PART

# Four

# International Macroeconomic Policy

CHAPTER 18

# The International Monetary System, 1870–1973

In the previous two chapters we saw how a single country can use monetary, fiscal, and exchange rate policy to change the levels of employment and production within its borders. Although the analysis usually assumed that macroeconomic conditions in the rest of the world were not affected by the actions of the country we were studying, this assumption is not, in general, a valid one: Any change in the home country's real exchange rate automatically implies an opposite change in foreign real exchange rates, and any shift in overall domestic spending is likely to change domestic demand for foreign goods. Unless the home country is insignificantly small, developments within its borders affect macroeconomic conditions abroad and therefore complicate the task of foreign policy makers.

The inherent interdependence of open national economies has sometimes made it more difficult for governments to achieve such policy goals as full employment and price level stability. The channels of interdependence depend, in turn, on the monetary and exchange rate arrangements that countries adopt—a set of institutions called the *international monetary system*. This chapter examines how the international monetary system influenced macroeconomic policy making and performance during three periods: the gold standard era (1870–1914), the interwar period (1918–1939), and the post-World War II years during which exchange rates were fixed under the Bretton Woods agreement (1946–1973).

In an open economy, macroeconomic policy has two basic goals, internal balance (full employment with price stability) and external balance (avoiding excessive imbalances in international payments). Because a country cannot alter its international payments position without automatically causing an opposite change of equal magnitude in the payments position of the rest of the world, one country's pursuit of its macroeconomic goals inevitably influences how well other countries attain their goals. The goal of external balance therefore offers a clear illustration of how policy actions taken abroad may change an economy's position relative to the position its government prefers.

Throughout the period 1870–1973, with its various international currency arrangements, how did countries try to attain internal and external balance, and

how successful were they? Did policy makers worry about the foreign repercussions of their actions, or did each adopt nationalistic measures that were self-defeating for the world economy as a whole? The answers to these questions depend on the international monetary system in effect at the time.

## Learning Goals

After reading this chapter, you will be able to:

- Explain how the goals of internal and external balance motivate economic policy makers in open economies.
- Describe the structure of the international gold standard that linked countries' exchange rates and policies prior to World War I, and the role of the Great Depression of the 1930s in ending efforts to restore the pre-1914 world monetary order.
- Discuss how the post-World War II Bretton Woods system of globally fixed exchange rates was designed to combine exchange rate stability with limited autonomy of national macroeconomic policies.
- List and assess the policy options available for attaining internal and external balance under the Bretton Woods arrangements.
- Explain the factors that led to the final collapse of the Bretton Woods system in 1973 and the move to the current system of floating exchange rates.

# Macroeconomic Policy Goals in an Open Economy

In open economies, policy makers are motivated by the goals of internal and external balance. Simply defined, **internal balance** requires the full employment of a country's resources and domestic price level stability. **External balance** is attained when a country's current account is neither so deeply in deficit that the country may be unable to repay its foreign debts in the future nor so strongly in surplus that foreigners are put in that position.

In practice, neither of these definitions captures the full range of potential policy concerns. Along with full employment and stability of the overall price level, for example, policy makers may have a particular domestic distribution of income as an additional internal target. Depending on exchange rate arrangements, policy makers may worry about swings in balance of payments accounts other than the current account. To make matters even more complicated, the line between external and internal goals can be fuzzy. How should one classify an employment target for export industries, for example, when export growth influences the economy's ability to repay its foreign debts?

The simple definitions of internal and external balance given above, however, capture the goals that most policy makers share regardless of the particular economic environment. We therefore organize our analysis around these definitions and discuss possible additional aspects of internal or external balance when they are relevant.

## Internal Balance: Full Employment and Price Level Stability

When a country's productive resources are fully employed and its price level is stable, the country is in internal balance. The waste and hardship that occur when resources are

underemployed is clear. If a country's economy is "overheated" and resources are *over*employed, however, waste of a different (though probably less harmful) kind occurs. For example, workers on overtime might prefer to be working less and enjoying leisure, but their contracts require them to put in longer hours during periods of high demand. Machines that are being worked more intensely than usual will tend to suffer more frequent breakdowns and to depreciate more quickly.

Under- and overemployment also lead to general price level movements that reduce the economy's efficiency by making the real value of the monetary unit less certain and thus a less useful guide for economic decisions. Since domestic wages and prices rise when the demands for labor and output exceed full-employment levels, and fall in the opposite case, the government must prevent substantial movements in aggregate demand relative to its full-employment level to maintain a stable, predictable price level.

Inflation or deflation can occur even under conditions of full employment, of course, if the expectations of workers and firms about future monetary policy lead to an upward or downward wage-price spiral. Such a spiral can continue, however, only if the central bank fulfills expectations through continuing injections or withdrawals of money (Chapter 14).

One particularly disruptive effect of an unstable price level is its effect on the real value of loan contracts. Because loans tend to be denominated in the monetary unit, unexpected price level changes cause income to be redistributed between creditors and debtors. A sudden increase in the U.S. price level, for example, makes those with dollar debts better off, since the money they owe to lenders is now worth less in terms of goods and services. At the same time, the price level increase makes creditors worse off. Because such accidental income redistribution can cause considerable distress to those who are hurt, governments have another reason to maintain price level stability.[1]

Theoretically, a perfectly predictable trend of rising or falling prices would not be too costly, since everyone would be able to calculate easily the real value of money at any point in the future. But in the real world, there appears to be no such thing as a predictable inflation rate. Indeed, experience shows that the unpredictability of the general price level is magnified tremendously in periods of rapid price level change. The costs of inflation have been most apparent in the postwar period in countries such as Argentina, Brazil, Serbia, and Zimbabwe, where astronomical price level increases caused the domestic currencies practically to stop functioning as units of account or stores of value.

To avoid price level instability, therefore, the government must prevent large fluctuations in output, which are also undesirable in themselves. In addition, it must avoid inflation and deflation by ensuring that the money supply does not grow too quickly or too slowly.

## External Balance: The Optimal Level of the Current Account

The notion of external balance is more difficult to define than internal balance because there are no natural benchmarks like "full employment" or "stable prices" to apply to an economy's external transactions. Whether an economy's trade with the outside world poses macroeconomic problems depends on several factors, including the economy's particular circumstances,

[1] The situation is somewhat different when the government itself is a major debtor in domestic currency. In such cases, a surprise inflation that reduces the real value of government debt may be a convenient way of taxing the public. This method of taxation has been quite common in developing countries (see Chapter 22), but elsewhere it has generally been applied with reluctance and in extreme situations (for example, during wars). A policy of trying to surprise the public with inflation undermines the government's credibility and, through the Fisher effect, worsens the terms on which the government can borrow in the future.

conditions in the outside world, and the institutional arrangements governing its economic relations with foreign countries. A country that is committed to fix its exchange rate against a foreign currency, for example, may well adopt a different definition of external balance than one whose currency floats.

International economics textbooks often identify external balance with balance in a country's current account. While this definition is appropriate in some circumstances, it is not helpful as a general rule. Recall from Chapter 12 that a country with a current account deficit is borrowing resources from the rest of the world that it will have to pay back in the future. This situation is not necessarily undesirable. For example, the country's opportunities for investing the borrowed resources may be attractive relative to the opportunities available in the rest of the world. In this case, paying back loans from foreigners poses no problem because a profitable investment will generate a return high enough to cover the interest and principal on those loans. Similarly, a current account surplus may pose no problem if domestic savings are being invested more profitably abroad than they would be at home.

More generally, we may think of current account imbalances as providing another example of how countries gain from trade. The trade involved is what we have called *intertemporal trade,* that is, the trade of consumption over time (Chapter 7). Just as countries with differing abilities to produce goods at a single point in time gain from concentrating their production on what they do best and trading, countries can gain from concentrating the world's investment in those economies best able to turn current output into future output. Countries with weak investment opportunities should invest little at home and channel their savings into more productive investment activity abroad. Put another way, countries where investment is relatively unproductive should be net exporters of currently available output (and thus have current account surpluses), while countries where investment is relatively productive should be net importers of current output (and have current account deficits). To pay off their foreign debts when the investments mature, the latter countries export output to the former countries and thereby complete the exchange of present output for future output.

Other considerations may also justify an unbalanced current account. A country where output drops temporarily (for example, because of an unusually bad crop failure) may wish to borrow from foreigners to avoid the sharp temporary fall in its consumption that would otherwise occur. In the absence of this borrowing, the price of present output in terms of future output would be higher in the low-output country than abroad, so the intertemporal trade that eliminates this price difference leads to mutual gains.

Insisting that all countries be in current account equilibrium makes no allowance for these important gains from trade over time. Thus, no realistic policy maker would want to adopt a balanced current account as a policy target appropriate in all circumstances.

At a given point, however, policy makers generally adopt *some* current account target as an objective, and this target defines their external balance goal. While the target level of the current account is generally not zero, governments usually try to avoid extremely large external surpluses or deficits unless they have clear evidence that large imbalances are justified by potential intertemporal trade gains. (For example, the Baltic countries that joined the European Union in May 2004 are running high current account deficits that reflect, at least in part, their increasing attractiveness as locations for investment.) Governments are cautious because the exact current account balance that maximizes the gains from intertemporal trade is difficult if not impossible to figure out. In addition, this optimal current account balance can change unpredictably over time as conditions in the economy change. Current account balances that are very wide of the mark can, however, cause serious problems.

**Problems with Excessive Current Account Deficits** Why do governments prefer to avoid current account deficits that are too large? As noted, a current account deficit (which means that the economy is borrowing from abroad) may pose no problem if the borrowed funds are channeled into productive domestic investment projects that pay for themselves with the revenue they generate in the future. Sometimes, however, large current account deficits represent temporarily high consumption resulting from misguided government policies or some other malfunction in the economy. At other times, the investment projects that draw on foreign funds may be badly planned and based on overoptimistic expectations about future profitability. In such cases, the government might wish to reduce the current account deficit immediately rather than face problems in repaying debts to foreigners later. In particular, a large current account deficit caused by an expansionary fiscal policy that does not simultaneously make domestic investment opportunities more profitable may signal a need for the government to restore external balance by changing its economic course.

At times the external target is imposed from abroad rather than chosen by the domestic government. When countries begin to have trouble meeting their payments on past foreign loans, foreign creditors become reluctant to lend them new funds and may even demand immediate repayment of the earlier loans. In such cases, the home government may have to take severe action to reduce the country's desired borrowing from foreigners to feasible levels. A large current account deficit can undermine foreign investors' confidence and contribute to a lending crisis.

