern that demand may not be strong enough to warrant new business investment or that their job prospects may not warrant the purchase of big-ticket household goods. Similarly, a credible anti-inflation policy will lead businesses and households to expect less wage and price inflation; workers then will not feel the same need to protect themselves by demanding large wage increases, and businesses will be less aggressive in raising their prices, for fear of losing sales and profits. As a result, inflation will come down more rapidly, in keeping with the policy-related slowing in growth of aggregate demand, and will give rise to less slack in product and resource markets than if workers and businesses continued to act as if inflation were not going to slow.

Guides to Monetary Policy

Although the goals of monetary policy are clearly spelled out in law, the means to achieve those goals are not. Changes in the FOMC's target federal funds rate take some time to affect the economy and prices, and it is often far from obvious whether a selected level of the federal funds rate will achieve those goals. For this reason, some have suggested that the Federal Reserve pay close attention to guides that are intermediate between its operational target—the federal funds rate—and the economy.

Among those frequently mentioned are monetary aggregates, the level and structure of interest rates, the so-called Taylor rule (discussed on page 23), and foreign exchange rates. Some suggest that one of these guides be selected as an intermediate target—that is, that a specific formal objective be set for the intermediate target and pursued aggressively with the policy instruments. Others suggest that these guides be used more as indicators, to be monitored regularly; in other words, the Federal Reserve could establish a reference path for the intermediate variable that it thought to be consistent with achieving the final goals of monetary policy, and actual outcomes departing appreciably from that path would be seen as suggesting that the economy might be drifting off course and that a policy adjustment might be necessary.

Monetary Aggregates

Monetary aggregates have at times been advocated as guides to monetary policy on the grounds that they may have a fairly stable relationship with the economy and can be controlled to a reasonable extent by the central bank, either through control over the supply of balances at the Federal Reserve or the federal funds rate. An increase in the federal funds rate (and other short-term interest rates), for example, will reduce the attractiveness of holding money balances relative to now higher-yielding money market instruments and thereby reduce the amount of money demanded and slow growth of the money stock. There are a few measures of the money stock—ranging from the transactions-dominated M1 to the broader M2 and M3 measures, which include other liquid balances—and these aggregates have different behaviors. (See page 22 for a description of the composition of the monetary aggregates.)

Ordinarily, the rate of money growth sought over time would be equal to the rate of nominal GDP growth implied by the objective for inflation and the objective for growth in real GDP. For example, if the objective for inflation is 1 percent in a given year and the rate of growth in real GDP associated with achieving maximum employment is 3 percent, then the guideline for growth in the money stock would be 4 percent. However, the relation between the growth in money and the growth in nominal GDP, known as “velocity,” can vary, often unpredictably, and this uncertainty can add to difficulties in using monetary aggregates as a guide to policy. Indeed, in the United States and many other countries with advanced financial systems over recent decades, considerable slippage and greater complexity in the relationship between money and GDP have made it more difficult to use monetary aggregates as guides to policy. In addition, the narrow and broader aggregates often give very different signals about the need to adjust policy. Accordingly, monetary aggregates have taken on less importance in policy making over time.



The Components of the Monetary Aggregates

The Federal Reserve publishes data on three monetary aggregates. The first, M1, is made up of types of money commonly used for payment, basically currency and checking deposits. The second, M2, includes M1 plus balances that generally are similar to transaction accounts and that, for the most part, can be converted fairly readily to M1 with little or no loss of principal. The M2 measure is thought to be held primarily by households. The third aggregate, M3, includes M2 plus certain accounts that are held by entities other than individuals and are issued by banks and thrift institutions to augment M2-type balances in meeting credit demands; it also includes balances in money market mutual funds held by institutional investors.

The aggregates have had different roles in monetary policy as their reliability as guides has changed. The following details their principal components:

- M1** Currency (and traveler's checks)
Demand deposits
NOW and similar interest-earning checking accounts

- M2** M1
Savings deposits and money market deposit accounts
Small time deposits¹
Retail money market mutual fund balances²

- M3** M2
Large time deposits
Institutional money market mutual fund balances
Repurchase agreements
Eurodollars

1. Time deposits in amounts of less than \$100,000, excluding balances in IRA and Keogh accounts at depository institutions.

2. Excludes balances held in IRA and Keogh accounts with money market mutual funds.

Interest Rates

Interest rates have frequently been proposed as a guide to policy, not only because of the role they play in a wide variety of spending decisions but also because information on interest rates is available on a real-time basis. Arguing against giving interest rates the primary role in guiding monetary policy is uncertainty about exactly what level or path of interest rates is consistent with the basic goals of monetary policy. The appropriate level of interest rates will vary with the stance of fiscal policy, changes in the pattern of household and business spending, productivity growth, and economic developments abroad. It can be difficult not only to gauge the strength of these forces but also to translate them into a path for interest rates.

