

# Part IV

## Central Banks, Monetary Policy, and Financial Stability

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# Chapter 15

## Central Banks in the World Today

In 1998, a financial meltdown in Russia and the multibillion-dollar collapse of Long Term Capital Management in the United States shook financial markets around the world. In the largest of the world's securities markets, trading nearly ground to a halt as dealers who normally offered to buy and sell reduced the extent of their participation. Investors verged on panic, fleeing real or imagined risks and rushing to the safest, most liquid assets they could find.<sup>1</sup> On Thursday, October 15, at 3:04 p.m., following an unscheduled conference call, the Federal Reserve's Federal Open Market Committee announced a quarter-percentage-point cut in interest rates and issued this statement:

“Growing caution by lenders and unsettled conditions in financial markets more generally are likely to be restraining aggregate demand in the future. Against this backdrop, further easing of the stance of monetary policy was judged to be warranted to sustain economic growth in the context of contained inflation.”

—(Federal Reserve Press Release, October 15, 1998)

Almost immediately, financial markets began to calm down. A second interest rate cut of the same size came during the Fed's regular meeting a month later, providing more balm for the markets. Over the next few months, things slowly returned to normal. Government officials had done what they were supposed to do: They had fixed a financial problem before it became serious enough for most of us to notice it.

The Federal Reserve (the Fed for short) is the United States' **central bank**. The people who work there are responsible for making sure that our financial system functions smoothly, so that the average citizen can carry on without worrying about it. During the treacherous fall of 1998, the Fed clearly did its job. But central banks don't act only during times of crisis. Their work is vital to the day-to-day operation of any modern economy. Today there are over 170 central banks in the world; virtually every country has one. The 15 republics that constituted the Soviet Union became independent in 1990. Within a year, 12 of them had established or reestablished a central bank; by 1993, they all had.<sup>2</sup>

Despite the constant presence of central banks in the news and their unprecedented power, most people have only a vague idea of what they are and what they do. This chapter explains the role of modern central banks in our economic and financial system and examines the complexities policymakers face in meeting their responsibilities.

<sup>1</sup>Federal Reserve Bank of New York President William McDonough called this episode “the worst financial crisis since World War II.” It followed the collapse of Thailand and Indonesia in the summer of 1997 and the financial crisis in Korea in January 1998. For further detail, see Chapters 7, 9 and 10.

<sup>2</sup>Most central banks maintain a Web site, which you can access from [www.bis.org/cbanks.htm](http://www.bis.org/cbanks.htm).

# The Basics: How Central Banks Originated and Their Role Today

The central bank started out as the government's bank and over the years added various other functions. A modern central bank not only manages the government's finances but provides an array of services to commercial banks. It is the bankers' bank. Let's see how this arrangement came about.

## The Government's Bank

Governments have financial needs of their own. Some rulers, like King William of Orange, created the central bank to finance wars. Others, like Napoléon Bonaparte, did it in an effort to stabilize their country's economic and financial system.<sup>3</sup>

While central banks have been around since the late 1600s, these early examples are really the exceptions, as central banking is largely a 20th-century phenomenon. In 1900, only 18 countries had central banks. Even the U.S. Federal Reserve did not begin operating until 1914.<sup>4</sup> As the importance of the government and the financial system grew, the need for a central bank grew along with it. Today it is hard to imagine not having one.

As the government's bank, the central bank occupies a privileged position: It has a monopoly on the issuance of currency. *The central bank creates money.* Historically, central bank money has been seen as more trustworthy than that issued by kings, queens, or emperors. Rulers have had a tendency to default on their debts, rendering their currencies worthless. By contrast, early central banks kept sufficient reserves to redeem their notes in gold. People must have faith in money if they are to use it, and experience tells us that this type of institutional arrangement creates that faith. Today the Federal Reserve has the sole legal authority to issue U.S. dollar bills.<sup>5</sup>

The ability to print currency means that the central bank can control the availability of money and credit in a country's economy. As we'll see in later chapters, most central banks go about this by adjusting short-term interest rates. This activity is what we refer to as **monetary policy**. In today's world, central banks use monetary policy to stabilize economic growth and inflation. An expansionary or accommodative policy, through lower interest rates, raises both growth and inflation over the short run, while tighter or restrictive policy reduces them.<sup>6</sup> We will discuss the mechanics of monetary policy in more detail in Chapter 17.

<sup>3</sup>The Bank of England was chartered in 1694 for the express purpose of raising taxes and borrowing to finance a war between Austria, England, and the Netherlands on one side and Louis XIV's France on the other. The Banque de France was created in 1800 in the aftermath of the deep recession and hyperinflation of the French Revolutionary period. For a more detailed discussion, see Glyn Davies' *The History of Money from Ancient Times to the Present Day* (Cardiff: University of Wales Press), 1994.

<sup>4</sup>For two short periods in the 19th century, the United States did have a national bank that served many of the functions of a central bank. Early American dislike for the centralization of power doomed these institutions, the First Bank of the United States (1791–1811) and the Second Bank of the United States (1816–1836). In the next chapter, we will see how industrial and financial development after the Civil War convinced people that they simply could not live without a central bank. See Michael F. Bryan and Bruce Champ's "Fear and Loathing of Central Banks in America," *Economic Commentary* of the Federal Reserve Bank of Cleveland, June 2002, for a brief description of this history.

<sup>5</sup>While once upon a time you could redeem dollar bills for gold, today all the Federal Reserve promises is that it will give you a crisp new dollar bill for a worn old one—and that is enough for the average person, given the public's faith in the Federal Reserve.

<sup>6</sup>To fully appreciate why expansionary monetary policy raises growth and inflation over the short run, we need to develop a macroeconomic model of what determines output and inflation. In the long run, however, monetary policy does not affect growth. This relationship is the subject of Chapters 20, 21, and 22.

Understanding why a country would want to have its own monetary policy is important. At its most basic level, printing money is a very profitable business. A \$100 bill costs only a few cents to print, but it can be exchanged for \$100 worth of goods and services. It is logical that governments would want to maintain a monopoly on printing money and to use the revenue it generates to benefit the general public.<sup>7</sup>

Government officials also know that losing control of the printing presses means losing control of inflation. A high rate of money growth creates high inflation. That is the real reason the republics of the former Soviet Union needed to establish their own central banks. After the collapse of the Soviet Union, the Russian ruble circulated throughout the area, and the central bank of the Russian Republic controlled how fast the quantity of rubles increased. This arrangement did not work well; by 1992, inflation throughout the *ruble zone* exceeded 1,000 percent per year. Not surprisingly, the monetary system soon collapsed. By late 1993, countries were issuing their own currencies in an attempt to control inflation locally. Moldova, one of the more successful, was able to reduce its inflation to 30 percent by 1995.

The primary reason for a country to create its own central bank, then, is to ensure control over its currency. Giving the money-printing monopoly to someone else can be disastrous. Nevertheless, some countries have done it; the European Monetary Union comes to mind immediately. A dozen European countries recently ceded their right to conduct independent monetary policy to the European Central Bank, as part of a broader move toward economic integration. But they did it after instituting strict controls that ensured inflation would remain low. There is very little risk that European monetary policy will be misused.

## The Bankers' Bank

The political backing of the government, together with their sizable gold reserves, made early central banks the biggest and most reliable banks around. The notes issued by the central bank were viewed as safer than those of smaller banks, making it easier for holders to convert their deposits into cash. This safety and convenience quickly persuaded most other banks to hold deposits at the central bank as well.

As the bankers' bank, the central bank took on the roles it plays today. The important day-to-day jobs of the central bank are to (1) provide loans during times of financial stress, (2) manage the payments system, and (3) oversee commercial banks and the financial system. The central bank's ability to print money means that it can make loans even when no one else can, including during a crisis. We discussed financial panics in Chapter 14, where we learned that a bank will collapse if all its depositors try to withdraw their account balances at the same time. No bank, no matter how well managed, can withstand a run. To stave off such a crisis, the central bank can lend cash to sound banks. We will take up this "lender of last resort" function in Chapter 18. For now, all we need to say is that by ensuring that sound banks and financial institutions can continue to operate, the central bank makes the whole financial system more stable. Many people believe this is the most important function of any modern central bank.