**Problems with Excessive Current Account Surpluses** An excessive current account surplus poses problems that are different from those posed by deficits. A surplus in the current account implies that a country is accumulating assets located abroad. Why are growing domestic claims to foreign wealth ever a problem? One potential reason stems from the fact that, for a given level of national saving, an increased current account surplus implies lower investment in domestic plant and equipment. (This follows from the national income identity, $S = CA + I$, which says that total domestic saving, $S$, is divided between foreign asset accumulation, $CA$, and domestic investment, $I$.) Several factors might lead policy makers to prefer that domestic saving be devoted to higher levels of domestic investment and lower levels of foreign investment. First, the returns on domestic capital may be easier to tax than those on assets located abroad. Second, an addition to the home capital stock may reduce domestic unemployment and therefore lead to higher national income than an equal addition to foreign assets. Finally, domestic investment by one firm may have beneficial technological spillover effects on other domestic producers that the investing firm does not capture.

If a large home current account surplus reflects excessive external borrowing by foreigners, the home country may in the future find itself unable to collect the money it is owed. Put another way, the home country may lose part of its foreign wealth if foreigners find they have borrowed more than they can repay. In contrast, nonrepayment of a loan between domestic residents leads to a redistribution of national wealth within the home country but causes no change in the level of national wealth.

Excessive current account surpluses may also be inconvenient for political reasons. Countries with large surpluses can become targets for discriminatory protectionist measures by trading partners with external deficits. Japan, for example, has sometimes been in this position. To avoid such damaging restrictions, surplus countries may try to keep their surpluses from becoming too large.

To summarize, the goal of external balance is a level of the current account that allows the most important gains from trade over time to be realized without risking the problems

discussed above. Because governments do not know this current account level exactly, they usually try to avoid large deficits or surpluses unless there is clear evidence of large gains from intertemporal trade.

## International Macroeconomic Policy Under the Gold Standard, 1870–1914

The gold standard period between 1870 and 1914 was based on ideas about international macroeconomic policy very different from those that formed the basis of international monetary arrangements in the second half of the 20th century. Nevertheless, the period warrants attention because subsequent attempts to reform the international monetary system on the basis of fixed exchange rates can be viewed as attempts to build on the strengths of the gold standard while avoiding its weaknesses. (Some of these strengths and weaknesses were discussed in Chapter 17.) This section looks at how the gold standard functioned in practice before World War I and examines how well it enabled countries to attain goals of internal and external balance.

### Origins of the Gold Standard

The gold standard had its origin in the use of gold coins as a medium of exchange, unit of account, and store of value. While gold has been used in this way since ancient times, the gold standard as a legal institution dates from 1819, when the British Parliament repealed long-standing restrictions on the export of gold coins and bullion from Britain.

Later in the 19th century, Germany, Japan, and other countries also adopted the gold standard. At the time, Britain was the world's leading economic power, and other nations hoped to achieve similar economic success by imitating British institutions. The United States effectively joined the gold standard in 1879 when it pegged to gold the paper "greenbacks" issued during the Civil War. Given Britain's preeminence in international trade and the advanced development of its financial institutions, London naturally became the center of the international monetary system built on the gold standard.

### External Balance Under the Gold Standard

Under the gold standard, the primary responsibility of a central bank was to preserve the official parity between its currency and gold; to maintain this price, the central bank needed an adequate stock of gold reserves. Policy makers therefore viewed external balance not in terms of a current account target, but as a situation in which the central bank was neither gaining gold from abroad nor (more important) losing gold to foreigners at too rapid a rate.

In the modern terminology of Chapter 12, central banks tried to avoid sharp fluctuations in the *balance of payments* (or official settlements balance), the sum of the current account balance, the capital account balance, and the nonreserve component of the financial account balance. Because international reserves took the form of gold during this period, the surplus or deficit in the balance of payments had to be financed by gold shipments between central banks.[2] To avoid large gold movements, central banks adopted policies that pushed the nonreserve component of the financial account surplus (or deficit) into line with the total current plus capital account deficit (or surplus). A country is said to be in **balance of payments equilibrium** when the sum of its current, capital, and nonreserve financial accounts equals

[2] In reality, central banks had begun to hold foreign currencies in their reserves even before 1914. (The pound sterling was the leading reserve currency.)

zero, so that the current plus capital account balance is financed entirely by private international lending without reserve movements.

Many governments took a laissez-faire attitude toward the current account. Britain's current account surplus between 1870 and World War I averaged 5.2 percent of its GNP, a figure that is remarkably high by post-1945 standards. Several borrowing countries, however, did experience difficulty at one time or another in paying their foreign debts. Perhaps because Britain was the world's leading exporter of international economic theory as well as of capital during these years, the economic writing of the gold standard era places little emphasis on problems of current account adjustment.

## The Price-Specie-Flow Mechanism

The gold standard contains some powerful automatic mechanisms that contribute to the simultaneous achievement of balance of payments equilibrium by all countries. The most important of these, the **price-specie-flow mechanism,** was recognized by the 18th century (when precious metals were referred to as "specie"). In 1752, David Hume, the Scottish philosopher, described the price-specie-flow mechanism as follows:

> Suppose four-fifths of all the money in Great Britain to be annihilated in one night, and the nation reduced to the same condition, with regard to specie, as in the reigns of the Harrys and the Edwards, what would be the consequence? Must not the price of all labour and commodities sink in proportion, and everything be sold as cheap as they were in those ages? What nation could then dispute with us in any foreign market, or pretend to navigate or to sell manufactures at the same price, which to us would afford sufficient profit? In how little time, therefore, must this bring back the money which we had lost, and raise us to the level of all the neighbouring nations? Where, after we have arrived, we immediately lose the advantage of the cheapness of labour and commodities; and the farther flowing in of money is stopped by our fulness and repletion.
>
> Again, suppose that all the money in Great Britain were multiplied fivefold in a night, must not the contrary effect follow? Must not all labour and commodities rise to such an exorbitant height, that no neighbouring nations could afford to buy from us; while their commodities, on the other hand, became comparatively so cheap, that, in spite of all the laws which could be formed, they would run in upon us, and our money flow out; till we fall to a level with foreigners, and lose that great superiority of riches which had laid us under such disadvantages?[3]

It is easy to translate Hume's description of the price-specie-flow mechanism into more modern terms. Suppose that Britain's current plus capital account surplus is greater than its nonreserve financial account deficit. Because foreigners' net imports from Britain are not being financed entirely by British loans, the balance must be matched by flows of international reserves—that is, of gold—into Britain. These gold flows automatically reduce foreign money supplies and swell Britain's money supply, pushing foreign prices downward and British prices upward. (Notice that Hume fully understood the lesson of Chapter 14, that price levels and money supplies move proportionally in the long run.)

[3] Hume, "Of the Balance of Trade," reprinted (in abridged form) in Barry Eichengreen and Marc Flandreau, eds., *The Gold Standard in Theory and History* (London: Routledge, 1997), pp. 33–43.

The simultaneous rise in British prices and fall in foreign prices—a real appreciation of the pound, given the fixed exchange rate—reduces foreign demand for British goods and services and at the same time increases British demand for foreign goods and services. These demand shifts work in the direction of reducing Britain's current account surplus and reducing the foreign current account deficit. Eventually, therefore, reserve movements stop and both countries reach balance of payments equilibrium. The same process also works in reverse, eliminating an initial situation of foreign surplus and British deficit.

## The Gold Standard "Rules of the Game": Myth and Reality

In theory the price-specie-flow mechanism could operate automatically. But the reactions of central banks to gold flows across their borders furnished another potential mechanism to help restore balance of payments equilibrium. Central banks that were persistently losing gold faced the risk of becoming unable to meet their obligation to redeem currency notes. They were therefore motivated to sell domestic assets when gold was being lost, pushing domestic interest rates upward and attracting inflows of capital from abroad. Central banks gaining gold had much weaker incentives to eliminate their own imports of the metal. The main incentive was the greater profitability of interest-bearing domestic assets compared with "barren" gold. A central bank that was accumulating gold might be tempted to purchase domestic assets, thereby lowering home interest rates, increasing financial outflows, and driving gold abroad.

These domestic credit measures, if undertaken by central banks, reinforced the price-specie-flow mechanism in pushing all countries toward balance of payments equilibrium. After World War I, the practices of selling domestic assets in the face of a deficit and buying domestic assets in the face of a surplus came to be known as the gold standard "rules of the game"—a phrase reportedly coined by Keynes. Because such measures speeded the movement of all countries toward their external balance goals, they increased the efficiency of the automatic adjustment processes inherent in the gold standard.

Later research has shown that the supposed "rules of the game" of the gold standard were frequently violated before 1914. As noted, the incentives to obey the rules applied with greater force to deficit than to surplus countries, so in practice it was the deficit countries that bore the burden of bringing the payments balances of *all* countries into equilibrium. By not always taking actions to reduce gold inflows, the surplus countries worsened a problem of international policy coordination inherent in the system: Deficit countries competing for a limited supply of gold reserves might adopt overcontractionary monetary policies that harmed employment while doing little to improve their reserve positions.

In fact, countries often reversed the rules and *sterilized* gold flows, that is, sold domestic assets when foreign reserves were rising and bought domestic assets as foreign reserves fell. Government interference with private gold exports also undermined the system. The picture of smooth and automatic balance of payments adjustment before World War I therefore did not always match reality. Governments sometimes ignored both the "rules of the game" and the effects of their actions on other countries.[4]

## Internal Balance Under the Gold Standard

By fixing the prices of currencies in terms of gold, the gold standard aimed to limit monetary growth in the world economy and thus to ensure stability in world price levels. While

[4] An influential modern study of central bank practices under the gold standard is Arthur I. Bloomfield, *Monetary Policy under the International Gold Standard: 1880–1914* (New York: Federal Reserve Bank of New York, 1959).

## Hume versus the Mercantilists

David Hume's forceful account of the price-specie-flow mechanism is another example of the skillful use of economic theory to mold economic policy. (We referred to Hume's classic analysis in Chapter 1.) An influential school of economic thinkers called *mercantilists* held that without severe restrictions on international trade and payments, Britain might find itself impoverished and without an adequate supply of circulating monetary gold as a result of balance of payments deficits. Hume refuted their arguments by demonstrating that the balance of payments would automatically regulate itself to ensure an adequate supply of money in every country.

Mercantilism, which originated in the 17th century, held that silver and gold were the mainstays of national wealth and essential to vigorous commerce. Mercantilists therefore viewed specie outflows with alarm and had as a main policy goal a continuing surplus in the balance of payments (that is, a continuing inflow of precious metals). As the mercantilist writer Thomas Mun put it around 1630: "The ordinary means therefore to increase our wealth and treasure is by foreign trade, wherein we must ever observe this rule: to sell more to strangers yearly than we consume of theirs in value."

