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U.S. MONETARY POLICY

An Introduction

Federal Reserve Bank of San Francisco

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U.S. Monetary Policy

An Introduction

U.S. monetary policy affects all kinds of economic and financial decisions people make in this country—whether to get a loan to buy a new house or car or to start up a company, whether to expand a business by investing in a new plant or equipment, and whether to put savings in a bank, in bonds, or in the stock market, for example. Furthermore, because the U.S. is the largest economy in the world, its monetary policy also has significant economic and financial effects on other countries.

The object of monetary policy is to influence the performance of the economy as reflected in such factors as inflation, economic output, and employment. It works by affecting demand across the economy—that is, people’s and firms’ willingness to spend on goods and services.

While most people are familiar with the fiscal policy tools that affect demand—such as taxes and government spending—many are less familiar with monetary policy and its tools. Monetary policy is conducted by the Federal Reserve System, the nation’s central bank, and it influences demand mainly by raising and lowering short-term interest rates.

This booklet provides an introduction to U.S. monetary policy as it is currently conducted by answering a series of questions:

How is the Fed structured to make monetary policy decisions?

What are the Fed’s goals?

What tools does it use to implement its policies?

How does monetary policy affect the U.S. economy?

How does the Fed formulate strategies to reach its goals?

How is the Federal Reserve structured?

The Federal Reserve System (called the Fed, for short) is the nation's central bank. It was established by an Act of Congress in 1913 and consists of the seven members of the Board of Governors in Washington, D.C., and twelve Federal Reserve District Banks (see the map; for a discussion of the Fed's overall responsibilities, see *The Federal Reserve System: Purposes and Functions*).

The Congress structured the Fed to be independent within the government—that is, although the Fed is accountable to the Congress, it is insulated from day-to-day political pressures. This reflects the conviction that the people who control the country's money supply should be independent of the people who frame the government's spending decisions. Most studies of central bank independence rank the Fed among the most independent in the world.

What makes the Fed independent?

Three structural features make the Fed independent: the appointment procedure for governors, the appointment procedure for Reserve Bank Presidents, and funding.

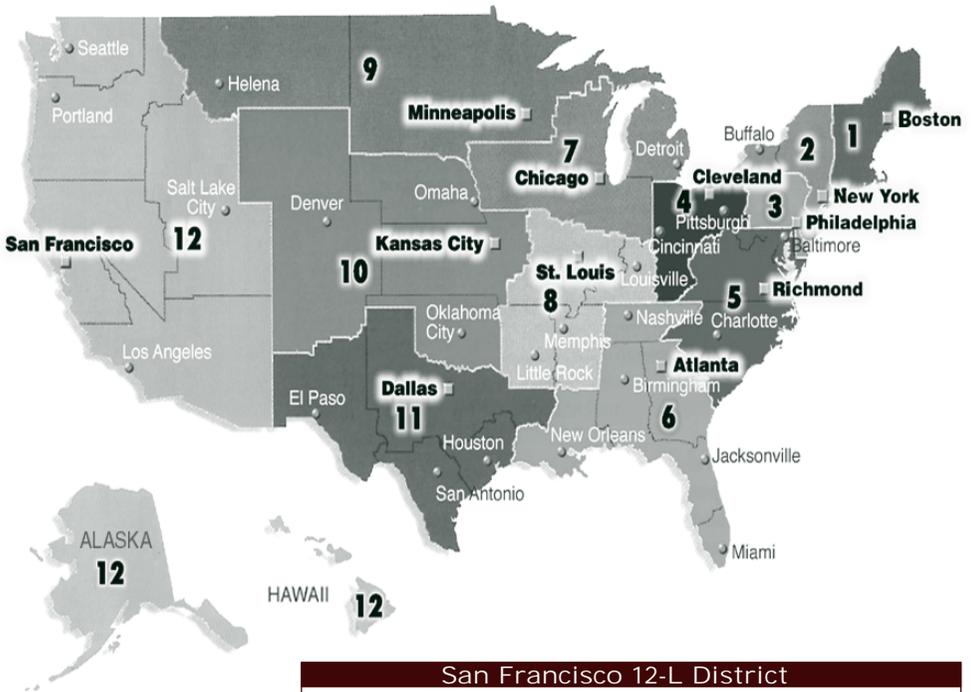
Appointment Procedure for Governors

The seven Governors on the Federal Reserve Board are appointed by the President of the United States and confirmed by the Senate. Independence derives from a couple of factors: first, the appointments are staggered to reduce the chance that a single U.S. President could “load” the Board with appointees; second their terms of office are 14 years—much longer than elected officials' terms.