Second, every country has to have a secure and efficient payments system. People need ways to pay each other, and financial institutions need a cheap and reliable way

<sup>7</sup>When we list the objectives of the central bank later in the chapter, however, we will explicitly exclude profit maximization.

to transfer funds to one another.<sup>8</sup> The fact that all banks have accounts there makes the central bank the natural place for these *interbank* payments to be settled. In today's world, interbank payments are extremely important. Look at the daily volume on the Federal Reserve's *Fedwire* system. In 2003, an average of almost \$3 trillion per day was transferred over the Fedwire—nearly one-quarter of the annual U.S. gross domestic product.

Finally, as we saw in our discussion of banking regulation, someone has to watch over private banks and nonbank financial institutions so that savers and investors can be confident they are sound. Those who monitor the financial system must have sensitive information. For example, they need to know the exact methods institutions use to make lending and credit decisions. Needless to say, such knowledge would be very useful to the institutions' competitors. Government examiners and supervisors are the only ones who can handle such information without conflict of interest. In some countries they are housed in the central bank, while in others they work in separate agencies. In the United States, as we saw in Chapter 14, the examiners work in various places, including the Federal Reserve.

As the government's bank and the bankers' bank, central banks are the biggest, most powerful players in a country's financial and economic system. Central bankers are supposed to use this power to stabilize the economy, making us all better off. And for the most part, that is what they do. But any institution with the power to ensure that the economic and financial systems run smoothly also has the power to create problems. Central bankers that are under extreme political pressure, or are simply incompetent, can wreak havoc on the economic and financial systems. By lending to weak financial institutions that should have been closed, the Bank of Thailand helped to create the Asian financial crisis of 1997. And the failure of the Bank of Russia to exert any control over the expansion of money and credit led to very high inflation, contributing to the fact that the Russian economy shrank by nearly 50 percent during the 1990s.

Before we go on to examine the goals and objectives of central bankers in detail, it is essential that we understand what a modern central bank is *not*. First, a central bank does not control securities markets, though it may monitor and participate in bond and stock markets. Second, the central bank does not control the government's budget. In the United States, the budget is determined by Congress and the president through **fiscal policy**. The U.S. Treasury then administers the government, managing the collection of funds through the tax system and writing checks to pay for the government's expenditures. The Fed acts only as the Treasury's bank, providing a place for money paid to the government to be deposited, making good on the government's checks, and helping to borrow funds when they are needed. Not just in the United States but throughout the world, the common arrangement today is for the central bank to serve the government in the same way that a commercial bank serves a business or an individual. The treasury or finance ministry manages fiscal policy, and the central bank offers a set of services that make such management possible.

Table 15.1 lists the functions of a modern central bank.

<sup>8</sup>Prior to the creation of the Federal Reserve's payment system, banks were not always willing to honor the obligations of other banks at par. Thus, a \$100 bank note from a particular Philadelphia bank might be worth only \$95 in New York. And the discount would vary depending on the perceived creditworthiness of the Philadelphia bank. This system was very cumbersome and expensive. One of the jobs of the Federal Reserve is to act as an intermediary, insuring that all banks' commitments are valued at par so that the rest of us don't have to worry.

Table 15.1 The Functions of a Modern Central Bank

1. *The Government's Bank*
  - a. Manages the finances of the government.
  - b. Through interest rates, controls the availability of money and credit.
2. *The Bankers' Bank*
  - a. Guarantees that sound banks can do business by *lending* to them, even during crises.
  - b. Operates a *payments system* for interbank payments.
  - c. Oversees financial institutions to ensure confidence in their soundness.

## Stability: The Primary Objective of All Central Banks

The central bank is part of the government. Whenever we see an agency of the government involving itself in the economy, we need to ask why. What makes individuals incapable of doing what we have entrusted to the government? In the case of national defense and pollution regulation, the reasons are obvious. Most people will not voluntarily contribute their resources to the army. Nor will they spontaneously clean up their own air. To put it slightly differently, government involvement is justified by the presence of externalities or public goods; that is, when individuals do not pay the full costs or capture the complete benefits from their actions.

The rationale for the existence of a central bank is equally clear. While economic and financial systems may be fairly stable most of the time, when left on their own they are prone to episodes of extreme volatility. Prior to the advent of the Fed, the U.S. financial system was extremely unstable. It was plagued by numerous panics. Even with a central bank, these systems don't necessarily work well. The historical record is filled with examples of failure, like the Great Depression of the 1930s, when the banking system collapsed, economic activity plunged by one-third, and one-quarter of Americans were unemployed for nearly a decade. Economic historians blame the Federal Reserve for the severity of that episode. The claim is that monetary policymakers failed to provide adequate money and credit, with the result that of the country's 25,000 banks, nearly 10,000 were closed.<sup>9</sup> Monetary policy failed in the 1930s, but since then the Fed's performance has been much better.

Central bankers work to reduce the volatility of the economic and financial systems by pursuing five specific objectives:

1. Low and stable inflation.
2. High and stable real growth, together with high employment.
3. Stable financial markets.
4. Stable interest rates.
5. A stable exchange rate.



<sup>9</sup>Although numerous, fortunately the failed banks were small, accounting for roughly 13 percent of the deposits in the banking system.

It is important to realize that instability in any of these—inflation, growth, financial markets, interest rates, or exchange rates—poses an economywide risk that individuals can't diversify away. Recall from Chapter 5 that systematic risk, where everyone is affected, differs from idiosyncratic risk, which affects only a particular organization or individual. The job of the central bank is to improve general economic welfare by managing and reducing systematic risk.<sup>10</sup> Keep in mind that it is probably impossible to achieve all five of the central bank's objectives simultaneously. Trade-offs must be made. As we will see, stabilizing inflation may result in less stable growth, and stable interest rates may be inconsistent with all the other objectives.

## Low, Stable Inflation

In 2002, the director of research of the International Monetary Fund (the closest thing there is to a world central bank) summarized virtually every economist's view when he said, "Uncontrolled inflation strangles growth, hurting the entire populace, especially the indigent."<sup>11</sup> That is why many central banks take as their primary job the maintenance of **price stability**. That is, they strive to eliminate inflation. The consensus is that when inflation rises, the central bank is at fault. Price stability is the primary objective of the central bank.

The rationale for keeping the economy inflation free is straightforward. Standards, everyone agrees, should be standard. A pound should always weigh a pound, a cup should always hold a cup, and a yard should always measure a yard. Similarly, a dollar should always be worth a dollar. What is true for physical weights and measures should be true for the unit of account as well. The purchasing power of one dollar, one yen, or one euro should remain stable over long periods. Maintaining price stability enhances money's usefulness both as a unit of account and as a store of value.

Prices are central to everything that happens in a market-based economy. They provide the information individuals and firms need to ensure that resources are allocated to their best uses. When a seller can raise the price of a product, for example, that is supposed to signal that demand has increased, so producing more is worthwhile. But inflation degrades the information content of prices. When all prices are rising together, understanding the reasons becomes difficult. Did consumers decide they liked an item, shifting demand? Did the cost of producing the item rise, shifting supply? Or was inflation responsible for the jump in price? If the economy is to run efficiently, we need to be able to tell the difference.

If inflation were predictable—say, 10 percent year in and year out—we might be able to adjust, eventually. But unfortunately, as inflation rises, it becomes less stable. If our best guess is that inflation will be 2 percent over the coming year, we can be fairly certain that the result will be a price level increase of between 1 and 3 percent. But experience tells us that when we expect inflation to be around 10 percent, we shouldn't be surprised if it ends up anywhere between 8 and 12 percent. The higher inflation is, the less predictable it is, and the more systematic risk it creates.<sup>12</sup>

Moreover, the fact is high inflation is bad for growth.<sup>13</sup> This fact is obvious in extreme cases, such as in 1985, when inflation reached 11,000 percent in Bolivia, or in 1983,



<sup>10</sup>Some people like volatility. Traders in the financial markets will say that volatility creates risk, and risk creates opportunity. Without volatility, traders can't profit. But what is true for traders is not true for the rest of us. We want our economy to be calm and under control, so our jobs will be secure and our paychecks predictable.

<sup>11</sup>Kenneth S. Rogoff, "An Open Letter to Joseph Stiglitz," International Monetary Fund, July 2, 2002.