Hume's reasoning showed that a perpetual surplus is impossible: Since specie inflows drive up domestic prices and restore equilibrium in the balance of payments, any surplus eventually eliminates itself. Similarly, a shortage of currency leads to low domestic prices and a foreign payments surplus that eventually brings into the country as much money as needed. Government interference with international transactions, Hume argued, would harm the economy without bringing about the ongoing increase in "wealth and treasure" that the mercantilists favored.

Hume pointed out that the mercantilists overemphasized a single and relatively minor component of national wealth, precious metals, while ignoring the nation's main source of wealth, its productive capacity. In making this observation Hume was putting forward a very modern view. Well into the 20th century, however, policy makers concerned with external balance often focused on international gold flows at the expense of broader indicators of changes in national wealth. Since the mercantilists were discredited by the attacks of Hume and like-minded thinkers, this relative neglect of the current account and its relation to domestic investment and productivity is puzzling. Perhaps mercantilistic instincts survived in the hearts of central bankers.

price levels within gold standard countries did not rise as much between 1870 and 1914 as over the period after World War II, national price levels moved unpredictably over shorter horizons as periods of inflation and deflation followed each other. The gold standard's mixed record on price stability reflected a problem discussed in the last chapter, change in the relative prices of gold and other commodities.

In addition, the gold standard does not seem to have done much to ensure full employment. The U.S. unemployment rate, for example, averaged 6.8 percent between 1890 and 1913, but it averaged around 5.6 percent between 1946 and 2007.[5]

A fundamental cause of short-term internal instability under the pre-1914 gold standard was the subordination of economic policy to external objectives. Before World War I, governments had not assumed responsibility for maintaining internal balance as fully as they did after World War II. In the United States, the resulting economic distress led to political opposition to the gold standard, as the Case Study that follows explains. The importance

[5] Data on price levels are given by Cooper (cited on p. 485 in Chapter 17) and data for U.S. unemployment are adapted from the same source. Caution should be used in comparing gold standard and post-World War II unemployment data because the methods used to assemble the earlier data were much cruder. A critical study of pre-1930 U.S. unemployment data is Christina D. Romer, "Spurious Volatility in Historical Unemployment Data," *Journal of Political Economy* 94 (February 1986), pp. 1–37.

of internal policy objectives increased after World War I as a result of the worldwide economic instability of the interwar years, 1918–1939. And the unpalatable internal consequences of attempts to restore the gold standard after 1918 helped mold the thinking of the architects of the fixed exchange rate system adopted after 1945. To understand how the post-World War II international monetary system tried to reconcile the goals of internal and external balance, we therefore must examine the economic events of the period between the two world wars.

## Case Study

### The Political Economy of Exchange Rate Regimes: Conflict Over America's Monetary Standard During the 1890s

As we learned in Chapter 17, the United States had a bimetallic monetary standard until the Civil War, with both silver and gold in circulation. Once war broke out the country moved to a paper currency (called the "greenback") and a floating exchange rate, but in 1879 a pure gold standard (and a fixed exchange rate against other gold-standard currencies such as the British pound sterling) was adopted.

World gold supplies had increased sharply after the 1849 discoveries in California, but the 1879 return of the dollar to gold at the pre-Civil War parity required deflation in the United States. Furthermore, a global shortage of gold generated continuing downward pressure on price levels long after the American restoration of gold. By 1896, the U.S. price level was about 40 percent below its 1869 level. Economic distress was widespread and became especially severe after a banking panic in 1893. Farmers, who saw the prices of agricultural products plummet more quickly even than the general price level, were especially hard hit.

In the 1890s, a broad Populist coalition of U.S. farmers, miners, and others pressed for revival of the bimetallic silver-gold system that had prevailed before the Civil War. They desired a return to the old 16:1 relative mint parity for gold and silver, but by the early 1890s, the market price of gold in terms of silver had risen to around 30. The Populists foresaw that the monetization of silver at 16:1 would lead to an increase in the silver money stock, and possibly a reversal of deflation, as people used gold dollars to buy silver cheaply on the market and then took it in to the mint for coining. These developments would have had several advantages from the standpoint of farmers and their allies, such as undoing the adverse terms of trade trends of the previous decades and reducing the real values of farmers' mortgage debts. Western silver mine owners, in particular, were wildly enthusiastic. On the other side, eastern financiers viewed "sound money"—that is, gold and gold alone—as essential for achieving more complete American integration into world markets.

The silver movement reached its high tide in 1896 when the Democratic Party nominated William Jennings Bryan to run for president after a stemwinding convention speech in which he famously proclaimed, "Thou shalt not crucify mankind upon a cross of gold." But by 1896 new gold discoveries in South Africa, Alaska, and elsewhere

were starting to reverse previous deflationary trends across the world, defusing silver as a political issue. Bryan lost the elections of 1896 and 1900 to Republican William McKinley, and in March 1900 Congress passed the Gold Standard Act, which definitively placed the dollar on an exclusive basis of gold.

Modern readers of L. Frank Baum's classic 1900 children's book, *The Wonderful Wizard of Oz,* usually don't realize that the story of Dorothy, Toto, and their friends is an allegorical rendition of the U.S. political struggle over gold. The yellow brick road represents the false promise of gold, the name "Oz" is a reference to an ounce (oz.) of gold, and Dorothy's silver slippers—changed to ruby slippers in the well-known Hollywood color film version—offer the true way home to the heavily indebted farming state of Kansas.[6]

Although farming debt is often mentioned as a prime factor in the 1890s silver agitation, Harvard political scientist Jeffry Frieden shows that a more relevant factor was the desire of farming and mining interests to raise the prices of their products relative to nontraded goods.[7] Manufacturers, who competed with imports, had been able to obtain tariff protection as a counterweight to deflation. As a group, they therefore had little interest in changing the currency standard. Because the United States was nearly exclusively an exporter of primary products, import tariffs would have been ineffective in helping farmers and miners. A depreciation of the U.S. dollar, however, promised to raise the dollar prices of primary products relative to the prices of nontradables. Through a careful statistical analysis of Congressional voting on bills related to the monetary system, Frieden shows that legislative support for silver was unrelated to debt levels but was indeed highly correlated with state employment in agriculture and mining.

# The Interwar Years, 1918–1939

Governments effectively suspended the gold standard during World War I and financed part of their massive military expenditures by printing money. Further, labor forces and productive capacity had been reduced sharply through war losses. As a result, price levels were higher everywhere at the war's conclusion in 1918.

Several countries experienced runaway inflation as their governments attempted to aid the reconstruction process through public expenditures. These governments financed their purchases simply by printing the money they needed, as they sometimes had during the war. The result was a sharp rise in money supplies and price levels.

## The Fleeting Return to Gold

The United States returned to gold in 1919. In 1922, at a conference in Genoa, Italy, a group of countries including Britain, France, Italy, and Japan agreed on a program calling for a general return to the gold standard and cooperation among central banks in attaining external and internal objectives. Realizing that gold supplies might be inadequate to meet central banks' demands for international reserves (a problem of the gold standard noted in Chapter 17), the Genoa Conference sanctioned a partial gold *exchange* standard in which smaller

[6] An informative and amusing account is Hugh Rockoff, "The 'Wizard of Oz' as a Monetary Allegory," *Journal of Political Economy* 98 (August 1990), pp. 739–760.

[7] See "Monetary Populism in Nineteenth-Century America: An Open Economy Interpretation," *Journal of Economic History* 57 (June 1997), pp. 367–395.

countries could hold as reserves the currencies of several large countries whose own international reserves would consist entirely of gold.

In 1925, Britain returned to the gold standard by pegging the pound to gold at the prewar price. Chancellor of the Exchequer Winston Churchill, who favored the return to the old parity, argued that any deviation from the prewar price would undermine world confidence in the stability of Britain's financial institutions, which had played the leading role in international finance during the gold standard era. Though Britain's price level had been falling since the war, in 1925 it was still higher than in the days of the prewar gold standard. To return the pound price of gold to its prewar level, the Bank of England was therefore forced to follow contractionary monetary policies that contributed to severe unemployment.

British stagnation in the 1920s accelerated London's decline as the world's leading financial center. Britain's economic weakening proved problematic for the stability of the restored gold standard. In line with the recommendations of the Genoa Conference, many countries held international reserves in the form of deposits in London. Britain's gold reserves were limited, however, and the country's persistent stagnation did little to inspire confidence in its ability to meet its foreign obligations. The onset of the Great Depression in 1929 was shortly followed by bank failures throughout the world. Britain left gold in 1931 when foreign holders of sterling (including several central banks) lost confidence in Britain's promise to maintain its currency's value and began converting their sterling to gold.

## International Economic Disintegration

As the depression continued, many countries renounced the gold standard and allowed their currencies to float in the foreign exchange market. The United States left gold in 1933 but returned in 1934, having raised the dollar price of gold from $20.67 to $35 per ounce. Countries that clung to the gold standard without devaluing their currencies suffered most during the Great Depression. Indeed, recent research places much of the blame for the depression's worldwide propagation on the gold standard itself (see the Case Study on the next page).

Major economic harm was done by restrictions on international trade and payments, which proliferated as countries attempted to discourage imports and keep aggregate demand bottled up at home. The Smoot-Hawley tariff imposed by the United States in 1930 had a damaging effect on employment abroad. The foreign response involved retaliatory trade restrictions and preferential trading agreements among groups of countries. A measure that raises domestic welfare is called a *beggar-thy-neighbor policy* when it benefits the home country only because it worsens economic conditions abroad (Chapter 11).

Uncertainty about government policies led to sharp reserve movements for countries with pegged exchange rates and sharp exchange rate movements for those with floating rates. Prohibitions on private financial account transactions were used by many countries to limit these effects of foreign exchange market developments. Trade barriers and deflation in the industrial economies of America and Europe led to widespread repudiations of international debts, particularly by Latin American countries, whose export markets were disappearing. In short, the world economy disintegrated into increasingly autarkic (that is, self-sufficient) national units in the early 1930s.