Appointment Procedure for Reserve Bank Presidents

Each Reserve Bank President is appointed to a five-year term by that Bank's Board of Directors, subject to final approval by the

Federal Reserve Districts



Board of Governors. This procedure adds to independence because the Directors of each Reserve Bank are not chosen by politicians but are selected to provide a cross-section of interests within the region, including those of depository institutions, nonfinancial businesses, labor, and the public.

Funding

The Fed is structured to be self-sufficient in the sense that it meets its operating expenses primarily from the interest earnings on its portfolio of securities. Therefore, it is independent of Congressional decisions about appropriations.

How is the Fed “independent within the government”?

Even though the Fed is independent of Congressional appropriations and administrative control, it is ultimately accountable to Congress and comes under government audit and review. The Chairman, other Governors, and Reserve Bank Presidents report regularly to the Congress on monetary policy, regulatory policy, and a variety of other issues, and meet with senior Administration officials to discuss the Federal Reserve’s and the federal government’s economic programs. The Fed also reports to Congress regarding its finances.

Who makes monetary policy?

The Fed’s FOMC (Federal Open Market Committee) has primary responsibility for conducting monetary policy. The FOMC meets in Washington eight times a year and has twelve members: the seven members of the Board of Governors, the President of the Federal Reserve Bank of New York, and four of the other Reserve Bank Presidents, who serve in rotation. The remaining Reserve Bank Presidents contribute to the Committee’s discussions and deliberations.

In addition, the Directors of each Reserve Bank contribute to monetary policy by making recommendations about the appropriate discount rate, which are subject to final approval by the Governors. (See “What are the tools of monetary policy?”)

What are the goals of U.S. monetary policy?

Monetary policy has two basic goals: to promote “maximum” output and employment and to promote “stable” prices. These goals are prescribed in a 1977 amendment to the Federal Reserve Act.

What does “maximum” output and employment mean?

In the long run, the level of output and employment in the economy depends on factors other than monetary policy. These include technology and people’s preferences for saving, risk, and work effort. So, “maximum” employment and output means the levels consistent with these factors in the long run.

But the economy goes through business cycles in which output and employment are above or below their long-run levels. Even though monetary policy can’t affect either output or employment in the long run, it can affect them in the short run. For example, when demand contracts and there’s a recession, the Fed can stimulate the economy—temporarily—and help push it back toward its long-run level of output by lowering interest rates. Therefore, in the short run, the Fed and many other central banks are concerned with stabilizing the economy—that is, smoothing out the peaks and valleys in output and employment around their long-run growth paths.

If the Fed can stimulate the economy out of a recession, why doesn’t it stimulate the economy all the time?

Persistent attempts to expand the economy beyond its long-run growth path will press capacity constraints and lead to higher and higher inflation, without producing lower unemployment or higher output in the long run. In other words, not only are there no long-term gains from persistently pursuing expansionary policies, but there’s also a price—higher inflation.

What's so bad about higher inflation?

High inflation can hinder economic growth. For example, when inflation is high, it also tends to vary a lot, and that makes people uncertain about what inflation will be in the future. That uncertainty can hinder economic growth in a couple of ways—it adds an inflation risk premium to long-term interest rates, and it complicates the planning and contracting by businesses and households that are so essential to capital formation.

High inflation also hinders economic growth in other ways. For example, because many aspects of the tax system are not indexed to inflation, high inflation distorts economic decisions by arbitrarily increasing or decreasing after-tax rates of return to different kinds of economic activities. In addition, it leads people to spend time and resources hedging against inflation instead of pursuing more productive activities.