<sup>12</sup>Inflation is costly for other reasons as well. They include the cost of going to the bank more often, the cost of changing prices more often, and distortions created by the way the tax system is written.

<sup>13</sup>For evidence on this point, see Michael Bruno and William Easterly, "Inflation Crises and Long-Run Growth," *Journal of Monetary Economics* 41 (February 1998), pp. 3–26.



## YOUR FINANCIAL WORLD

### Why Inflation Is Bad for You

If you ask most people why inflation is bad, they will say it is responsible for a decline in what they can purchase with their incomes. For them, inflation causes a drop in their standard of living: Prices have gone up, but their incomes, including their wages, haven't. Economists view inflation differently. To them, inflation is when everything that is denominated in dollars goes up proportionally—prices, incomes, savings account balances, everything. It is as if everything is suddenly measured in cents instead of dollars. How could this possibly make anyone worse off?

The answer is that inflation creates risk. The higher it is, the greater the risk. When inflation is averaging 2 percent per year, chances are slim that it will suddenly rise to 5 percent. But if inflation is averaging 15 percent, there is a good chance it will end up at 18 percent next year.

To see how this affects virtually everyone, recall from Chapter 6 that unpredictable inflation makes bonds risky. Higher-than-expected inflation reduces

the real return a bondholder receives. Since the real return is the nominal return minus expected inflation, if the nominal interest rate is 5 percent and inflation turns out to be 2 percent, then the real return drops to 3 percent. If inflation ends up at 5 percent, the real return is zero. That's a risk. Since risk requires compensation, inflation risk drives up the interest rate required to entice investors to hold bonds.

Now think about two common financial transactions: getting a home mortgage and saving for retirement. When you buy a house, your goal is to get the lowest mortgage interest rate you can find. Inflation risk drives up mortgage interest rates, increasing your monthly payments and forcing you to purchase a less expensive house. Turning to your retirement savings, inflation risk makes it more difficult to know how much to save, because you are unsure what the purchasing power of your savings will be 40 or 50 years from now. Long-term planning is hard enough without the added burden of inflation risk.

when it reached nearly 5,000 percent in Ukraine. In such cases of **hyperinflation**—when prices double every 2 to 3 months—prices contain virtually no information, and people use all their energy just coping with the crisis, so growth plummets. In Bolivia, growth went from more than plus 6 percent in the late 1970s to minus 5 percent during the hyperinflation. The Ukrainian economy shrank by more than 20 percent the year inflation peaked. Only when inflation was brought under control did these economies begin to grow again.

Because low inflation is the basis for general economic prosperity, most people agree that it should be the primary objective of monetary policy. But how low should inflation be? As the In the News article toward the end of this chapter explains, zero is probably too low. There are a couple of reasons for this. First, if the central bank tries to keep inflation at zero, there is a risk of deflation—a drop in prices. Deflation makes debts more difficult to repay, which increases the default rate on loans, affecting the health of banks. Recall from Chapter 11 that deflation increases the information problems lenders face, and may prevent some borrowers from obtaining loans. We'll come back to this topic in Chapter 23. Second, if inflation were zero, an employer wishing to cut labor costs would need to cut nominal wages, which is difficult to do. With a small amount of inflation, the employer can simply leave wages as they are, and workers' real wages will fall. So a small amount of inflation makes labor markets work better, at least from the employer's point of view.<sup>14</sup>

<sup>14</sup>Added to all of this is the fact that measured inflation tends to overstate true inflation. That is, inflation statistics are biased upward. Most economists believe the bias to be about 1 percentage point. And the objective of central bankers should be to keep measured inflation somewhat above 1 percent so that there is virtually no true inflation. Your Financial World in Chapter 20 discusses the issue of inflation measurement in more detail.

## High, Stable Real Growth

In January 2000, near the end of the longest economic expansion in U.S. history, Governor of the Federal Reserve Board Laurence H. Meyer observed, “Supporting maximum sustainable growth is very much the business of monetary policy.”<sup>15</sup> Central bankers make this sort of statement all the time. What they mean is that they are working to dampen the fluctuations of the business cycle. Booms are popular, but recessions are not. In recessions, people get laid off and businesses fail. Without a steady income, individuals struggle to make their auto, credit card, and mortgage payments. Consumers pull back, hurting businesses that rely on them to buy products. Reduced sales lead to more layoffs, and so on. The longer the downturn goes on, the worse it gets.

By adjusting interest rates, central bankers work to moderate these cycles and stabilize growth and employment. The idea is that there is some long-run *sustainable* level of production called **potential output** that depends on things like technology, the size of the capital stock, and the number of people who can work.<sup>16</sup> Growth in these *inputs* leads to growth in *potential output*—**sustainable growth**. In the United States, growth usually runs around 3 percent per year. Over the short run, output may deviate from this potential level, and growth may deviate from its long-run sustainable rate. In recessions, the economy stalls, incomes stagnate, and unemployment rises. By lowering interest rates, monetary policy makers can moderate such declines.

Similarly, there are times when growth rises above sustainable rates, and the economy overheats. These periods may seem to bring increased prosperity, but since they don’t last forever, they are followed by reduced spending, lower business investment, and layoffs. A period of above-average growth has to be followed by a period of below-average growth. The job of the central bank during such periods is to raise interest rates and keep the economy from operating at unsustainable levels. In the long run, lower volatility produces higher average growth (see Applying the Concept: Stable Countries Grow Faster).

The importance of keeping sustainable growth as high as possible is hard to overstate. The difference between an economy that grows at 4 percent per year and one that grows at 2 percent per year is the difference between an economy that doubles in size over 18 years and one that grows by less than 50 percent in the same period. (This calculation uses the rule of 72 described in Your Financial World in Chapter 4.) Keeping employment high is equally important. It is impossible to recover later what unemployed people would have produced had they been working during a downturn. You can’t get the lost time back. Our hope is that policymakers can manage the country’s affairs so that we will stay on a high and sustainable growth path.

The levels of growth and employment aren’t the only things of importance, though. Stability matters too. Fluctuations in general business conditions are the primary source of systematic risk, a kind of risk that can’t be diversified away. As we have said a number of times, uncertainty about the future makes planning more difficult, so getting rid of uncertainty makes everyone better off.



## Financial System Stability

The Federal Reserve was founded to stop the financial panics that plagued the United States during the late 19th and early 20th centuries. It took a while to work out the kinks in the system. As we have seen, the U.S. financial system collapsed again in the early 1930s, as policymakers at the Federal Reserve watched. Since then, officials

<sup>15</sup>Laurence H. Meyer, “Sustainability and Monetary Policy,” remarks before the National Economists Club and the Society of Government Economists, Washington, D.C., January 20, 2000.

<sup>16</sup>We will discuss the concept of potential output in more detail in Chapter 21.



## APPLYING THE CONCEPT

### STABLE COUNTRIES GROW FASTER

For most countries, stable growth means faster growth. Figure 15.1 plots average annual growth in a sample of countries both large and small on the vertical axis and the standard deviation, or volatility, of growth in those countries on the horizontal axis. Remember from Chapter 5 that the standard deviation is a measure of risk. The figure shows a clear negative correlation: Points range from the top left to the lower right. High growth is less volatile than low growth.

It is plausible that stability actually causes higher growth.\* To see how such a relationship might arise, we need to remember some key facts:

- Unstable growth creates risk for investors.
- Investors require compensation for risk, so interest rates will be higher.
- Higher interest rates mean lower levels of borrowing by businesses.
- Lower levels of borrowing by business mean fewer resources for companies to invest.
- Fewer resources for companies to invest mean less growth.

To understand how this process works, think about getting a loan to buy a car. The more certain you are that you will have a good, steady job over the next few years, the larger the loan you will feel comfortable taking on. If you are nervous that you might lose your job, you will be cautious. What is true for you and your car loan is true for every person and every company. The greater the uncertainty about future business conditions, the more cautious people are in making investments of all kinds.

\*Figure 15.1 establishes a correlation between the level and volatility of growth, not a causal relationship. While high growth leads to stability, theoretical explanations focus on the reverse relationship. For a more detailed discussion of the relationship between correlation and causality, see Tools of the Trade in Chapter 23.