In the face of the Great Depression, many countries had resolved the choice between external and internal balance by curtailing their trading links with the rest of the world and eliminating, by government decree, the possibility of any significant external imbalance. By reducing the gains from trade, that approach imposed high costs on the world economy and contributed to the slow recovery from depression, which in many countries was still incomplete in 1939. All countries would have been better off in a world with freer international trade, provided international cooperation had helped each country preserve its external balance and financial stability without sacrificing internal policy goals. It was this realization that inspired the blueprint for the postwar international monetary system, the **Bretton Woods agreement.**

## Case Study

### The International Gold Standard and the Great Depression

One of the most striking features of the decade-long Great Depression that started in 1929 was its global nature. Rather than being confined to the United States and its main trading partners, the downturn spread rapidly and forcefully to Europe, Latin America, and elsewhere. What explains the Great Depression's nearly universal scope? Recent scholarship shows that the international gold standard played a central role in starting, deepening, and spreading the 20th century's greatest economic crisis.[8]

In 1929, most market economies were once again on the gold standard. At the time, however, the United States, attempting to slow its overheated economy through monetary contraction, and France, having just ended an inflationary period and returned to gold, faced large finanical inflows. Through the resulting balance of payments surpluses, both countries were absorbing the world's monetary gold at a startling rate. (By 1932 the two countries alone held more than 70 percent of it!) Other countries on the gold standard had no choice but to engage in domestic asset sales and raise interest rates if they wished to conserve their dwindling gold stocks. The resulting world-wide monetary contraction, combined with the shock waves from the October 1929 New York stock market crash, sent the world into deep recession.

Waves of bank failures around the world only accelerated the world's downward economic spiral. The gold standard again was a key culprit. Many countries desired to safeguard their gold reserves in order to be able to remain on the gold standard. This desire often discouraged them from providing troubled banks with the liquidity that might have allowed the banks to stay in business. After all, any cash provided to banks by their home governments would have increased potential private claims to the government's precious gold holdings.[9]

Perhaps the clearest evidence of the gold standard's role is the contrasting behavior of output and the price level in countries that left the gold standard relatively early, such as Britain, and those that stubbornly hung on. Countries that abandoned the gold standard freed themselves to adopt more expansionary monetary policies that limited (or prevented)

[8] Important contributions to this research include Ehsan U. Choudhri and Levis A. Kochin, "The Exchange Rate and the International Transmission of Business Cycle Disturbances: Some Evidence from the Great Depression," *Journal of Money, Credit, and Banking* 12 (1980), pp. 565–574; Peter Temin, *Lessons from the Great Depression* (Cambridge, MA: MIT Press, 1989); and Barry Eichengreen, *Golden Fetters: The Gold Standard and the Great Depression, 1919–1939* (New York: Oxford University Press, 1992). A concise and lucid summary is Ben S. Bernanke, "The World on a Cross of Gold: A Review of 'Golden Fetters: The Gold Standard and the Great Depression, 1919–1939,' " *Journal of Monetary Economics* 31 (April 1993), pp. 251–267.

[9] Chang-Tai Hsieh and Christina D. Romer argue that the fear of being forced off gold cannot explain the U.S. Federal Reserve's unwillingness to expand the money supply in the early 1930s. See "Was the Federal Reserve Constrained by the Gold Standard During the Great Depression? Evidence from the 1932 Open Market Purchase Program," *Journal of Economic History* 66 (March 2006), pp. 140–176.

both domestic deflation and output contraction. The countries with the biggest deflations and output contractions over the years 1929–1935 include France, Switzerland, Belgium, the Netherlands, and Poland, all of which stayed on the gold standard until 1936.

# The Bretton Woods System and the International Monetary Fund

In July 1944 representatives of 44 countries meeting in Bretton Woods, New Hampshire, drafted and signed the Articles of Agreement of the **International Monetary Fund (IMF).** Remembering the disastrous economic events of the interwar period, statesmen in the Allied countries hoped to design an international monetary system that would foster full employment and price stability while allowing individual countries to attain external balance without imposing restrictions on international trade.[10]

The system set up by the Bretton Woods agreement called for fixed exchange rates against the U.S. dollar and an unvarying dollar price of gold—$35 an ounce. Member countries held their official international reserves largely in the form of gold or dollar assets and had the right to sell dollars to the Federal Reserve for gold at the official price. The system was thus a gold exchange standard, with the dollar as its principal reserve currency. In the terminology of Chapter 17, the dollar was the "*N*th currency" in terms of which the $N - 1$ exchange rates of the system were defined. The United States itself intervened only rarely in the foreign exchange market. Usually, the $N - 1$ foreign central banks intervened when necessary to fix the system's $N - 1$ exchange rates, while the United States was responsible in theory for fixing the dollar price of gold.

## Goals and Structure of the IMF

The IMF Articles of Agreement hoped to avoid a repetition of the turbulent interwar experience through a mixture of discipline and flexibility.

The major discipline on monetary management was the requirement that exchange rates be fixed to the dollar, which, in turn, was tied to gold. If a central bank other than the Federal Reserve pursued excessive monetary expansion, it would lose international reserves and eventually become unable to maintain the fixed dollar exchange rate of its currency. Since high U.S. monetary growth would lead to dollar accumulation by foreign central banks, the Fed itself was constrained in its monetary policies by its obligation to redeem those dollars for gold. The official gold price of $35 an ounce served as a further brake on American monetary policy, since that price would be pushed upward if too many dollars were created.

[10] The same conference set up a second institution, the World Bank, whose goals were to help the belligerents rebuild their shattered economies and to help the former colonial territories develop and modernize theirs. Only in 1947 was the General Agreement on Tariffs and Trade (GATT) inaugurated as a forum for the multilateral reduction of trade barriers. The GATT was meant as a prelude to the creation of an International Trade Organization (ITO), whose goals in the trade area would parallel those of the IMF in the financial area. Unfortunately, the ITO was doomed by the failures of Congress and Britain's Parliament to ratify its charter. Only much later, in the 1990s, did the GATT become the current World Trade Organization (WTO).

Fixed exchange rates were viewed as more than a device for imposing monetary discipline on the system, however. Rightly or wrongly, the interwar experience had convinced the IMF's architects that floating exchange rates were a cause of speculative instability and were harmful to international trade.

The interwar experience had shown also that national governments would not be willing to maintain both free trade and fixed exchange rates at the price of long-term domestic unemployment. After the experience of the Great Depression, governments were widely viewed as responsible for maintaining full employment. The IMF agreement therefore tried to incorporate sufficient flexibility to allow countries to attain external balance in an orderly fashion without sacrificing internal objectives or fixed exchange rates.

Two major features of the IMF Articles of Agreement helped promote this flexibility in external adjustment. First, members of the IMF contributed their currencies and gold to form a pool of financial resources that the IMF could lend to countries in need. Second, although exchange rates against the dollar were fixed, these parities could be adjusted with the agreement of the IMF. Such devaluations and revaluations were supposed to be infrequent and carried out only in cases of an economy in *fundamental disequilibrium.* Although the IMF's Articles did not define "fundamental disequilibrium," the term was intended to cover countries that suffered permanent adverse shifts in the demand for their products, so that without devaluation, the country would face a long period of unemployment and external deficits. The flexibility of an adjustable exchange rate was not available, however, to the "*N*th currency" of the Bretton Woods system, the U.S. dollar.

## Convertibility and the Expansion of Private Financial Flows

Just as the general acceptability of national currency eliminates the costs of barter within a single economy, the use of national currencies in international trade makes the world economy function more efficiently. To promote efficient multilateral trade, the IMF Articles of Agreement urged members to make their national currencies convertible as soon as possible. A **convertible currency** is one that may be freely exchanged for foreign currencies. The U.S. and Canadian dollars became convertible in 1945. (Recall Chapter 13, p. 317.) This meant, for example, that a Canadian resident who acquired U.S. dollars could use them to make purchases in the United States, could sell them in the foreign exchange market for Canadian dollars, or could sell them to the Bank of Canada, which then had the right to sell them to the Federal Reserve (at the fixed dollar/gold exchange rate) in return for gold. General *in*convertibility would make international trade extremely difficult. A French citizen might be unwilling to sell goods to a German in return for inconvertible German marks because these marks would then be usable only subject to restrictions imposed by the German government. With no market in inconvertible French francs, the German would be unable to obtain French currency to pay for the French goods. The only way of trading would therefore be through barter, the direct exchange of goods for goods. Most countries in Europe did not restore convertibility until the end of 1958, with Japan following in 1964.

The early convertibility of the U.S. dollar, together with its special position in the Bretton Woods system, helped to make it the postwar world's key currency. Because dollars were freely convertible, much international trade tended to be invoiced in dollars and importers and exporters held dollar balances for transactions. In effect, the dollar became an international money—a universal medium of exchange, unit of account, and store of value. Central banks naturally found it advantageous to hold their international reserves in the form of interest-bearing dollar assets.

The restoration of convertibility in Europe in 1958 gradually began to change the nature of policy makers' external constraints. As foreign exchange trading expanded, financial

markets in different countries became more tightly integrated—an important step toward the creation of today's worldwide foreign exchange market. With growing opportunities to move funds across borders, national interest rates became more closely linked and the speed with which policy changes might cause a country to lose or gain international reserves increased. After 1958, and increasingly over the next 15 years, central banks had to be attentive to foreign financial conditions or take the risk that sudden reserve losses might leave them without the resources needed to peg exchange rates. Faced with a sudden rise in foreign interest rates, for example, a central bank would be forced to sell domestic assets and raise the domestic interest rate to hold its international reserves steady.

The restoration of convertibility did not result in immediate and complete international financial integration, as assumed in the model of fixed exchange rates set out in Chapter 17. On the contrary, most countries continued to maintain restrictions on financial account transactions, a practice that the IMF explicitly allowed. But the opportunities for *disguised* capital flows increased dramatically. For example, importers within a country could effectively purchase foreign assets by accelerating payments to foreign suppliers relative to actual shipments of goods; they could effectively borrow from foreign suppliers by delaying payments. These trade practices—known, respectively, as "leads" and "lags"—provided two of many ways through which official barriers to private capital movements could be evaded. Even though the condition of international interest rate equality assumed in the last chapter did not hold exactly, the links among countries' interest rates tightened as the Bretton Woods system matured.

## Speculative Capital Flows and Crises

Current account deficits and surpluses took on added significance under the new conditions of increased private capital mobility. A country with a large and persistent current account deficit might be suspected of being in "fundamental disequilibrium" under the IMF Articles of Agreement, and thus ripe for a currency devaluation. Suspicion of an impending devaluation could, in turn, spark a balance of payments crisis (see Chapter 17).

Anyone holding pound deposits during a devaluation of the pound, for example, would suffer a loss, since the foreign currency value of pound assets would decrease suddenly by the amount of the exchange rate change. If Britain had a current account deficit, therefore, holders of pounds would become nervous and shift their wealth into other currencies. To hold the pound's exchange rate against the dollar pegged, the Bank of England (Britain's central bank) would have to buy pounds and supply the foreign assets that market participants wished to hold. This loss of foreign reserves, if large enough, might force a devaluation by leaving the Bank of England without enough reserves to prop up the exchange rate.