So that's why the other goal is "stable prices"?

Yes. Although monetary policy cannot expand the economy beyond its potential growth path or reduce unemployment in the long run, it can stabilize prices in the long run. Price "stability" is basically low inflation—that is, inflation that's so low that people don't worry about it when they make decisions about what to buy, whether to borrow or invest, and so on.

If low inflation is the only thing the Fed can achieve in the long run, why isn't it the sole focus of monetary policy?

Because the Fed can determine the economy's average rate of inflation, some commentators—and some members of Congress as well—have emphasized the need to define the goals of monetary policy in terms of price stability, which is achievable.

However, volatility in output and employment also is costly to people. In practice, the Fed, like most central banks, cares about both inflation and measures of the short-run performance of the economy.

Are the two goals ever in conflict?

Yes, sometimes they are. One kind of conflict involves deciding which goal should take precedence at any point in time. For example, suppose there's a recession and the Fed works to prevent employment losses from being too severe; this short-run success could turn into a long-run problem if monetary policy remains expansionary too long, because that could trigger inflationary pressures. So it's important for the Fed to find the balance between its short-run goal of stabilization and its longer-run goal of maintaining low inflation.

Another kind of conflict involves the potential for pressure from the political arena. For example, in the day-to-day course of governing the country and making economic policy, politicians may be tempted to put the emphasis on short-run results rather than on the longer-run health of the economy. The Fed is somewhat insulated from such pressure, however, by its independence, which allows it to achieve a more appropriate balance between short-run and long-run objectives.

Why don't the goals include helping a region of the country that's in recession?

Often, some state or region is going through a recession of its own while the national economy is humming along. But the Fed can't concentrate its efforts to expand the weak region for two reasons. First, monetary policy works through credit markets, and since credit markets are linked nationally, the Fed simply has no way to direct stimulus to any particular part of the country that needs help. Second, if the Fed stimulated whenever any state had economic hard times, it would be stimulating much of the time, and this would result in excessive stimulation for the overall country and higher inflation.

But this focus on the well-being of the national economy doesn't mean that the Fed ignores regional economic conditions. Extensive regional data and anecdotal information are used, along with

statistics that directly measure developments in regional economies, to fit together a picture of the national economy's performance. This is one advantage to having regional Federal Reserve Bank Presidents sit on the FOMC: They are in close contact with economic developments in their regions of the country.



What are the tools of monetary policy?

The Fed can't control inflation or influence output and employment directly; instead, it affects them indirectly, mainly by raising or lowering short-term interest rates. The Fed affects interest rates mainly through open market operations and the discount rate, and both of these methods work through the market for bank reserves, known as the federal funds market.

What are bank reserves?

Banks and other depository institutions (for convenience, we'll refer to all of these as "banks") are legally required to hold a specific amount of funds in reserve. These funds, which can be used to meet unexpected outflows, are called reserves, and banks keep them as cash in their vaults or as deposits with the Fed. Currently, banks must hold between 3% and 10% of the funds they have in interest-bearing and non-interest-bearing checking accounts as reserves (depending on the dollar amount of such accounts held at each bank). Banks also may hold additional reserves needed for clearing overnight checks and other payments.

What is the federal funds market?

From day to day, the amount of reserves a bank has to hold may change as its deposits and transactions change. When a bank needs additional reserves on a short-term basis, it can borrow them from other banks that happen to have more reserves than they need. These loans take place in a private financial market called the federal funds market.

The interest rate on the overnight borrowing of reserves is called the federal funds rate or simply the "funds rate." It adjusts to balance the supply of and demand for reserves. For example, an increase in the amount of reserves supplied to the federal funds market causes the funds rate to fall, while a decrease in the supply of reserves raises that rate.

What are open market operations?

The major tool the Fed uses to affect the supply of reserves in the banking system is open market operations—that is, the Fed buys and sells government securities on the open market. These operations are conducted by the Federal Reserve Bank of New York.