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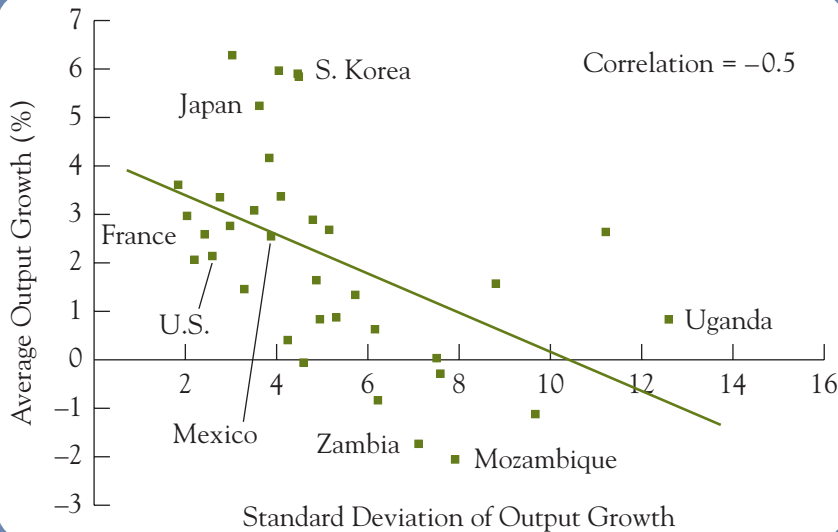
have figured out how to avert most crises. The Fed's actions in 1998, described in the introduction to this chapter, show that today's central banks can move quickly to quell investors' anxieties. **Financial system stability** is an integral part of every modern central banker's job. It is essential for policymakers to ensure that the markets for stocks, bonds, and the like continue to operate smoothly and efficiently.

The financial system is like plumbing: When it works, we take it for granted, but when it doesn't work, watch out. If people lose faith in banks and financial markets, they will rush to low-risk alternatives, and intermediation will stop. Savers will not lend and borrowers will not be able to borrow. Getting a car loan or a home mortgage becomes impossible, as does selling a bond to maintain or expand a business. When the financial system collapses, economic activity does, too.

The possibility of a severe disruption in the financial markets is a type of systematic risk. Nothing that a single individual does can eliminate it. Central banks must control this systematic risk, making sure that the financial system remains in good work-

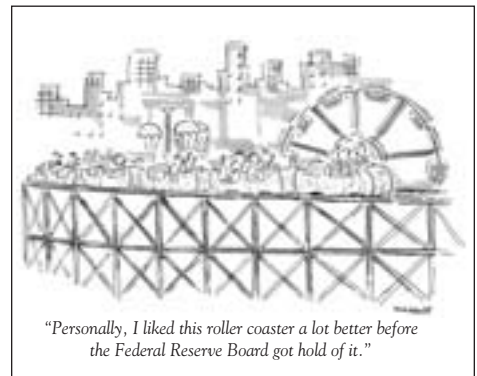
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**Figure 15.1 The Relationship between the Level and Volatility of Growth, 1960-1985**



SOURCE: Data comes from Garey Ramey and Valerie A. Ramey's "Cross-Country Evidence on the Link between Volatility and Growth," *American Economic Review* 85 (December 1995), pp. 1138-1151.

ing order. The *value at risk*, not the standard deviation, is the important measure here. Recall from Chapter 5 that value at risk measures the risk of the maximum potential loss. When thinking about financial stability, central bankers want to minimize the risk of a disaster and keep the chance of this maximum loss as small as possible.



SOURCE: © The New Yorker Collection 1997. Robert Mankoff from cartoonbank.com. All Rights Reserved.

## Interest-Rate and Exchange-Rate Stability

If you ask them, most central bankers will tell you that they do their best to keep interest rates and exchange rates from fluctuating too much. They want to eliminate abrupt changes. But if you press them further, they will tell you that these goals are secondary to those of low inflation, stable growth, and financial stability. The reason for this hierarchy is that **interest-rate stability** and **exchange-rate stability** are means for achieving the ultimate goal of stabilizing the economy; they are not ends unto themselves.

It is easy to see why interest-rate volatility is a problem. First, most people respond to low interest rates by borrowing and spending more. Individuals take out loans to purchase cars, new appliances and the like, while corporations issue more bonds and use the proceeds to enlarge their operations. Conversely, when interest rates rise, people borrow and spend less. So, by raising expenditure when interest rates are low and reducing expenditure when interest rates are high, interest-rate volatility makes output unstable. Second, interest-rate volatility means higher risk—and a higher risk premium—on long-term bonds. (Remember from Chapter 7 that the long-term interest rate is the average of expected future short-term interest rates plus a risk premium that compensates for the volatility of short-term interest rates.) Risk makes financial decisions more difficult, lowering productivity and making the economy less efficient. Since central bankers control short-term interest rates, they are in a position to control this risk and stabilize the economy.

Stabilizing exchange rates is the last item on the list of central bank objectives.<sup>17</sup> The value of a country's currency affects the cost of imports to domestic consumers and the cost of exports to foreign buyers. When the exchange rate is stable, the dollar price of a car produced in Germany is predictable, making life easier for the foreign automobile manufacturer, the domestic retailer, and the American car buyer. Planning ahead is easier for everyone.

Different countries have different priorities. While the Federal Reserve and the European Central Bank may not care much about exchange-rate stability, the heads of central banks in small, less developed countries do. In *emerging-markets countries* where exports and imports are central to the structure of the economy, officials might reasonably argue that good overall macroeconomic performance follows from a stable exchange rate.

Table 15.2 summarizes the five objectives of a modern central bank.

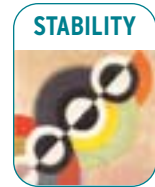
## Meeting the Challenge: Creating a Successful Central Bank

The 1990s were amazing in many ways. The Internet and cell phones came into widespread use. Overall economic conditions improved nearly everywhere. Growth was higher, inflation lower, and both more stable than in the 1980s. In the United States, inflation fell from 6 percent at the start of the decade to less than 2 percent at the end. Meanwhile, real growth rose from less than 3 percent to more than 4 percent.

<sup>17</sup>As we will see in Chapter 19, the Federal Reserve is not officially in charge of exchange-rate policy in the United States; the Secretary of the Treasury is. But, because of the way in which exchange rates are determined, they cannot be independent of interest-rate policy. Since the Fed controls interest rates, it effectively controls exchange rates as well.

Table 15.2 The Objectives of a Modern Central Bank

1. <i>Low, stable inflation.</i>	Inflation creates confusion and makes planning difficult. When inflation is high, growth is low.
2. <i>High, stable growth.</i>	Stable, predictable growth is higher than unstable, unpredictable growth.
3. <i>Financial system stability.</i>	A stable financial system is a necessity for an economy to operate efficiently.
4. <i>Stable interest rates.</i>	Interest-rate volatility creates risk for both lenders and borrowers.
5. <i>Stable exchange rates.</i>	Variable exchange rates make the revenues from foreign sales and the cost of purchasing imported goods hard to predict.



Volatility declined, too. But the United States wasn't the only country where economic conditions improved; the same thing happened around the globe.<sup>18</sup>

What explains this phenomenon? A prime candidate is that technology sparked a boom just as central banks became better at their jobs. First, monetary policymakers realized that sustainable growth had gone up, so they could keep interest rates low without worrying about inflation. Second, central banks were redesigned. It wasn't just that new central banks were established, like the ones set up in the 15 republics of the former Soviet Union. The structure of existing central banks changed significantly. The Bank of England is over 300 years old (its building in London has stood for nearly 200 years) but its operating charter was completely rewritten in 1998. The same year brought major changes in the organizational structure of the Bank of Japan. Federal Reserve operations have changed, too. The first public announcement of a move in the federal funds rate was made on February 4, 1994. On January 19, 2002, the regular issuance of a statement explaining interest-rate decisions became an official part of Federal Reserve procedures.<sup>19</sup>

Many people believe that improvements in economic performance during the 1990s were related at least in part to the policy followed by these restructured central banks. Improving monetary policy is not just a matter of finding the right person for the job. There is an ample supply of highly qualified people. In fact, in many countries there is a long history of central bankers who have tried but failed because they weren't free to pursue effective policies. Successful policymaking is as much a consequence of the institutional environment as of the people who work in the institutions. Nowhere is that more true than in central banking.