Similarly, countries with large current account surpluses might be viewed by the market as candidates for revaluation. In this case their central banks would find themselves swamped with official reserves, the result of selling the home currency in the foreign exchange market to keep it from appreciating. A country in this position would face the problem of having its money supply grow uncontrollably, a development that could push the price level up and upset internal balance.

Balance of payments crises became increasingly frequent and violent throughout the 1960s and early 1970s. A record British trade balance deficit in early 1964 led to a period of intermittent speculation against the pound that complicated British policy making until November 1967, when the pound was finally devalued. France devalued its franc and Germany revalued its mark in 1969 after similar speculative attacks. (The two countries still had their own currencies at that time.) These crises became so massive by the early 1970s that they eventually brought down the Bretton Woods structure of fixed exchange rates. The events leading up to the system's collapse are covered later in this chapter.

The possibility of a balance of payments crisis therefore lent increased importance to the external goal of a current account target. Even current account imbalances justified by differing international investment opportunities or caused by purely temporary factors might fuel market suspicions of an impending parity change. In this environment, policy makers had additional incentives to avoid sharp current account changes.

# Analyzing Policy Options Under the Bretton Woods System

To describe the problem an individual country (other than the United States) faced in pursuing internal and external balance under the Bretton Woods system of fixed exchange rates, let's return to the framework used in Chapter 17. Assume that domestic ($R$) and foreign ($R^*$) interest rates are always equal,

$$R = R^*.$$

As noted above, this equality does not fit the Bretton Woods facts exactly (particularly just after 1958), but it leads to a fairly accurate picture of the external constraints policy makers then faced in using their macroeconomic tools. The framework will show how a country's position with respect to its internal and external goals depends on the level of its fixed exchange rate, $E$, and its fiscal policy. Throughout, $E$ is the domestic currency price of the dollar. The analysis applies to the short run because the home and foreign price levels ($P$ and $P^*$, respectively) are assumed to be fixed.[11]

## Maintaining Internal Balance

First consider internal balance. If both $P^*$ and $E$ are permanently fixed, domestic inflation depends primarily on the amount of aggregate demand pressure in the economy, not on expectations of future inflation. Internal balance therefore requires only full employment, that is, that aggregate demand equal the full-employment level of output, $Y^f$.[12]

Recall that aggregate demand for domestic output is the sum of consumption, $C$, investment, $I$, government purchases, $G$, and the current account, $CA$. Consumption is an increasing function of disposable income, $Y - T$, where $T$ denotes net taxes. The current account surplus is a decreasing function of disposable income and an increasing function of the real exchange rate, $EP^*/P$ (Chapter 16). Finally, investment is assumed constant. The condition of internal balance is therefore

$$Y^f = C(Y^f - T) + I + G + CA(EP^*/P, Y^f - T). \quad (18\text{-}1)$$

Equation (18-1) shows the policy tools that affect aggregate demand and therefore affect output in the short run. Fiscal expansion (a rise in $G$ or a fall in $T$) stimulates aggregate demand and causes output to rise. Similarly, a devaluation of the currency (a rise in $E$) makes domestic goods and services cheaper relative to those sold abroad and thereby increases demand and output. The policy maker can hold output steady at its full employment level, $Y^f$, through fiscal policy or exchange rate changes.

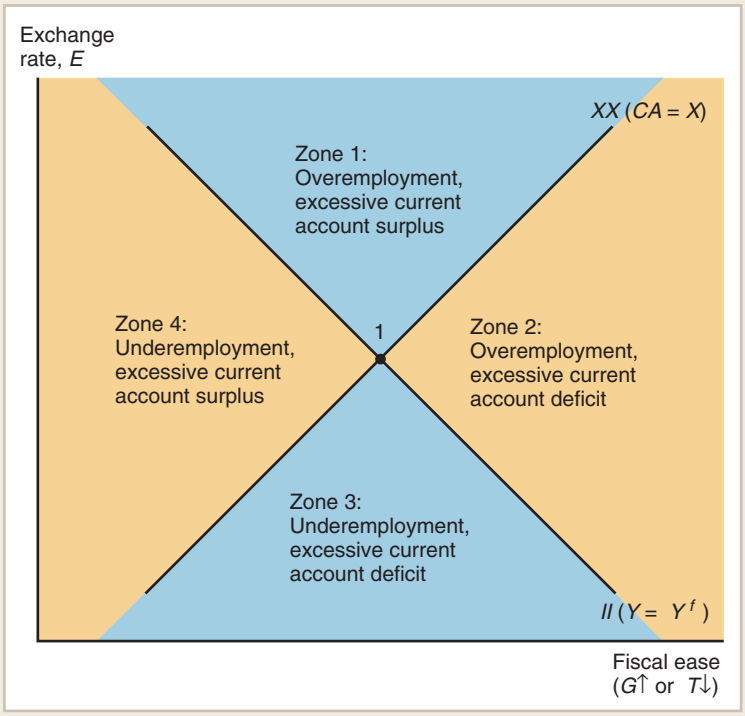
[11] By assumption there is no ongoing balance of payments crisis, that is, no expectation of a future exchange rate change. The point of this assumption is to highlight the difficult choices policy makers faced, even under favorable conditions.

[12] If $P^*$ is unstable because of foreign inflation, for example, full employment alone will not guarantee price stability under a fixed exchange rate. This complex problem is considered below when worldwide inflation under fixed exchange rates is examined.

**Figure 18-1**

**Internal Balance (*II*), External Balance (*XX*), and the "Four Zones of Economic Discomfort"**

The diagram shows what different levels of the exchange rate and fiscal ease imply for employment and the current account. Along *II,* output is at its full-employment level, $Y^f$. Along *XX,* the current account is at its target level, *X*.




Notice that monetary policy is not a policy tool under fixed exchange rates. This is because, as shown in Chapter 17, an attempt by the central bank to alter the money supply by buying or selling domestic assets will cause an offsetting change in foreign reserves, leaving the domestic money supply unchanged. Domestic asset transactions by the central bank can be used to alter the level of foreign reserves but not to affect the state of employment and output.

The *II* schedule in Figure 18-1 shows combinations of exchange rates and fiscal policy that hold output constant at $Y^f$ and thus maintain internal balance. The schedule is downward-sloping because currency devaluation (a rise in $E$) and fiscal expansion (a rise in $G$ or a fall in $T$) both tend to raise output. To hold output constant, a revaluation of the currency (which reduces aggregate demand) must therefore be matched by fiscal expansion (which increases aggregate demand). Schedule *II* shows precisely how the fiscal stance must change as $E$ changes to maintain full employment. To the right of *II,* fiscal policy is more expansionary than needed for full employment, so the economy's productive factors are overemployed. To the left of *II,* fiscal policy is too restrictive, and there is unemployment.

## Maintaining External Balance

We have seen how fiscal policy or exchange rate changes can be used to influence output and thus help the government achieve its internal goal of full employment. How do these policy tools affect the economy's external balance? To answer this question, assume the government has a target value, *X,* for the current account surplus. The goal of external balance requires the government to manage fiscal policy and the exchange rate so that the equation

$$CA(EP^*/P, Y - T) = X \tag{18-2}$$

is satisfied.

Given $P$ and $P^*$, a rise in $E$ makes domestic goods cheaper and improves the current account. Fiscal expansion, however, has the opposite effect on the current account. A fall in $T$ raises output, $Y$; the resulting increase in disposable income raises home spending on foreign goods and worsens the current account. Similarly, a rise in $G$ causes $CA$ to fall by increasing $Y$.

To maintain its current account at $X$ as it devalues the currency (that is, as it raises $E$), the government must expand its purchases or lower taxes. Figure 18-1 therefore shows that the $XX$ schedule, along which external balance holds, is positively sloped. The $XX$ schedule shows how much fiscal expansion is needed to hold the current account surplus at $X$ as the currency is devalued by a given amount.[13] Since a rise in $E$ raises net exports, the current account is in surplus, relative to its target level $X$, above $XX$. Similarly, below $XX$ the current account is in deficit relative to its target level.[14]

## Expenditure-Changing and Expenditure-Switching Policies

The $II$ and $XX$ schedules divide the diagram into four regions, sometimes called the "four zones of economic discomfort." Each of these zones represents the effects of different policy settings. In zone 1 the level of employment is too high and the current account surplus too great; in zone 2 the level of employment is too high but the current account deficit is too great; in zone 3 there is underemployment and an excessive deficit; and in zone 4 underemployment is coupled with a current account surplus greater than the target level. Used together, fiscal and exchange rate policy can place the economy at the intersection of $II$ and $XX$ (point 1), the point at which both internal and external balance hold. Point 1 shows the policy setting that places the economy in the position that the policy maker would prefer.

If the economy is initially away from point 1, appropriate adjustments in fiscal policy and the exchange rate are needed to bring about internal and external balance. The change in fiscal policy that moves the economy to point 1 is called an **expenditure-changing policy** because it alters the *level* of the economy's total demand for goods and services. The accompanying exchange rate adjustment is called an **expenditure-switching policy** because it changes the *direction* of demand, shifting it between domestic output and imports. In general, both expenditure changing and expenditure switching are needed to reach internal and external balance.

Under the Bretton Woods rules, exchange rate changes (expenditure-switching policy) were supposed to be infrequent. This left fiscal policy as the main tool for moving the economy toward internal and external balance. But as Figure 18-1 shows, one instrument, fiscal

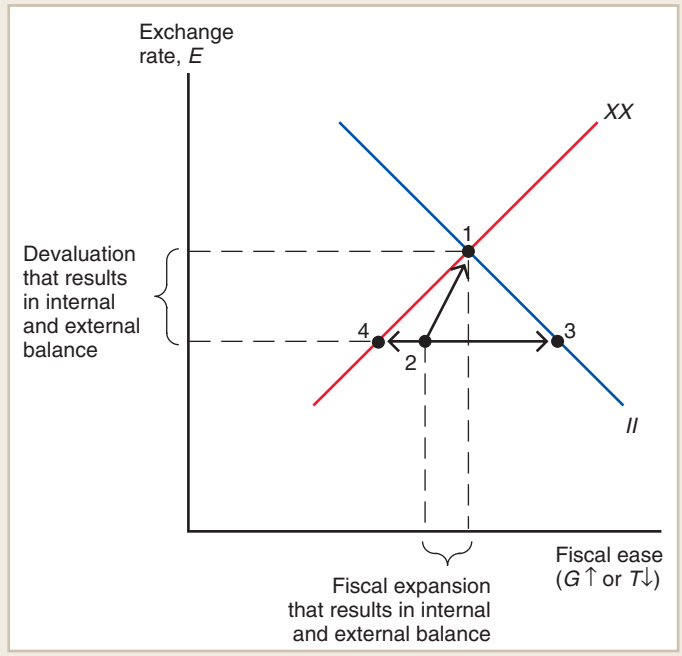
[13] Can you see how to derive the $XX$ schedule in Figure 18-1 from the different (but related) $XX$ schedule shown in Figure 16-17? (Hint: Use the latter diagram to analyze the effects of fiscal expansion.)