Suppose the Fed wants the funds rate to fall. To do this, it buys government securities from a bank. The Fed then pays for the securities by increasing that bank's reserves. As a result, the bank now has more reserves than it is required to hold. So the bank can lend these excess reserves to another bank in the federal funds market. Thus, the Fed's open market purchase increases the supply of reserves to the banking system, and the federal funds rate falls.

When the Fed wants the funds rate to rise, it does the reverse, that is, it sells government securities. The Fed receives payment in reserves from banks, which lowers the supply of reserves in the banking system, and the funds rate rises.

What is the discount rate?

Banks also can borrow reserves from the Federal Reserve Banks at their “discount windows,” and the interest rate they must pay on this borrowing is called the discount rate. The total quantity of discount window borrowing tends to be small, because the Fed discourages such borrowing except to meet occasional short-term reserve deficiencies (see *The Federal Reserve: Purposes and Functions* for a discussion of other types of discount window borrowing that are unrelated to monetary policy).

The discount rate plays a role in monetary policy because, traditionally, changes in the rate may have “announcement effects”—that is, they sometimes signal to markets a significant change in monetary policy. A higher discount rate can be used to indicate a more restrictive policy, while a lower rate may signal a more expansionary policy. Therefore, discount rate changes are often coordinated with FOMC decisions to change the funds rate.

What about foreign currency operations?

Purchases and sales of foreign currency by the Fed are directed by the FOMC, acting in cooperation with the Treasury, which has overall responsibility for these operations. The Fed does not have targets, or desired levels, for the exchange rate. Instead, the Fed gets involved to counter disorderly movements in foreign exchange markets, such as speculative movements that may disrupt the efficient functioning of these markets or of financial markets in general. For example, during some periods of disorderly declines in the dollar, the Fed has purchased dollars (sold foreign currency) to absorb some of the selling pressure.

Intervention operations involving dollars, whether initiated by the Fed, the Treasury, or by a foreign authority, are not allowed to alter the supply of bank reserves or the funds rate. The process of keeping intervention from affecting reserves and the funds rate is called the “sterilization” of exchange market operations. As such, these operations are not used as a tool of monetary policy.

How does monetary policy affect the economy?

The point of implementing policy through raising or lowering interest rates is to affect people's and firms' demand for goods and services. This section discusses how policy actions affect real interest rates, which in turn affect demand and ultimately output, employment, and inflation.

What are real interest rates and why do they matter?

For the most part, the demand for goods and services is not related to the market interest rates quoted on the financial pages of newspapers, known as nominal rates. Instead, it is related to real interest rates—that is, nominal interest rates minus the expected rate of inflation.

Variations in expected inflation can make a big difference in interpreting the stance of monetary policy. In 1978, the nominal funds rate averaged 8%, but the rate of inflation was 9%. So, even though nominal interest rates were high, monetary policy actually was stimulating demand with a negative real funds rate of minus 1%.

By contrast, in early 1999, the nominal funds rate was 4³/₄% and the inflation rate was running at about 2%. This implied a positive 2³/₄% real funds rate. So the nominal funds rate of 8% in 1978 was more stimulative than the 4³/₄% nominal funds rate in early 1999.

How do real interest rates affect economic activity in the short run?

Changes in real interest rates affect the public's demand for goods and services mainly by altering borrowing costs, the availability of bank loans, the wealth of households, and foreign exchange rates.

For example, a decrease in real interest rates lowers the cost of borrowing and leads to increases in business investment spending and household purchases of durable goods, such as autos and new homes.

In addition, lower real rates and a healthy economy may increase banks' willingness to lend to businesses and households. This may increase spending, especially by smaller borrowers who have few sources of credit other than banks.

Lower real rates make common stocks and other such investments more attractive than bonds and other debt instruments; as a result, common stock prices tend to rise. Households with stocks in their portfolios find that the value of their holdings has gone up, and this increase in wealth makes them willing to spend more. Higher stock prices also make it more attractive for businesses to invest in plant and equipment by issuing stock.

In the short run, lower real interest rates in the U.S. also tend to reduce the foreign exchange value of the dollar, which lowers the prices of the exports we sell abroad and raises the prices we pay for foreign-produced goods. This leads to higher aggregate spending on goods and services produced in the U.S.