Today there is a clear consensus about the best way to design a central bank and what to tell monetary policy makers to do. To be successful, a central bank must (1) be inde-

<sup>18</sup>Stephen G. Cecchetti and Michael Ehrmann compared 1985–1989 to 1993–1997 in a set of 23 industrialized and emerging-markets countries and found that annual inflation fell an average of five percentage points, annual growth rose an average of one percentage point, and both were significantly more stable. See “Does Inflation Targeting Increase Output Volatility? An International Comparison of Policymakers’ Preferences and Outcomes” in Norman Loayza and Klaus Schmidt-Hebbel (eds.), *Monetary Policy: Rules and Transmission Mechanisms*, Proceedings of the Fourth Annual Conference of the Central Bank of Chile, Santiago, Chile: Central Bank of Chile, 2002, pp. 247–274.

<sup>19</sup>See Chapter 16 for a discussion of the most important changes in the Federal Reserve’s structure and operations.



## YOUR FINANCIAL WORLD

### Does News about the Fed Affect Your Daily Life?

On an average day the *The Wall Street Journal* mentions the Federal Reserve in about five stories. Reporters and editors obviously think people should care what the central bank is doing. Do we really need to follow news about the Fed every day?

The preoccupation with the central bank comes from the fact that it adjusts interest rates. News reports invariably predict the timing and direction of the next move in interest rates. While we all care about interest rates—they measure the cost of a car loan or mortgage, and the return we get on investments—on a normal day, the interest rate on a loan doesn't change.

Sometimes Federal Reserve actions do have an effect on everyone, however. On July 15, 2003, Federal Reserve chairman Alan Greenspan suggested that interest rates might not fall as much as people in the financial markets thought they would. As a result, the yield on a  $4\frac{1}{4}\%$  coupon 10-year U.S. Treasury bond rose 0.21 percentage point, from 3.72 percent to 3.93 percent. That may not seem like much, but it meant that the owner of a \$1,000 10-year Treasury bond lost \$17.40 in one day—that's

how much the price of the bond fell. And the increase translated directly into a rise in the interest rates everyone pays to borrow. Because of Chairman Greenspan's comments, mortgage rates rose nearly one-quarter of a percentage point in a single day, with a 30-year fixed-rate mortgage rising from roughly  $5\frac{1}{2}$  to  $5\frac{3}{4}$  percent.\* This alone drove the monthly payment on a \$100,000 mortgage up from \$559 to \$574.

Events like this one don't happen often. Understanding when and how they might occur requires knowing how the Fed operates and what sort of news is likely to precipitate changes in interest rates. That means following long-term economic trends to gain some sense of what the Fed is likely to do, and when.

\*Chapter 18 will discuss the exact mechanism that causes this. Briefly, Chairman Greenspan's comments led people to think the Federal Reserve was going to raise the interest rate that it controls—the overnight interbank lending rate. This raised long-term interest rates because, according to the expectations hypothesis of the term structure described in Chapter 7, they are an average of expected short-term interest rates.

pendent of political pressure, (2) make decisions by committee, (3) be accountable to the public and transparent in communicating its policy actions, and (4) operate within an explicit framework that clearly states its goals and the tradeoffs among them.

## The Need for Independence

The idea of **central bank independence**—that central banks should be independent of political pressure—is a new one. After all, the central bank originated as the government's bank. It did the bidding first of the king or emperor and then of the democratically elected congress or parliament. Politicians rarely give up control over anything, much less something as important as monetary policy. But in the 1990s, nearly every government that hadn't already done so made the central bank independent of the finance ministry. The Banque de France became independent in 1993. Political control of the Bank of England and the Bank of Japan ended in 1998. And the new European Central Bank was independent from the day it opened on July 1, 1998.

Independence has two operational components. First, monetary policymakers must be free to control their own budgets. If politicians can starve the central bank of funding, then they can control the bank's decisions. Second, the bank's policies must not be reversible by people outside the central bank. Prior to 1998, policymakers at the Bank of England merely recommended interest-rate changes to the Chancellor of the Exchequer, a political official. That is, interest rate policy was ultimately decided by the British equivalent of the U.S. Secretary of the Treasury. Since 1998, the Bank of England's Monetary Policy Committee has made those decisions autonomously. The

same is true in the United States, where the Federal Open Market Committee's decisions on when to raise or lower interest rates cannot be overridden by the President, Congress, or the Supreme Court.

Successful monetary policy requires a long time horizon. The impact of today's decisions won't be felt for a while—several years, in many instances. Democratically elected politicians are not a particularly patient bunch; their time horizon extends only to the next election. The political system encourages members of Parliament and members of Congress to do everything they can for their constituents before the next election—including manipulating interest rates to bring short-term prosperity at the expense of long-term stability. The temptation to forsake long-term goals for short-term gains is simply impossible for most politicians to resist. Given the ability to choose, politicians will select monetary policies that are overly accommodative. They will keep interest rates too low and money growth rates too high. This raises output and employment quickly (before the election), but causes inflation to go up later (after the election). Low interest rates are very popular because there are more borrowers than lenders.

Knowing these tendencies, governments have moved responsibility for monetary policy into a separate, largely apolitical, institution. To insulate policymakers from the daily pressures faced by politicians, governments must give central bankers control of their budgets and authority to make irreversible decisions and must appoint them to long terms.

## Decision Making by Committee

Should important decisions be made by an individual or by a committee? Military planners know they can't have groups making decisions in the heat of a battle; someone has to be in charge. But monetary policy isn't war. Monetary policy decisions are made deliberately, after significant amounts of information are collected and examined. Occasionally a crisis does occur, and in those times someone does need to be in charge. But in the course of normal operations, it is better to rely on a committee than an individual. Though extraordinary individuals can be trusted to make policy as well as a committee, building an institution on the assumption that someone of exemplary ability will always be available to run it is unwise. And given the difficulty of removing a central bank governor—a feature that is built into the central bank system—the cost of putting the wrong person in charge can be very high.

The solution, then, is to make policy by committee. Pooling the knowledge, experience, and opinions of a group of people reduces the risk that policy will be dictated by an individual's quirks. Besides, in a democracy, vesting so much power in one individual poses a legitimacy problem. For these reasons, monetary policy decisions are made by committee in all major central banks in the world. The Federal Reserve has its Federal Open Market Committee, the European Central Bank its Governing Council, and the Bank of Japan its Monetary Policy Committee. The number of members varies from 9 in Japan to (currently) 18 at the ECB—but, crucially, it is always bigger than one.

## The Need for Accountability and Transparency

There is a big problem with central bank independence: It is inconsistent with representative democracy. The idea of putting appointed technocrats in charge of one of the most important government functions is inherently undemocratic. Politicians answer to the voters; by design, independent central bankers don't. How can we have faith in our financial system if there are no checks on what the central bankers are doing? The economy will not operate efficiently unless we trust our policymakers to do the right thing.



## APPLYING THE CONCEPT

### INDEPENDENT CENTRAL BANKS DELIVER LOWER INFLATION

What finally drove politicians to give up control over monetary policy? It was the realization that independent central bankers would deliver lower inflation than they themselves could. Researchers noticed that the degree of control politicians can exert over central banks varies greatly across countries, and is related to inflation outcomes. Figure 15.2 shows an index of central bank independence on the horizontal axis and average inflation from 1973 to 1988 on the vertical axis. Note that Germany and Switzerland, the two countries with the most independent central banks, had the lowest inflation, averaging around 3 percent per year over the 15-year period. Conversely, New Zealand and Spain, the two countries with the least independent central banks, had the highest inflation—between 7 and 9 percent. Even the politicians were convinced. They knew that the more control they had over the central bank, the more money they were likely to create. While printing more money relieves short-term fiscal problems, it eventually drives inflation higher. Politicians voluntarily tied their own hands, handing over control of monetary policy to an independent central bank.