[14] Since the central bank does not affect the economy when it raises its foreign reserves by an open-market sale of domestic assets, no separate reserve constraint is shown in Figure 18-1. In effect, the bank can borrow reserves freely from abroad by selling domestic assets to the public. (During a devaluation scare, this tactic would not work because no one would want to sell the bank foreign assets for domestic money.) Our analysis, however, assumes perfect asset substitutability between domestic and foreign bonds (see Chapter 17). Under imperfect asset substitutability, central bank domestic asset sales to attract foreign reserves would drive up the domestic interest rate relative to the foreign rate. Thus, while imperfect asset substitutability would give the central bank an additional policy tool (monetary policy), it would also make the bank responsible for an additional policy target (the domestic interest rate). If the government is concerned about the domestic interest rate because it affects investment, for example, the additional policy tool would not necessarily increase the set of attractive policy options. Imperfect substitutability was exploited by central banks under Bretton Woods, but it did not get countries out of the policy dilemmas illustrated in the text.

**Figure 18-2**

**Policies to Bring About Internal and External Balance**

Unless the currency is devalued and the degree of fiscal ease increased, internal and external balance (point 1) cannot be reached. Acting alone, fiscal policy can attain *either* internal balance (point 3) *or* external balance (point 4), but only at the cost of increasing the economy's distance from the goal that is sacrificed.




policy, is generally insufficient to attain the two goals of internal and external balance. Only if the economy had been displaced horizontally from point 1 would fiscal policy be able to do the job alone. In addition, fiscal policy is an unwieldy tool, since it often cannot be implemented without legislative approval. Another drawback is that a fiscal expansion, for example, might have to be reversed after some time if it leads to chronic government budget deficits.

As a result of the exchange rate's inflexibility, policy makers sometimes found themselves in dilemma situations. With the fiscal policy and exchange rate indicated by point 2 in Figure 18-2, there is underemployment and an excessive current account deficit. Only the combination of devaluation and fiscal expansion indicated in the figure moves the economy to internal and external balance (point 1). Expansionary fiscal policy, acting alone, can eliminate the unemployment by moving the economy to point 3, but the cost of reduced unemployment is a larger external deficit. While contractionary fiscal policy alone can bring about external balance (point 4), output falls as a result and the economy moves farther from internal balance. It is no wonder that policy dilemmas such as the one at point 2 gave rise to suspicions that the currency was about to be devalued. Devaluation improves the current account and aggregate demand by raising the real exchange rate $EP^*/P$ in one stroke; the alternative is a long and politically unpopular period of unemployment to bring about an equal rise in the real exchange rate through a fall in $P$.[15]

In practice, countries did sometimes use changes in their exchange rates to move closer to internal and external balance, although the changes were typically accompanied by

[15] As an exercise to test understanding, show that a fall in $P$, all else equal, lowers both $II$ and $XX$, moving point 1 vertically downward.

balance of payments crises. Many countries also tightened controls on financial account transactions to sever the links between domestic and foreign interest rates and make monetary policy more effective. In this they were only partly successful, as the events leading to the breakdown of the system were to prove.

## The External Balance Problem of the United States

The external balance problem of the United States was different from the one faced by other countries in the Bretton Woods system. As the issuer of the *N*th currency, the United States was not responsible for pegging dollar exchange rates. Its main responsibility was to hold the dollar price of gold at $35 an ounce and, in particular, to guarantee that foreign central banks could convert their dollar holdings into gold at that price. For this purpose it had to hold sufficient gold reserves.

Because the United States was required to trade gold for dollars with foreign central banks, the possibility that other countries might convert their dollar reserves into gold was a potential external constraint on U.S. macroeconomic policy. In practice, however, foreign central banks were willing to hold on to the dollars they accumulated, since these paid interest and represented an international money *par excellence.* And the logic of the gold exchange standard dictated that foreign central banks should continue to accumulate dollars. World gold supplies were not growing quickly enough to keep up with world economic growth, so the only way central banks could maintain adequate international reserve levels (barring deflation) was by accumulating dollar assets. Official gold conversions did occur on occasion, and these depleted the American gold stock and caused concern. But as long as most central banks were willing to add dollars to their reserves and forgo the right of redeeming those dollars for American gold, the U.S. external constraint appeared looser than that faced by other countries in the system.

In an influential book that appeared in 1960, economist Robert Triffin of Yale University called attention to a fundamental long-run problem of the Bretton Woods system, the **confidence problem.**[16] Triffin realized that as central banks' international reserve needs grew over time, their holdings of dollars would necessarily grow until they exceeded the U.S. gold stock. Since the United States had promised to redeem these dollars at $35 an ounce, it would no longer have the ability to meet its obligations should all dollar holders simultaneously try to convert their dollars into gold. This would lead to a confidence problem: Central banks, knowing that their dollars were no longer "as good as gold," might become unwilling to accumulate more dollars and might even bring down the system by attempting to cash in the dollars they already held.

One possible solution at the time was an increase in the official price of gold in terms of the dollar and all other currencies. But such an increase would have been inflationary and would have had the politically unattractive consequence of enriching the main gold-producing countries. Further, an increase in gold's price would have caused central banks to expect further decreases in the gold value of their dollar reserve holdings in the future, thereby possibly worsening the confidence problem rather than solving it!

By the late 1960s, the Bretton Woods system of fixed exchange rates was beginning to show strains that would soon lead to its collapse. These strains were closely related to the special position of the United States.

[16] See Triffin, *Gold and the Dollar Crisis* (New Haven: Yale University Press, 1960).

## Case Study

### The Decline and Fall of the Bretton Woods System

The system of fixed parities made it difficult for countries to attain simultaneous internal and external balance without discrete exchange rate adjustments. As it became easier to transfer funds across borders, however, the very possibility that exchange rates *might* be changed set off speculative capital movements that made the task facing policy makers even harder. The story of the Bretton Woods system's breakdown is the story of countries' unsuccessful attempts to reconcile internal and external balance under its rules.

Many economists view the U.S. macroeconomic policy package of 1965–1968 as a major blunder that helped unravel the system of fixed exchange rates. In 1965, government military purchases began rising as President Lyndon B. Johnson widened America's involvement in the Vietnam conflict. At the same time, other categories of government spending also rose dramatically as the president's Great Society programs (which included funds for public education and urban redevelopment) expanded. Figure 18-3a shows how the growth rate of nominal government purchases began to rise, slowly in 1965 and then quite sharply the next year. These increases in government expenditures were not matched by a prompt increase in taxes: 1966 was a mid-term election year, and President Johnson was reluctant to invite close Congressional scrutiny of his spending by asking for a tax increase.

The result was a substantial fiscal expansion that helped set U.S. prices rising and caused a sharp fall in the U.S. current account surplus (Figures 18-3b and 18-3c). Although monetary policy (as measured by the growth rate of the money supply) initially turned contractionary as output expanded, the negative effect of the resulting high interest rates on the construction industry led the Federal Reserve to choose a much more expansionary monetary course in 1967 and 1968 (Figure 18-3d). As Figure 18-3b shows, this further push to the domestic price level left the United States with an inflation rate near 6 percent per year by the end of the decade.

Early signals of future problems came from the London gold market. In late 1967 and early 1968 private speculators began buying gold in anticipation of a rise in its dollar price. After massive gold sales by the Federal Reserve and European central banks, central banks announced the creation of a *two-tier* gold market, with one tier private and the other official. Private gold traders would continue to trade on the London gold market, but the gold price set there would be allowed to fluctuate. In contrast, central banks would continue to transact with each other in the official tier at the official gold price of $35 an ounce.

The creation of the two-tier market was a turning point for the Bretton Woods system. A prime goal of the gold exchange standard created at Bretton Woods was to prevent inflation by tying down gold's dollar price. By severing the link between the supply of dollars and a fixed *market* price of gold, the central banks had jettisoned the system's built-in safeguard against inflation. The new arrangements did not eliminate the external constraint on the United States altogether, because foreign central banks retained the right to purchase gold for dollars from the Federal Reserve. But the *official* price of gold had been reduced to a fictitious device for squaring accounts among central banks; it no longer placed an automatic constraint on worldwide monetary growth.

The U.S. economy entered a recession in 1970, and as unemployment rose, markets became increasingly convinced that the dollar would have to be devalued against all the major European currencies. To restore full employment and a balanced current account, the United States somehow had to bring about a real depreciation of the dollar. That real