The increase in aggregate demand for the economy's output through these various channels leads firms to raise production and employment, which in turn increases business spending on capital goods even further by making greater demands on existing factory capacity. It also boosts consumption further because of the income gains that result from the higher level of economic output.

How does monetary policy affect inflation?

Wages and prices will begin to rise at faster rates if monetary policy stimulates aggregate demand enough to push labor and capital markets beyond their long-run capacities. In fact, a monetary policy that persistently attempts to keep short-term real rates low will lead eventually to higher inflation and higher nominal interest rates, with no permanent increases in the growth of output or decreases in unemployment. As noted earlier, in the long run, output and employment cannot be set by monetary policy. In

other words, while there is a trade-off between higher inflation and lower unemployment in the short run, the trade-off disappears in the long run.

Policy also can affect inflation directly through people's expectations about future inflation. For example, suppose the Fed eases monetary policy. If consumers and business people expect higher inflation in the future, they'll ask for bigger increases in wages and prices. That in itself will raise inflation without big changes in employment and output.

Doesn't U.S. inflation depend on worldwide capacity, not just U.S. capacity?

In this era of intense global competition, it might seem parochial to focus on U.S. capacity as a determinant of U.S. inflation, rather than on world capacity. For example, some argue that even if unemployment in the U.S. drops to very low levels, U.S. workers wouldn't be able to push for higher wages, because they're competing for jobs with workers abroad, who are willing to accept much lower wages.

This reasoning doesn't hold up too well, however, for a couple of reasons. First, a large proportion of what we consume in the U.S. isn't affected very much by foreign trade. One example is health care, which isn't traded internationally and which amounts to about 14% of GDP.

Second, even when we consider goods that *are* traded internationally, the effect on U.S. prices is largely offset by flexible foreign exchange rates. Suppose the price of steel, or some other good, is lower in Japan than in the U.S. When U.S. manufacturers buy Japanese steel, they have to pay for it in yen, which they buy on the foreign exchange market. As a result, the value of the yen will climb relative to the dollar, and the cost of Japanese steel to U.S. firms will go up—even though the Japanese have not changed the (yen) price they charge.

How long does it take a policy action to affect the economy and inflation?

The lags in monetary policy are long and variable. The major effects of a change in policy on growth in the overall production of goods and services usually are felt within three months to two years. And the effects on inflation tend to involve even longer lags, perhaps one to three years, or more.

Why are the lags so hard to predict?

Since monetary policy is aimed at affecting people's demand, it's dealing with human responses, which are changeable and hard to predict.

For example, the effect of a policy action on the economy will depend on what people think the Fed action means for inflation in the future. If people believe that a tightening of policy means the Fed is determined to keep inflation under control, they'll immediately expect low inflation in the future, so they're likely to ask for smaller wage and price increases, and this will help to achieve that end. But if people aren't convinced that the Fed is going to contain inflation, they're likely to ask for bigger wage and price increases, and that means that inflation is likely to rise. In this case, the only way to bring inflation down is to tighten so much and for so long that there are significant losses in employment and output.

How does the Fed formulate its strategies?

The Fed's job of stabilizing output in the short run and promoting price stability in the long run is made more difficult by two main factors: the long and variable lags in policy, and the uncertain influences of factors other than monetary policy on the economy.

What problems do lags cause?

The Fed's job would be much easier if monetary policy had swift and sure effects. Policymakers could set policy, see its effects, and then adjust the settings until they eliminated any discrepancy between economic developments and the goals.

But with the long lags and uncertain effects of monetary policy actions, the Fed must be able to anticipate the effects of its policy actions into the distant future. To see why, suppose the Fed waits to shift its policy stance until it actually sees an increase in inflation. That would mean that inflationary momentum already had developed, so the task of reducing inflation would be that much harder and more costly in terms of job losses. Not surprisingly, anticipating policy effects in the future is a difficult task.

What problems are caused by other influences on the economy?

Output, employment, and inflation are influenced not only by monetary policy, but also by such factors as our government's taxing and spending policies, the availability and price of key natural resources (such as oil), economic developments abroad, financial conditions at home and abroad, and the introduction of new technologies.