The slope of the yield curve (that is, the difference between the interest rate on longer-term and shorter-term instruments) has also been suggested as a guide to monetary policy. Whereas short-term interest rates are strongly influenced by the current setting of the policy instrument, longer-term interest rates are influenced by expectations of future short-term interest rates and thus by the longer-term effects of monetary policy on inflation and output. For example, a yield curve with a steeply positive slope (that is, longer-term interest rates far above short-term rates) may be a signal that participants in the bond market believe that monetary policy has become too expansive and thus, without a monetary policy correction, more inflationary. Conversely, a yield curve with a downward slope (short-term rates above longer rates) may be an indication that policy is too restrictive, perhaps risking an unwanted loss of output and employment. However, the yield curve is also influenced by other factors, including prospective fiscal policy, developments in foreign exchange markets, and expectations about the future path of monetary policy. Thus, signals from the yield curve must be interpreted carefully.

The Taylor Rule

The “Taylor rule,” named after the prominent economist John Taylor, is another guide to assessing the proper stance of monetary policy. It relates the setting of the federal funds rate to the primary objectives of monetary policy—that is, the extent to which inflation may be departing from something approximating price stability and the extent to which output and employment may be departing from their maximum sustainable levels. For example, one version of the rule calls for the federal funds rate to be set equal to the rate thought to be consistent in the long run with the achievement of full employment and price stability plus a component based on the gap between current inflation and the inflation objective less a component based on the shortfall of actual output from the full-employment level. If inflation is picking up, the Taylor rule prescribes

the amount by which the federal funds rate would need to be raised or, if output and employment are weakening, the amount by which it would need to be lowered. The specific parameters of the formula are set to describe actual monetary policy behavior over a period when policy is thought to have been fairly successful in achieving its basic goals.

Although this guide has appeal, it too has shortcomings. The level of short-term interest rates associated with achieving longer-term goals, a key element in the formula, can vary over time in unpredictable ways. Moreover, the current rate of inflation and position of the economy in relation to full employment are not known because of data lags and difficulties in estimating the full-employment level of output, adding another layer of uncertainty about the appropriate setting of policy.

Foreign Exchange Rates

Exchange rate movements are an important channel through which monetary policy affects the economy, and exchange rates tend to respond promptly to a change in the federal funds rate. Moreover, information on exchange rates, like information on interest rates, is available continuously throughout the day.

Interpreting the meaning of movements in exchange rates, however, can be difficult. A decline in the foreign exchange value of the dollar, for example, could indicate that monetary policy has become, or is expected to become, more accommodative, resulting in inflation risks. But exchange rates respond to other influences as well, notably developments abroad; so a weaker dollar on foreign exchange markets could instead reflect higher interest rates abroad, which make other currencies more attractive and have fewer implications for the stance of U.S. monetary policy and the performance of the U.S. economy. Conversely, a strengthening of the dollar on foreign exchange markets could reflect a move to a more restrictive monetary policy in the United States—or expectations of such a move. But it also could reflect expectations of a lower path for interest rates elsewhere or a heightened perception of risk in foreign financial assets relative to U.S. assets.

Some have advocated taking the exchange rate guide a step further and using monetary policy to stabilize the dollar's value in terms of a particular currency or in terms of a basket of currencies. However, there is a great deal of uncertainty about which level of the exchange rate is most consistent with the basic goals of monetary policy, and selecting the wrong rate could lead to a protracted period of deflation and economic slack or to an overheated economy. Also, attempting to stabilize the exchange rate in the face of a disturbance from abroad would short-circuit the cushioning effect that the associated movement in the exchange rate would have on the U.S. economy.

Conclusion

All of the guides to monetary policy discussed here have something to do with the transmission of monetary policy to the economy. All have certain advantages; however, none has shown so consistently close a relationship with the ultimate goals of monetary policy that it can be relied on alone. Consequently, monetary policy makers have tended to use a broad range of indicators—those mentioned above along with many others, including the actual behavior of output and prices—to judge trends in the economy and to assess the stance of monetary policy.

Such an eclectic approach enables the Federal Reserve and other central banks to use all the available information in conducting monetary policy. This tack may be especially important as market structures and economic processes change in ways that reduce the utility of any single indicator. However, a downside to such an approach is the difficulty it poses in communicating the central bank's intentions to the public; the lack of a relatively simple set of procedures may make it difficult for the public to understand the actions of the Federal Reserve and to judge whether those actions are consistent with achieving its statutory goals. This downside risk can be mitigated if the central bank develops a track record of achieving favorable policy outcomes when no single guide to policy has proven reliable.