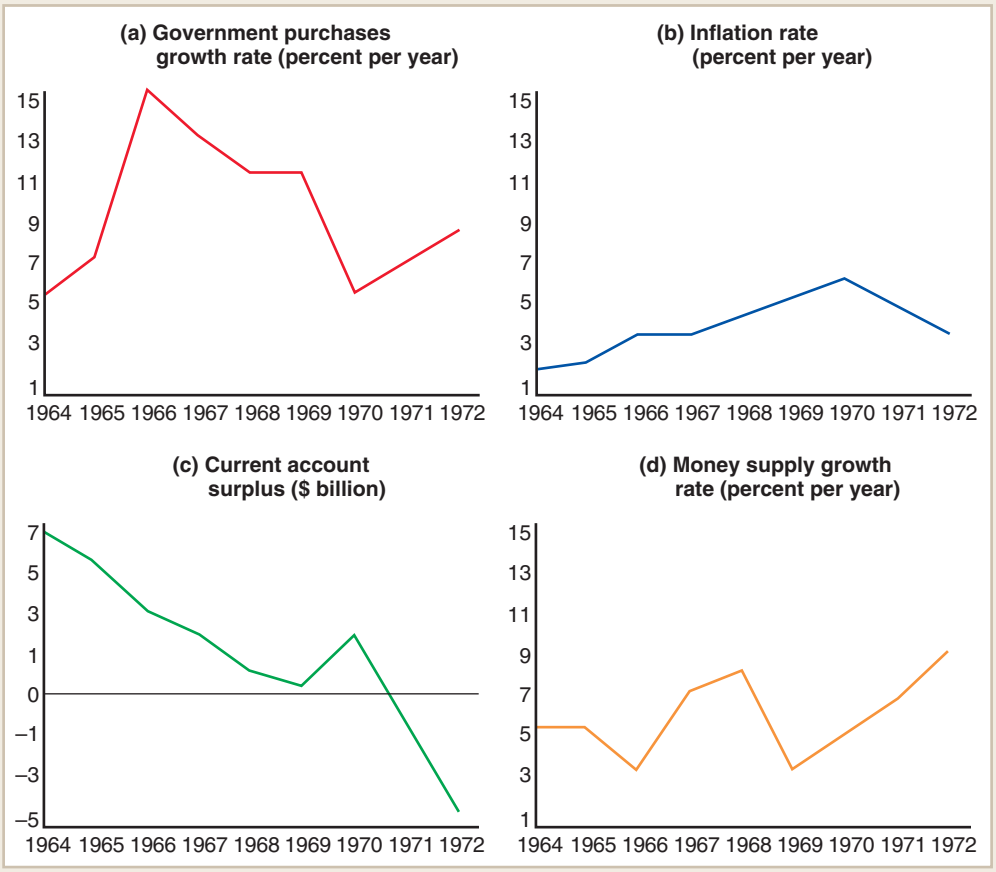



**Figure 18-3**

**U.S. Macroeconomic Data, 1964–1972**

**Source:** *Economic Report of the President,* 1985. Money supply growth rate is the December to December percentage increase in M1. Inflation rate is the percentage increase in each year's average consumer price index over the average consumer price index for the previous year.

depreciation could be brought about in two ways. The first option was a fall in the U.S. price level in response to domestic unemployment, coupled with a rise in foreign price levels in response to continuing purchases of dollars by foreign central banks. The second option was a fall in the dollar's nominal value in terms of foreign currencies. The first route—unemployment in the United States and inflation abroad—seemed a painful one for policy makers to follow. The markets rightly guessed that a change in the dollar's value was inevitable. Their realization led to massive sales of dollars in the foreign exchange market.

Devaluation was no easy matter for the United States, however. Any other country could change its exchange rates against all currencies simply by fixing its *dollar* rate at a new level. But as the *N*th currency, the dollar could be devalued only if foreign governments agreed to peg their currencies against the dollar at new rates. In effect, all countries had to agree simultaneously to *revalue* their currencies against the dollar. Dollar devaluation could therefore be accomplished only through extensive multilateral negotiations. And some foreign countries were not anxious to revalue because revaluation would make

their goods more expensive relative to U.S. goods and would therefore hurt their export- and import-competing industries.

President Richard M. Nixon forced the issue on August 15, 1971. First, he ended U.S. gold losses by announcing the United States would no longer automatically sell gold to foreign central banks for dollars. This action effectively cut the remaining link between the dollar and gold. Second, the president announced a 10 percent tax on all imports to the United States, to remain effective until America's trading partners agreed to revalue their currencies against the dollar.

An international agreement on exchange rate realignment was reached in December 1971 at the Smithsonian Institution in Washington, D.C. On average, the dollar was devalued against foreign currencies by about 8 percent, and the 10 percent import surcharge that the United States had imposed to force the realignment was removed. The official gold price was raised to $38 an ounce, but the move had no economic significance because the United States did not agree to resume sales of gold to foreign central banks. The Smithsonian agreement made clear that the last remnant of the gold standard had been abandoned.

The Smithsonian realignment, although hailed at the time by President Nixon as "the most significant monetary agreement in the history of the world," was in shambles less than 15 months later. Early in February 1973, another massive speculative attack on the dollar started and the foreign exchange market was closed while the United States and its main trading partners negotiated on dollar support measures. A further 10 percent devaluation of the dollar was announced on February 12, but speculation against the dollar resumed as soon as governments allowed the foreign exchange market to reopen. After European central banks purchased $3.6 billion on March 1 to prevent their currencies from appreciating, the foreign exchange market was closed down once again.

When the foreign exchange market reopened on March 19, the currencies of Japan and most European countries were floating against the dollar.[17] The floating of the industrialized countries' dollar exchange rates was viewed at the time as a temporary response to unmanageable speculative capital movements. But the interim arrangements adopted in March 1973 turned out to be permanent and marked the end of fixed exchange rates and the beginning of a turbulent new period in international monetary relations.

## Worldwide Inflation and the Transition to Floating Rates

The acceleration of American inflation in the late 1960s, shown in Figure 18-3b, was a worldwide phenomenon. Table 18-1 shows that by the start of the 1970s, inflation had also broken out in European economies. The theory in Chapter 17 predicts that when the reserve currency country speeds up its monetary growth, as the United States did in the second half of the 1960s, one effect is an automatic increase in monetary growth rates and inflation abroad as foreign central banks purchase the reserve currency to maintain their exchange rates and expand their money supplies in the process. One interpretation of the Bretton Woods system's

[17] Many developing countries continued to peg to the dollar, and a number of European countries were continuing to peg their mutual exchange rates as part of an informal arrangement called the "snake." The snake evolved into the European Monetary System (discussed in Chapter 20) and ultimately led to Europe's single currency, the euro.

**TABLE 18-1 Inflation Rates in European Countries, 1966–1972 (percent per year)**

| Country | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 |
|---|---|---|---|---|---|---|---|
| Britain | 3.6 | 2.6 | 4.6 | 5.2 | 6.5 | 9.7 | 6.9 |
| France | 2.8 | 2.8 | 4.4 | 6.5 | 5.3 | 5.5 | 6.2 |
| Germany | 3.4 | 1.4 | 2.9 | 1.9 | 3.4 | 5.3 | 5.5 |
| Italy | 2.1 | 2.1 | 1.2 | 2.8 | 5.1 | 5.2 | 5.3 |

**Source:** Organization for Economic Cooperation and Development. *Main Economic Indicators: Historical Statistics, 1964–1983.* Paris: OECD, 1984. Figures are percentage increases in each year's average consumer price index over that of the previous year.

collapse is that foreign countries were forced to *import* U.S. inflation through the mechanism described in Chapter 17. To stabilize their price levels and regain internal balance, they had to abandon fixed exchange rates and allow their currencies to float. How much blame for the system's breakdown can be placed on U.S. macroeconomic policies?

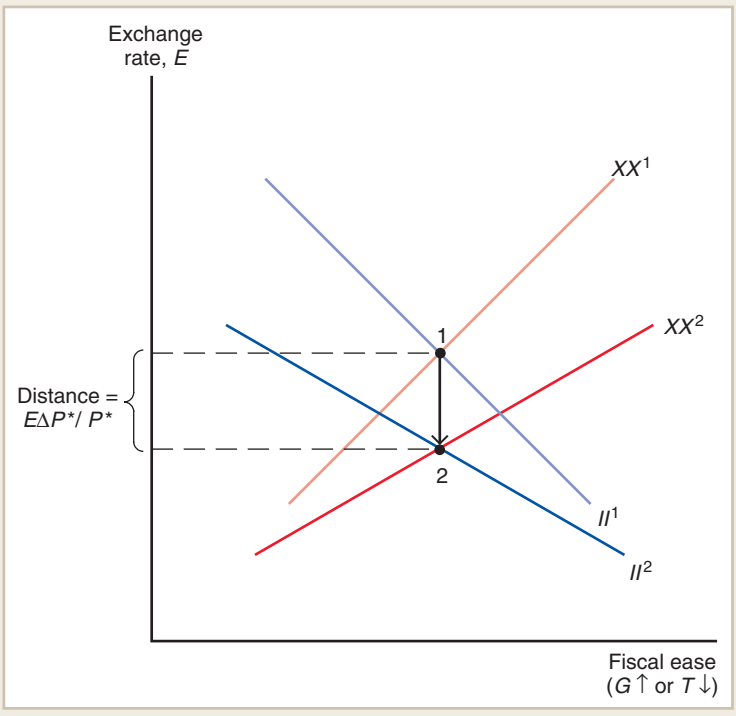
To understand how inflation can be imported from abroad unless exchange rates are adjusted, look again at the graphical picture of internal and external balance shown in Figure 18-1. Suppose the home country is faced with foreign inflation. Above, the foreign price level, $P^*$, was assumed to be given; now, however, $P^*$ rises as a result of inflation abroad. Figure 18-4 shows the effect on the home economy.

You can see how the two schedules shift by asking what would happen if the nominal exchange rate were to fall in proportion to the rise in $P^*$. In this case, the real exchange rate $EP^*/P$ would be unaffected (given $P$), and the economy would remain in internal balance or in external balance if either of these conditions originally held. Figure 18-4 therefore shows that for a given initial exchange rate, a rise in $P^*$ shifts both $II^1$ and $XX^1$ downward

**Figure 18-4**

**Effect on Internal and External Balance of a Rise in the Foreign Price Level, $P^*$**

After $P^*$ rises, point 1 is in zone 1 (overemployment and an excessive surplus). Revaluation (a fall in $E$) restores balance immediately by moving the policy setting to point 2.



by the same distance (equal to the proportional increase in $P^*$ times the initial exchange rate). The intersection of the new schedules $II^2$ and $XX^2$ (point 2) lies directly below the original intersection at point 1.

If the economy starts out at point 1, a rise in $P^*$, *given* the fixed exchange rate and the domestic price level, therefore strands the economy in zone 1 with overemployment and an undesirably high surplus in its current account. The factor that causes this outcome is a real currency depreciation that shifts world demand toward the home country ($EP^*/P$ rises because $P^*$ rises).

If nothing is done by the government, overemployment puts upward pressure on the domestic price level, and this pressure gradually shifts the two schedules back to their original positions. The schedules stop shifting once $P$ has risen in proportion to $P^*$. At this stage the real exchange rate, employment, and the current account are at their initial levels, so point 1 is once again a position of internal and external balance.

The way to avoid the imported inflation is to revalue the currency (that is, lower $E$) and move to point 2. A revaluation restores internal and external balance immediately, without domestic inflation, by using the nominal exchange rate to offset the effect of the rise in $P^*$ on the real exchange rate. Only an expenditure-switching policy is needed to respond to a pure increase in foreign prices.

The rise in domestic prices that occurs when no revaluation takes place requires a rise in the domestic money supply, since prices and the money supply move proportionally in the long run. The mechanism that brings this rise about is foreign exchange intervention by the home central bank. As domestic output and prices rise after the rise in $P^*$, the real money supply shrinks and the demand for real money holdings increases. To prevent the resulting upward pressure on the home interest rate from appreciating the currency, the central bank must purchase international reserves and expand the home money supply. In this way, inflationary policies pursued by the reserve center spill over into foreign countries' money supplies.