In order to have the desired effect on the economy, the Fed must take into account the influences of these other factors and either offset them or reinforce them as needed. This isn't easy because sometimes these developments occur unexpectedly, and because the size and timing of their effects are difficult to estimate.

The 1997-98 currency crisis in East Asia is a good example. Over this period, economic activity in several countries in that region either slowed or declined, and this reduced their demand for U.S. products. In addition, the foreign exchange value of most of their currencies depreciated, and this made Asian-produced goods less expensive for us to buy and U.S.-produced goods more expensive in Asian countries. By themselves, these factors would reduce the demand for U.S. products and therefore lower our output and employment. As a result, this is a factor that the Fed has had to consider in setting monetary policy.

Another example is the spread of new technologies that can enhance productivity. When workers and capital are more productive, the economy can expand more rapidly without creating inflationary pressures. In the 1990s, there have been indications that the U.S. economy may have experienced a productivity surge, perhaps brought on by computers and other high-tech developments. The issue for monetary policymakers is how much faster productivity is increasing and whether those increases are temporary or permanent.

With all these uncertainties, how does the Fed know how and when its policies will affect the economy?

The Fed looks at a whole range of indicators of the future course of output, employment, and inflation. Among the indicators are measures of the money supply, real interest rates, the unemployment rate, nominal and real GDP growth, commodity prices, exchange rates, various interest rate spreads (including the term structure of interest rates), and inflation expectations surveys.

Economic forecasting models help give structure to understanding the interplay of these indicators and policy actions. But these models are far from perfect—so policymakers rely on their own less formal judgments about indicators as well.

Indeed, policymakers often disagree about how important one indicator is rather than another—and this isn't surprising, because the indicators can be hard to interpret, and they can even give contradictory signals.

To illustrate the difficulties of interpreting these indicators, consider the problems with three of the most prominent: the money supply measures (M1, M2, and M3), real interest rates, and the unemployment rate.

What are the problems of using the money supply as an indicator of future economic performance?

Before much of the deregulation of the financial markets in the 1980s, measures of the money supply were pretty reliable predictors of aggregate spending; moreover, they could be controlled relatively well by the Fed. So the Fed paid special attention to them and to their annual target ranges during the 1970s and 1980s. In fact, from late 1979 to late 1982 the Fed explicitly targeted money on a short-term basis.

But the predictable relationship between the money supply and aggregate spending began to fall apart once financial markets were deregulated and new financial instruments were introduced. For example, consider M1, a narrow monetary measure, which includes only currency and (fully) checkable deposits. Before deregulation, banks couldn't pay explicit interest on the deposits in M1, so people tended to keep only as much in them as they needed for their transactions; that made those deposits track spending pretty closely.

Once banks were allowed to pay explicit interest nationwide on checkable deposits, M1 no longer reflected spending so well, because people started to leave money in those deposits over and above what they needed for transactions. Furthermore, once private financial markets started introducing instruments that competed with M1 deposits, some people shifted their funds to those instruments, and that also weakened the relationship between M1

and spending. Ultimately, the same kinds of deterioration occurred with the broader money supply measures, M2 and M3.

The Fed still establishes annual ranges for M2 and M3, as well as for total nonfinancial debt, as required by Congress. However, given the problems with the reliability of the aggregates, they have come to play a less central role in the formulation of monetary policy in the 1990s.

What are the problems with using real interest rates as indicators of future economic performance?

Real interest rates are natural variables to consider as policy indicators, since they are influenced by the Fed and they are a key link in the transmission mechanism of monetary policy. But real interest rates are problematic as indicators of real GDP for at least two reasons.

First, it is not always obvious when real rates are “high” or “low.” The reason is that real rates are figured as the nominal rate minus expected future inflation. The level of expected future inflation may be hard to estimate.

Second, it also is not obvious how to determine the equilibrium real interest rate—that is, the rate that would be consistent with the full employment of labor and with real GDP being on its long-run growth path. This rate is needed as a benchmark to judge whether a given real interest rate is expansionary or contractionary.