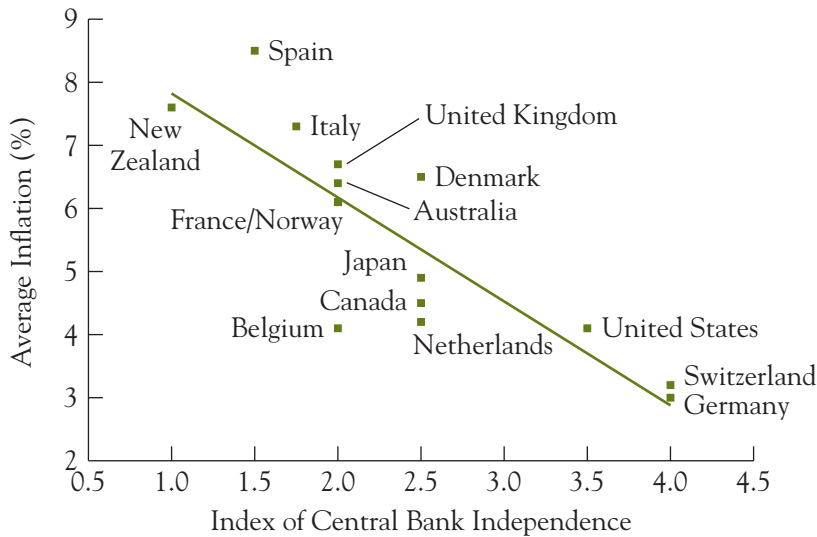
The design of the European Central Bank (ECB) is a clear example of the logic that independence leads to lower inflation. Politicians in Spain, Italy, and France, where inflation had been running over 6 percent per year for several decades, wanted their economies to be more like Germany's. In hopes that the new institution would deliver low inflation, they chose the German central bank, the Deutsche Bundesbank, as a model. By most accounts, the ECB is the most independent central bank in the world. And, as one would expect, inflation has been consistently low in the Europe.

Proponents of central bank independence realized they would need to solve this problem if their proposals were going to be accepted. Their solution was twofold. First, politicians would establish a set of goals; second, the policymakers would publicly report their progress in pursuing those goals. Explicit goals foster **accountability** and disclosure requirements create **transparency**. While central bankers are powerful, our elected representatives tell them what to do and then monitor their progress. That means requiring plausible explanations for their decisions, along with supporting data.

The institutional means for assuring accountability and transparency differ from one country to the next. In some cases, the government establishes an explicit numerical target for inflation, while in others the central bank defines the target. In the United Kingdom, the government sets a specific target each year; in the European Union, the central bank is asked only to pursue “price stability” as its primary objective; in the United States, the Federal Reserve is asked to deliver price stability as one of a number of objectives. Similar differences exist in the timing and content of information made public by central banks. Today every central bank announces its policy actions almost immediately, but the extent of the statements that accompany the

continued from previous page

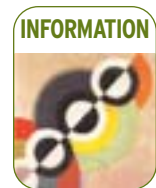
**Figure 15.2 Inflation and Central Bank Independence 1973–1988**



SOURCE: “Central Bank Independence and Macroeconomic Performance: Some Comparative Evidence,” *Journal of Money, Credit, and Banking*, 25 (May 1993), pp. 151–162.

announcement and the willingness to answer questions vary. The Federal Reserve’s statements tend to be only a few sentences long, and no one answers questions. In contrast, the president and vice president of the European Central Bank hold a press conference to answer questions on a statement several pages in length.<sup>20</sup>

It is difficult to know how important these differences in communications strategies are. Central bank statements are very different today than they were in the early 1990s. Until 1994, for example, the Federal Reserve didn’t announce its policy decisions publicly. Secrecy, once the hallmark of central banking, is now understood to damage both the policymakers and the economies they are trying to manage. For monetary policy to be a stabilizing force, central bankers need to explain their actions in periodic public statements, like the ones that follow every Federal Open Market Committee meeting. In essence, the economy and financial markets should respond to information that everyone receives, not to speculation about what poli-



<sup>20</sup>We will come back to the issue of how central banks formulate and communicate their objectives as part of our discussion of central bank structure in Chapter 16.

cymakers are doing. Thus, policymakers need to be as clear as possible about what they are trying to achieve and how they intend to achieve it. There really shouldn't be any surprises.

## The Policy Framework, Policy Trade-offs, and Credibility

We've seen that a modern central bank has a long list of objectives—low, stable inflation; high, stable growth; a stable financial system; and stable interest and exchange rates. To meet these objectives, central bankers must be independent, accountable, and good communicators. Together these qualities make up what we will call the **monetary policy framework**. The framework exists to resolve ambiguities that arise in the course of the central bank's work. Looking at the bank's objectives, we can see the problem. Setting a goal of low inflation is easy, but there are many ways to measure inflation. (See the discussion of inflation statistics in *Your Financial World*, Chapter 20.) The central bank needs to decide which measure to use and then stick with it. Thus, the European Central Bank is explicit about the measure of inflation it uses in evaluating the success or failure of its policy. It is called the harmonized index of consumer prices, or HICP. More important than the details, though, is the fact that officials have told us what they are trying to do. Their statement helps people to plan at the same time that it holds officials accountable to the public.

The monetary policy framework also clarifies the likely responses when goals conflict with one another. There is simply no way that policymakers can meet all their objectives at the same time. They have only one instrument—the interest rate—with which to work, and it is impossible to use a single instrument to achieve a long list of objectives. To take a recent example, by the end of 2000, a recession appeared to be looming in the United States. Businesses were reducing their production levels and starting to lay off workers. When the economy is slowing, the standard solution is to ease policy by lowering interest rates. Starting on January 3, 2001, and almost once a month for the rest of the year, the Federal Reserve's Federal Open Market Committee did just that. Eleven times in just over 11 months it lowered the target interest rate. As a result, the recession that began in March 2001 was extremely mild. But there was a cost. Obviously, if interest rates are changing every month, they are not stable. More important, lowering the interest rate means increasing the availability of money and credit at the risk of raising inflation. The goal of keeping inflation low and stable, then, can be inconsistent with the goal of avoiding a recession. By the end of 2001, inflation had gone up slightly, but most people thought the Fed had done a good job of moderating the recession.

Central bankers face the trade-off between inflation and growth on a daily basis. In October 1998, in announcing that “further easing of the stance monetary policy was judged to be warranted to sustain economic growth in the context of contained inflation” (that's the quote at the beginning of this chapter), the Federal Open Market Committee was trying to calm fears that its members had lost sight of the long-term goal of price stability. The Fed had chosen to reduce interest rates to head off a financial crisis and stabilize real economic activity. Its members had decided that inflation was a problem for another day. As is often the case, policymakers were forced to choose among competing objectives.

Since policy goals often conflict, central bankers must make their priorities clear. The public needs to know whether policymakers are focusing primarily on price stability, as is the case in many countries, or whether they are willing to allow a modest rise in inflation to avoid a slowdown in economic activity. The public also needs to know the role that interest-rate and exchange-rate stability plays in policy delibera-

Table 15.3 The Principles of Central Bank Design

1. <i>Independence.</i>	To keep inflation low, monetary decisions must be made free of political influence.
2. <i>Decision making by committee.</i>	Pooling the knowledge of a number of people yields better decisions than decision making by an individual.
3. <i>Accountability and transparency.</i>	Policymakers must be held accountable to the public they serve and clearly communicate their objectives, decisions, and methods.
4. <i>Policy framework.</i>	Policymakers must clearly state their policy goals and the tradeoffs among them.

tions. This important part of the policy framework limits the discretionary authority of the central bankers, ensuring that they will do the job they have been entrusted with. Thus, it is an essential part of the bank's communication responsibilities.

Finally, a well-designed policy framework helps policymakers establish **credibility**. For central bankers to achieve their objectives, everyone must trust them to do what they say they are going to do. This is particularly important when it comes to keeping inflation low. The reason is that most economic decisions are based on expectations about future inflation. We saw this relationship when we studied the determination of interest rates: The nominal interest rate equals the real interest rate plus expected inflation. The same is true for wage and price decisions. Firms set prices based partly on what they believe inflation will be in the future. They make wage agreements with workers based on expected future inflation. The higher their expectations for future inflation, the higher the prices, wages, and interest rates will be. Expected inflation creates inflation.<sup>21</sup> Successful monetary policy, then, requires that inflation expectations be kept under control. The most straightforward way for the central bank to do so is to announce its objectives, show resolve in meeting them, and explain its actions clearly along the way.

Table 15.3 summarizes the principles of central bank design and can serve as a check list for evaluating the operation of any central bank we come across.