The close association between U.S. and foreign inflation evident in Figure 18-3 and Table 18-1 suggests that some European inflation was imported from the United States. But the timing of the inflationary surges in different countries suggests that factors peculiar to individual economies also played a role. In Britain, for example, inflation speeds up markedly in 1968, the year following the pound's devaluation. Since (as seen in the last chapter) devaluation is neutral in the long run, it must raise the long-run domestic price level proportionally. The devaluation is probably part of the explanation for the rise in British inflation. Strikes in France in 1968 led to large wage increases, a French-German currency crisis, and a devaluation of the franc in 1969. These events partly explain the sharp increase in French inflation in 1968–1969. The role of imported inflation was greatest in Germany, where painful earlier experience with extreme inflation had made policy makers determined to resist price level increases.

Evidence on money supplies confirms that European and Japanese monetary growth accelerated in the late 1960s, as our theory predicts. Table 18-2 shows the evolution of the international reserves and money supply of West Germany over the years 1968–1972. The table shows how monetary growth rose dramatically after 1969 as the German central bank's international reserves expanded.[18] This evidence is consistent with the view that American inflation was imported into Germany through the German central bank's purchases of dollars in the foreign exchange market.

The acceleration of German money growth probably cannot be explained entirely as a direct consequence of the acceleration in U.S. monetary growth, however. A comparison of Figure 18-3 and Table 18-2 shows that German monetary growth accelerated by much more than U.S. monetary growth after 1969. This difference suggests that much of the

[18] The behavior of reserves in 1968 and 1969—a large increase followed by a large decrease—reflects speculation on a revaluation against the franc during the French-German currency crisis of those years.

**TABLE 18-2 Changes in Germany's Money Supply and International Reserves, 1968–1972 (percent per year)**

| Growth rate of | 1968 | 1969 | 1970 | 1971 | 1972 |
|---|---|---|---|---|---|
| Money supply | 6.4 | −6.3 | 8.9 | 12.3 | 14.7 |
| Official international reserves | 37.8 | −43.6 | 215.7 | 36.1 | 35.8 |

**Source:** Organization for Economic Cooperation and Development. *Main Economic Indicators: Historical Statistics, 1964–1983.* Paris: OECD, 1984. Figures are percentage increases in each year's end-of-year money supply or international reserves over the level at the end of the previous year. Official reserves are measured net of gold holdings.

growth in Germany's international reserves reflected speculation on a possible dollar devaluation in the early 1970s and the resulting shift by market participants away from dollar assets and into deutsche mark assets.

U.S. monetary policy certainly contributed to inflation abroad by its direct effect on prices and money supplies. It helped wreck the fixed rate system by confronting foreign policy makers with a choice between fixed rates and imported inflation. But the U.S. fiscal policy that helped make a dollar devaluation necessary also contributed to foreign inflation by giving further encouragement to speculative capital flows out of dollars. U.S. fiscal policy in the later 1960s must be viewed as an additional cause of the Bretton Woods system's demise.

Thus, the collapse of the Bretton Woods system was due, in part, to the lopsided macroeconomic power of the United States. But it was also due to the fact that the key expenditure-switching tool needed for internal and external balance—discrete exchange rate adjustment—inspired speculative attacks that made both internal and external balance progressively more difficult to achieve. The architects of the Bretton Woods system had hoped its most powerful member would see beyond purely domestic goals and adopt policies geared to the welfare of the world economy as a whole. When the United States proved unwilling to shoulder this responsibility after the mid-1960s, the fixed exchange rate system came apart.

## SUMMARY

1. In an open economy, policy makers try to maintain *internal balance* (full employment and a stable price level) and *external balance* (a current account level that is neither so negative that the country may be unable to repay its foreign debts nor so positive that foreigners are put in that position). The definition of external balance depends on a number of factors, including the exchange rate regime and world economic conditions. Because each country's macroeconomic policies have repercussions abroad, a country's ability to reach internal and external balance depends on the policies other countries choose to adopt.
2. The gold standard system contains a powerful automatic mechanism for assuring external balance, the *price-specie-flow mechanism.* The flows of gold accompanying deficits and surpluses cause price changes that reduce current account imbalances and therefore tend to return all countries to external balance. The system's performance in maintaining internal balance was mixed, however. With the eruption of World War I in 1914, the gold standard was suspended.
3. Attempts to return to the prewar gold standard after 1918 were unsuccessful. As the world economy moved into general depression after 1929, the restored gold standard fell apart and international economic integration weakened. In the turbulent economic

conditions of the period, governments made internal balance their main concern and tried to avoid the external balance problem by partially shutting their economies off from the rest of the world. The result was a world economy in which all countries' situations could have been bettered through international cooperation.

4. The architects of the *International Monetary Fund (IMF)* hoped to design a fixed exchange rate system that would encourage growth in international trade while making the requirements of external balance sufficiently flexible that they could be met without sacrificing internal balance. To this end, the IMF charter provided financing facilities for deficit countries and allowed exchange rate adjustments in conditions of "fundamental disequilibrium." All countries pegged their currencies to the dollar. The United States pegged to gold and agreed to exchange gold for dollars with foreign central banks at a price of $35 an ounce.
5. After *currency convertibility* was restored in Europe in 1958, countries' financial markets became more closely integrated, monetary policy became less effective (except for the United States), and movements in international reserves became more volatile. These changes revealed a key weakness in the system. To reach internal and external balance at the same time, *expenditure-switching* as well as *expenditure-changing* policies were needed. But the possibility of expenditure-switching policies (exchange rate changes) could give rise to speculative financial flows that undermined fixed exchange rates. As the main reserve currency country, the United States faced a unique external balance problem: the *confidence problem* that would arise as foreign official dollar holdings inevitably grew to exceed U.S. gold holdings.
6. U.S. macroeconomic policies in the late 1960s helped cause the breakdown of the Bretton Woods system by early 1973. Overexpansionary U.S. fiscal policy contributed to the need for a devaluation of the dollar in the early 1970s, and fears that this would occur touched off speculative capital flows out of dollars that caused foreign money supplies to balloon. Higher U.S. money growth fueled inflation at home and abroad, making foreign governments increasingly reluctant to continue importing U.S. inflation through fixed exchange rates. A series of international crises led in stages to the abandonment in March 1973 of both the dollar's link to gold and fixed dollar exchange rates for the industrialized countries.

## KEY TERMS

balance of payments equilibrium, p. 507
Bretton Woods agreement, p. 513
confidence problem, p. 522
convertible currency, p. 516
expenditure-changing policy, p. 520
expenditure-switching policy, p. 520
external balance, p. 503
internal balance, p. 503
International Monetary Fund (IMF), p. 515
price-speci1e-flow mechanism, p. 508

## PROBLEMS

myeconlab

1. If you were in charge of macroeconomic policies in a small open economy, what qualitative effect would each of the following events have on your target for external balance?
   **a.** Large deposits of uranium are discovered in the interior of your country.
   **b.** The world price of your main export good, copper, rises permanently.
   **c.** The world price of copper rises temporarily.
   **d.** There is a temporary rise in the world price of oil.

**2.** Under a gold standard of the kind analyzed by Hume, describe how balance of payments equilibrium between two countries, A and B, would be restored after a transfer of income from B to A.

**3.** Despite the flaws of the pre-1914 gold standard, exchange rate changes were rare for the "core" countries (including the richer European countries and the U.S.). In contrast, such changes became frequent in the interwar period. Can you think of reasons for this contrast?

**4.** Under a gold standard, countries may adopt excessively contractionary monetary policies as all scramble in vain for a larger share of the limited supply of world gold reserves. Can the same problem arise under a reserve currency standard when bonds denominated in different currencies are all perfect substitutes?

**5.** A central bank that adopts a fixed exchange rate may sacrifice its autonomy in setting domestic monetary policy. It is sometimes argued that when this is the case, the central bank also gives up the ability to use monetary policy to combat the wage-price spiral. The argument goes like this: "Suppose workers demand higher wages and employers give in, but that the employers then raise output prices to cover their higher costs. Now the price level is higher and real balances are momentarily lower, so to prevent an interest rate rise that would appreciate the currency, the central bank must buy foreign exchange and expand the money supply. This action accommodates the initial wage demands with monetary growth and the economy moves permanently to a higher level of wages and prices. With a fixed exchange rate there is thus no way of keeping wages and prices down." What is wrong with this argument?

**6.** Economists have long debated whether the growth of dollar reserve holdings in the Bretton Woods years was "demand-determined" (that is, determined by central banks' desire to add to their international reserves) or "supply-determined" (that is, determined by the speed of U.S. monetary growth). What would your answer be? What are the consequences for analyzing the relationship between growth in the world stock of international reserves and worldwide inflation?

**7.** Suppose the central bank of a small country is faced by a rise in the world interest rate, $R^*$. What is the effect on its foreign reserve holdings? On its money supply? Can it offset either of these effects through domestic open-market operations?

**8.** How might restrictions on private financial account transactions alter the problem of attaining internal and external balance with a fixed exchange rate? What costs might such restrictions involve?

**9.** "Governments with economies in deficit usually face more intense pressures to restore external balance than do surplus countries. As a result, the external balance problem of a deficit country is more severe than that of a surplus country." Do you agree?

**10.** In 1961, Germany faced the dilemma of an external surplus and a booming economy. As a result, speculative capital flowed *into* Germany and the Germans felt obliged to revalue their currency (rather than to devalue it). Can you describe how such a "revaluation crisis" or "inflow attack" might operate when the government (like Germany's at the time) is highly fearful of inflation? The reasoning is different from that underlying the devaluation crisis discussed in Chapter 17, because interest rates are pushed down by speculators and there is no danger of running out of foreign reserves. (Such inflow attacks are not totally out of date: Hungary had one in January 2003.)

**11.** You are an economic adviser to the government of China in 2008. The country has a current account surplus and is facing gathering inflationary pressures.

- **a.** Show the location of the Chinese economy on a diagram like Figure 18–1.
- **b.** What would be your advice on how the authorities should move the renminbi's exchange rate?

**c.** What would be your advice about fiscal policy? In that regard, you have three pieces of data: First, the current account surplus is big, in excess of 9 percent of GDP. Second, China currently provides a rather low level of government services to its people. Third, China's government would like to attract workers from the rural countryside into manufacturing employment, so Chinese officials would prefer to soften any negative impact of their policy package on urban employment.

## FURTHER READING

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