The equilibrium real rate varies over time in ways that are difficult to measure or predict, and it depends on many factors, such as the productivity of investment, fiscal policy, tax rates, and preferences for risk and saving. So, unless real interest rates are extremely high or low relative to historical experience, it can be difficult to interpret the implications of observed market interest rates for future economic developments.

Why is it hard to pinpoint the natural rate of unemployment?

The unemployment rate sometimes is used as an indicator of future inflation. In judging the inflationary implications of the unemployment rate, some economists focus on the so-called “natural rate” of unemployment as a benchmark. The natural rate is the unemployment rate that would occur when short-run cyclical factors have played themselves out—that is, when wages have had time to adjust to balance labor demand and supply. All else equal, if unemployment is below the natural rate, inflation would tend to rise; likewise, if unemployment is above the natural rate, inflation would tend to fall.

But it is difficult to know what the natural rate of unemployment is, because it can change if the structure of the labor market changes. For example, the natural rate rose temporarily in the 1970s as more women sought jobs. And in recent years, some economists have argued that the natural rate has fallen because of worker “insecurity” stemming from rapid changes in the job skills needed by firms as computers and other new technologies were introduced.

Is that why policymakers look at so many indicators?

Although all of the indicators mentioned above provide some useful information, none is reliable enough to be used mechanically as a sole target or guide to policy.

As a result, each FOMC policymaker must process all the available information according to his or her own best judgment and with the advice of the best research available. They then discuss and debate the policy options at FOMC meetings and try to reach a consensus on the best course of action.

Glossary of Terms

Capital market. The market in which corporate equity and longer-term debt securities (those maturing in more than one year) are issued and traded.

Central bank. Principal monetary authority of a nation, which performs several key functions, including issuing currency and regulating the supply of money and credit in the economy. The Federal Reserve is the central bank of the United States.

Depository institution. Financial institution that obtains its funds mainly through deposits from the public; includes commercial banks, savings and loan associations, savings banks, and credit unions.

Discount rate. Interest rate at which an eligible depository institution may borrow funds, typically for a short period, directly from a Federal Reserve Bank. The law requires that the board of directors of each Reserve Bank establish the discount rate every fourteen days subject to the approval of the Board of Governors.

Excess reserves. Amount of reserves held by an institution in excess of its reserve requirement and required clearing balance.

Equilibrium real interest rate. The level of the real interest rate that is consistent with the level of long-run output and full employment.

Federal funds rate. The interest rate at which banks borrow surplus reserves and other immediately available funds. The federal funds rate is the shortest short-term interest rate, with maturities on federal funds concentrated in overnight or one-day transactions.

Fiscal policy. Federal government policy regarding taxation and spending, set by Congress and the Administration.

Foreign currency operations. Purchase or sale of the currencies of other nations by a central bank for the purpose of influencing foreign exchange rates or maintaining orderly foreign exchange markets. Also called foreign-exchange market intervention.

Foreign exchange rate. Price of the currency of one nation in terms of the currency of another nation.

Government securities. Securities issued by the U.S. Treasury or federal agencies.

Gross Domestic Product (GDP). The total market value of a nation's final output of goods and services. GDP may be expressed in terms of product–consumption, investment, government purchases of goods and services, and net exports—or, it may be expressed in terms of income earned—wages, interest, and profits.

Inflation. A rate of increase in the general price level of all goods and services. (This should not be confused with increases in the prices of specific goods relative to the prices of other goods.)

Inflationary expectations. The rate of increase in the general price level anticipated by the public in the period ahead.

Long-term interest rates. Interest rates on loan contracts—or debt instruments such as Treasury bonds or utility, industrial or municipal bonds—having maturities greater than one year. Often called capital market rates.

M1. Measure of the U.S. money stock that consists of currency held by the public, travelers checks, demand deposits, and other fully checkable deposits.

M2. Measure of the U.S. money stock that consists of M1, plus certain overnight repurchase agreements and certain overnight Eurodollars, savings deposits (including money market deposit accounts), time deposits in amounts of less than \$100,000, and balances in money market mutual funds (other than those restricted to institutional investors.)