## Fitting Everything Together: Central Banks and Fiscal Policy

Before a European country can join the common currency area and adopt the euro, it must meet a number of conditions. Two of the most important are that the country's annual budget deficit—the excess of government spending over revenues each year—cannot exceed 3 percent of GDP and the government's total debt—its accumulated level of outstanding bonds and other borrowings—cannot exceed 60 percent of GDP.<sup>22</sup> Once a country gains membership in the monetary union, failure to maintain these standards triggers substantial penalties.<sup>23</sup>

<sup>21</sup>We will come back to this when we discuss business cycles in Chapter 22.

<sup>22</sup>In practice, these limits were open to political interpretation, so countries that failed to meet them were allowed to join anyway. For example, in fall of 1998, Belgium's debt was 122 percent of its GDP—more than double the stated limit. But because the debt was forecasted to decline in the future, the requirement was waived.

<sup>23</sup>The “Stability and Growth Pact of 1997” dictates that “medium-term budgets” must be “close to balance or in surplus.” The exact mechanism came under significant strain in 2003. The previously agreed upon penalties that would be triggered by budget deficits in excess of 3 percent of GDP were not levied on the offending countries. Nevertheless, we can expect some form of fiscal discipline based on the pact to be enforced within the euro area.



## IN THE NEWS

### A Little Bit of Inflation Could Go a Long Way

**The New York Times**

by Tom Redburn

June 2, 2002

Everybody knows it's possible to have too much of a good thing. Too much rich food leads to indigestion; too many e-mail messages can drive you to the delete button.

The same is true of the Federal Reserve's long crusade to eliminate inflation from the American economy. That campaign, begun courageously by [then Federal Reserve Board chairman] Paul Volcker in 1979 when prices were spiraling higher at double-digit rates and carried on brilliantly by [his successor] Alan Greenspan over the last 15 years, is one of the great success stories of economic policy, helping to lay the foundation for much of the prosperity of recent years.

But enough is enough.

The danger is not just that the economy could fall into a deep deflationary pit, as it did in the Depression or as Japan's economy is doing today. The Fed will do every-



Alan Greenspan

SOURCE: © Brooks Kraft/Corbis



Paul Volcker

SOURCE: © Lisa Quinones/Black Star

thing in its power to prevent that. The more subtle risk is from the conventional view—particularly among bond market vigilantes—that zero inflation is the ideal and should be pursued without question. That stern attitude blocks the modest upward creep in the overall price level that is needed to properly grease the wheels of commerce.

Some Fed officials, even those long identified with a hawkish anti-inflationary stance, have begun to recognize this danger.

Remember that the central bank does not control the government's budget. Fiscal policy, the decisions about taxes and spending, are the responsibility of elected officials. But by specifying a range of "acceptable" levels of borrowing, Europeans are trying to restrict the fiscal policies that member countries enact. For the European Central Bank to do its job effectively, all the member countries' governments must behave responsibly.<sup>24</sup>

While fiscal and monetary policymakers share the same ultimate goal—to improve the well-being of the population—conflicts can arise between them. Fiscal policymakers are responsible for providing national defense, educating children, building

<sup>24</sup>While at this writing the U.S. has no explicit government budget restrictions, it has in the past. Following the large deficits of the 1980s, the U.S. Congress put restrictions on the size of the federal deficit. These expired in the late 1990s, and during the first few years of the 21st century, deficits began to rise again. One has to suspect that Congress will eventually be forced to address these problems and the likely outcome will be budget restrictions of the type that are in place in Europe.

“I always think of myself as pretty resolute when it comes to inflation,” Robert Parry, president of the Federal Reserve Bank of San Francisco, said in a mid-May talk. “But perhaps a little bit of inflation is a little bit safer than zero.”

William McDonough, the president of the Federal Reserve Bank of New York, was explicit about his willingness to tolerate a small amount of inflation. Not long ago, when consumer price inflation was running at 1.4 percent, he said, “If that’s not price stability, what is?”

This unusually candid talk, coming from central bankers inculcated by their own code of silence never to say a kind word about inflation, is a positive sign. But even an inflation rate somewhat higher than today’s would be nothing to fear. Indeed, it would be welcome.

Already, inflation, by just about every important indicator, is low and headed lower.

“One is a lovely number,” James Glassman, senior economist at J. P. Morgan Securities, wrote in a recent report. “Most measures of inflation have eased into a range that brackets 1 percent annually.”

With inflation so low, however, prices for most goods are still falling. The only signs of price increases are in housing and in services, particularly for medical services where past gains from managed care are beginning to erode. As a result, corporate profits in many sectors remain depressed, retarding the revival of investment needed to sustain a healthy economic recovery.

It is important to remember that a market economy works through price fluctuations that respond to changes in supply and demand. In the absence of inflation, the only way to signal relative differences across the full range

of goods and services is for some prices to fall in absolute terms even as others are rising.

A modicum of inflation allows this price signaling to occur without squeezing so many producers to cut prices. As long as the central bank does not allow it to get out of control, this kind of modest upward price movement creates an environment more conducive to economic growth than a determination to squelch inflation at all cost.

Fortunately for the economy, Fed officials are recognizing that overall price stability is not an unalloyed virtue. And with inflation tame, Mr. Glassman said, “The Fed will have little fear of allowing the economy to regain its stride.”

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### LESSONS OF THE ARTICLE

Federal Reserve officials make their views known to the public so that financial markets will not be surprised. While their objective is to keep inflation low and stable, they are clearly willing to tolerate small amounts of inflation, which they believe help the economy to function more smoothly. When inflation is low, policymakers can focus their efforts on ensuring that growth remains high. Importantly, a little steady inflation is unlikely to cause problems of the sort mentioned in *Your Financial World: Why Inflation Is Bad for You* in this chapter.

and maintaining transportation systems, and aiding the sick and poor. They need resources to pay for these services. Thus, funding needs create a natural conflict between monetary and fiscal policymakers. Central bankers, in their effort to stabilize prices and provide the foundation for high sustainable growth, take the long view, imposing limits on how fast the quantity of money and credit can grow. In contrast, fiscal policymakers tend to ignore the long-term inflationary effects of their actions and look for ways to spend resources today at the expense of prosperity tomorrow. For better or worse, their time horizon extends only until the next election. Some fiscal policymakers resort to actions intended to get around restrictions imposed by the central bank, eroding what is otherwise an effective and responsible monetary policy.

In the earliest days of central banks, a government that needed money would simply order the bank to print some. Of course, the result was inflation and occasionally hyperinflation. That is what led to the evolution of the independent central banks. Today the central bank’s autonomy leaves fiscal policymakers with two options for

financing government spending. They can take a share of income and wealth from the country's citizens through taxes, or they can borrow by issuing bonds in the financial markets.<sup>25</sup>

Because no one likes taxes, and officials fear angering the electorate, politicians often turn to borrowing in order to finance some portion of their spending. But a country can issue only so much debt. Beyond some limit, future tax revenues will not cover the payments that are due to lenders. At that point, the only solution is to turn to the central bank for the means to finance spending. As a technical matter, the government will "sell" new bonds directly to the central bank—bonds that no one else wants to buy. But doing so creates a monetary expansion, which leads to inflation. In fact, if officials can't raise taxes and are having trouble borrowing, inflation is the only way out.

While central bankers hate it, inflation is a real temptation to shortsighted fiscal policymakers. It is a way to get money in their hands. The mechanism is straightforward. The government forces the central bank to buy its bonds and then uses the proceeds to finance spending. But doing so increases the quantity of money in circulation, sparking inflation. While the rise in inflation may ultimately do great damage to the country's well-being, it also benefits fiscal policymakers: It reduces the value of the bonds the government has already sold, making them easier to repay.

To see why, let's assume the government sells \$100 billion worth of 10 percent, 10-year bonds. The result is an obligation to pay \$10 billion in interest annually and a lump sum of \$100 billion in 10 years. The plan is to make the interest payments using income tax revenue and worry about repaying the principal later. (Ten years is an eternity to the politicians who make these decisions. They generally try to avoid committing to specific, long-term payment plans lest the information hurt their chances for re-election.) Say the government gets its revenue from a 20 percent income tax on income of \$100 billion. That means 50 percent of the \$20 billion per year in tax collections will go to pay the interest on the debt.