M3. Measure of the U.S. money stock that consists of M2, plus time deposits of \$100,000 or more at all depository institutions, term repurchase agreements in amounts of \$100,000 or more, certain term Eurodollars, and balances in money market mutual funds restricted to institutional investors.

Market interest rates. Rates of interest paid on deposits and other investments, determined by the interaction of the supply of and demand for funds in financial markets.

Monetary policy. A central bank's actions to influence short-term interest rates and the supply of money and credit, as a means of helping to promote national economic goals. Tools of U.S. monetary policy include open market operations, discount rate policy, and reserve requirements.

Natural rate of unemployment. The rate of unemployment that can be sustained in the long run and that is consistent with constant inflation.

Nominal interest rates. Stated rates of interest paid or earned; often thought of as consisting of a real rate of interest and a premium to compensate for expected inflation.

Open market operations. Purchases and sales of government and certain other securities in the open market, through the Domestic Trading Desk at the Federal Reserve Bank of New York as directed by the Federal Open Market Committee. Open market operations influence short-term interest rates and the volume of money and credit in the economy. Purchases inject reserves into the banking system and stimulate growth of money and credit; sales do the opposite.

Productivity. The level of output per hour of work.

Real GDP. GDP adjusted for inflation. Real GDP provides the value of GDP in constant dollars, which is used as an indicator of the volume of the nation's final output.

Real interest rates. Interest rates adjusted for the expected erosion of purchasing power resulting from inflation. Technically defined as nominal interest rates minus the expected rate of inflation.

Short-term interest rates. Interest rates on loan contracts—or debt instruments such as Treasury bills, bank certificates of deposit, or commercial paper—having maturities less than one year. Often called money market rates.

Total Nonfinancial Debt. Includes outstanding credit market debt of federal, state, and local governments and of private nonfinancial sectors (including mortgages and other kinds of consumer credit and bank loans, corporate bonds, commercial paper, bankers acceptances, and other debt instruments).

Suggested Reading

For an overview of the Federal Reserve System and its functions, see:

- *The Federal Reserve System: Purposes and Functions*, 8th ed. Washington, DC: Board of Governors, Federal Reserve System, December 1994.
- *The Federal Reserve System in Brief*. Federal Reserve Bank of San Francisco.

For further discussion on several of the topics in this booklet, see the following issues of the Federal Reserve Bank of San Francisco's *FRBSF Economic Letter*:

Overview of Monetary Policy

- 94-27 "A Primer on Monetary Policy, Part I: Goals and Instruments," by Carl Walsh.
94-28 "A Primer on Monetary Policy, Part II: Targets and Indicators," by Carl Walsh.

Goals of Monetary Policy

- 93-21 "Federal Reserve Independence and the Accord of 1951," by Carl Walsh.
93-44 "Inflation and Growth," by Brian Motley.
94-05 "Is There a Cost to Having an Independent Central Bank?" by Carl Walsh.
95-16 "Central Bank Independence and Inflation," by Robert T. Parry.
95-25 "Should the Central Bank Be Responsible for Regional Goals?"
by Timothy Cogley and Desiree Schaan.
97-01 "Nobel Views on Inflation and Unemployment," by Carl Walsh.
97-27 "What Is the Optimal Rate of Inflation?" by Timothy Cogley.
98-04 "The New Output-Inflation Trade-off," by Carl Walsh.
99-05 "The Goals of U.S. Monetary Policy," by John Judd and Glenn Rudebusch.

Monetary Policy Transmission Mechanism

- 95-05 "What Are the Lags in Monetary Policy?" by Glenn Rudebusch.
95-23 "Federal Reserve Policy and the Predictability of Interest Rates,"
by Glenn Rudebusch.
97-15 "Job Loss during the 1990s," by Rob Valletta.
97-18 "Interest Rates and Monetary Policy," by Glenn Rudebusch.
97-29 "A New Paradigm?" by Bharat Trehan.
97-34 "Job Security Update," by Rob Valletta and Randy O'Toole.

Monetary Policy Strategies

- 93-01 "An Alternative Strategy for Monetary Policy," by John Judd and Brian Motley.
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