Now look at the impact of inflation. To simplify the calculations, let's assume that the price level suddenly doubles, increasing income from \$100 billion to \$200 billion. This doubles tax collections from \$20 billion to \$40 billion. But since the interest payments stay the same, they now account for only 25 percent of revenue. So the politicians get a bonus. And when the time finally comes to repay the \$100 billion, it is worth only half as much. Inflation is a way for governments to default on a portion of the debt they owe.

While many politicians do act in their countries' long-term interests, there are plenty of examples of poor fiscal policymaking. Following the collapse of the Soviet Union, Russia had very few sources of revenue. Taxes were hard to collect and lenders were skeptical of the new government's ability to repay its loans, so interest rates were extremely high. Then there was the fact that almost everyone worked for the government. In short, expenses were high and revenue was low. Russian politicians turned to the Central Bank of Russia. The result was inflation of more than 14 percent per *month* for five consecutive years.

In early 2002, Argentina's economy collapsed when banks refused to honor their depositors' withdrawal requests. Unemployment skyrocketed, output plummeted, and the president was forced to resign. The full story is complicated, but we can understand one aspect of it without much trouble. During 2001, Argentina's provincial governments (the equivalent of the state governments in the United States) began to

<sup>25</sup>The fiscal policymakers can also sell some government assets, but that approach can't be sustained for long, so we will not pursue its implications.

experience significant budget problems. Their response was to start paying their employees with government bonds. But unlike the bonds we normally see, these were in small denominations—1, 2, 5, 10, 20 pesos, and so on. Not surprisingly, these small-denomination bonds were immediately used as means of payment, becoming money in effect. By mid-2002, this new form of money accounted for roughly 40 percent of the currency circulating in Argentina and the Central Bank of Argentina lost control over the amount of money circulating in the economy.

So, we see that the actions of fiscal policymakers can subvert the best efforts of central bankers. The Central Bank of Argentina was independent and its policymakers were well regarded. But if the government can shut down the banking system and issue its own money, then the central bank's independence is irrelevant. The Federal Reserve, the European Central Bank, the Bank of Japan, and 170 other central banks around the world are independent at the pleasure of their governments. When faced with a fiscal crisis, politicians often look for the easiest way out. If that way is inflating the value of the currency today, they will worry about the consequences tomorrow.

This brings us back to the criteria for inclusion in the European Monetary Union. The founders of the system wanted to ensure that participating governments kept their fiscal houses in order so that none of them would be tempted to pressure the European Central Bank to create inflation and bail them out. Monetary policy can meet its objective of price stability only if the government lives within its budget and never forces the central bank to finance a fiscal deficit.

In summary, responsible fiscal policy is essential to the success of monetary policy. But that is just the final point. Our discussions earlier in the chapter allowed us to conclude that there is no way for a poorly designed central bank to stabilize prices, output, the financial system, and interest and exchange rates, regardless of the government's behavior. To be successful, a central bank must operate in a particular way. It must be independent, accountable, and clear about its goals. It must have a well-articulated communications strategy and a sound decision-making mechanism. We turn in Chapter 16 to a detailed discussion of the structure of major central banks to see what makes them successful.

## Terms

accountability, 390	interest-rate stability, 386
central bank, 376	monetary policy, 377
central bank independence, 388	monetary policy framework, 392
credibility, 393	potential output, 383
exchange-rate stability, 386	price stability, 381
financial system stability, 384	sustainable growth, 383
fiscal policy, 379	transparency, 390
hyperinflation, 382	

## Chapter Lessons

1. The functions of a modern central bank are to
  - a. Adjust interest rates to control the quantity of money and credit in the economy.
  - b. Operate a payments system.
  - c. Lend to sound banks during times of stress.
  - d. Oversee the financial system.
2. The objective of a central bank is to reduce systematic risk in the economic and financial system. Specific objectives include
  - a. Low and stable inflation.
  - b. High and stable growth and employment.
  - c. Stable financial markets and institutions.
  - d. Stable interest rates.
  - e. Stable exchange rates.Because these objectives often conflict, policymakers must have clear priorities.
3. The best central banks
  - a. Are independent of political pressure.
  - b. Make decisions by committee rather than by an individual.
  - c. Are accountable to elected representatives and the public.
  - d. Communicate their objectives, actions, and policy deliberations clearly to the public.
  - e. Articulate clearly how they will act when their goals conflict.
  - f. Are credible in their efforts to meet their objectives.
4. Fiscal policy can make the central bank's job impossible because
  - a. Politicians take a short-term view, ignoring the inflationary impact of their actions over the long term.
  - b. Politicians are predisposed toward financing techniques that will create inflation.
  - c. Inflation provides immediate revenue and reduces the value of the government's outstanding debt.
  - d. Responsible fiscal policy is a precondition for successful monetary policy.
  - e. Central banks remain independent at the pleasure of politicians.

## Problems

1. For many central banks, the primary goal is to control inflation.
  - a. What are the costs of inflation?
  - b. Does anyone benefit from inflation? If so, who benefits and how?
2. Provide arguments for and against the proposition that a central bank should be allowed to set its own objectives.

3. Explain how transparency helps eliminate the problems that are created by central bank independence.
4. In 1998, Brazil was on the verge of a financial crisis. Foreign investors did not believe the government would be able to repay the bonds it had issued, so the interest rate began to rise. That made investors even less confident of Brazil's ability to make the required payments, so the interest rate rose even higher. The solution to the problem involved both monetary and fiscal policy. At the central bank, the governor was replaced and a new policy framework was put into place. Meanwhile, fiscal policymakers promised they would restrain their profligate spending and cut the budget deficit. Explain why these events helped to avert a crisis.
5. The Maastricht Treaty, which established the European Central Bank, states that the governments of the countries in the European Monetary Union must not seek to influence the members of the central bank's decision-making bodies. Why is freedom from political influence crucial to the ECB's ability to maintain price stability?
6. Most central banks publish volumes of material to inform the public about what they do and how they do it. In many cases, they are responding to reporting obligations mandated by the legislation that established the bank. Is such reporting important, or is it a waste of paper?
7. In 1900, there were 18 central banks in the world; 100 years later, there were 174. Why does nearly every country in the world now have a central bank?
8. The power of a central bank is based on its monopoly over the issuance of currency. Economics teaches us that monopolies are bad and competition is good. Would competition among several central banks be better? Provide arguments both for and against.
9. In the 1970s and 1980s, Argentina experienced a series of hyperinflationary episodes, during which inflation averaged about 300 percent per year. Finally, after two decades, authorities decided to create a system in which the Argentinean peso could be converted to U.S. dollars on a one-to-one basis. If the central bank wanted to print more pesos, it would need to obtain dollars to back them. Discuss the possible sources of Argentina's high inflation and explain why the change in policy was expected to eliminate it. (For 10 years, the system worked with virtually no inflation. But in January 2002, the monetary system collapsed, along with the Argentinean economy.)
10. During the 19th century, a \$100 bank note (or check) issued in Philadelphia would not necessarily be worth \$100 in New York. Why? How could the creation of a central bank solve this problem?
11. As chairman of the Federal Reserve, Alan Greenspan has never been willing to clarify what he means by the objective of "price stability." The European Central Bank defines the objective explicitly in terms of the rate of change in a particular price index. Why would Greenspan shy away from an explicit definition? What are the pros and cons of the two strategies?
12. Inflation hit 5,000 percent in Ukraine in 1993. The government had promised to provide many companies with subsidies, essentially giving them money. How was this promise connected to the inflation? What was the solution?
13. Since 1993, the Bank of England has published a quarterly *Inflation Report*. Find a copy of the report on the bank's Web site, [www.bankofengland.co.uk](http://www.bankofengland.co.uk). Describe its contents and explain why the bank might publish such a document.

14. After the end of the First World War in 1919, the Treaty of Versailles required the loser, Germany, to make large payments called reparations to the winners, the United States, the United Kingdom, and their allies. To make the payments, the German government had to find a source of revenue. With the country in ruins, there were very few options. Over the next four years, Germany experienced severe hyperinflation. Things got progressively worse, and from January 1922 to November 1923, prices rose by a factor of nearly 22 billion. Discuss the connection between the reparations payments and the hyperinflation.
15. Explain the costs of each of the following conditions and explain who bears them.
  - a. Interest-rate instability
  - b. Exchange-rate instability
  - c. Inflation
  - d. Unstable growth