

Chapter 15: International Economic Policy

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Questions

How has the world organized its international monetary system?

What is a fixed exchange rate system?

What is a floating exchange rate system?

What are the costs and benefits of fixed exchange rates vis-à-vis floating exchange rates?

Why do most countries today have floating exchange rates?

Why has western Europe recently created a “monetary union”—an irrevocable commitment to fixed exchange rates within western Europe?

What were the causes of the three major currency crises of the 1990s?

Up to this point this book has assumed that the economy's exchange rate is a *floating rate*, one that rises and falls freely as supply balances demand in the market for foreign exchange. This chapter changes the focus and considers alternative international monetary arrangements. How do alternative arrangements--chiefly fixed exchange rate systems--work? What are relative costs and benefits of fixed versus floating exchange rates? How did we arrive at our current system of largely floating exchange rates? And what difference does it make?

For most of the past century the dominant international exchange rate regime has been one of fixed, not floating, exchange rates. This chapter begins by sketching out the economic history of the international monetary system in order to understand how we got from here to there. It then analyzes how the economy works when the government fixes the exchange rate. The chapter concludes by analyzing some of the major international shocks to the world economy in the 1990s. Three separate major international financial crises struck during that decade: the European crisis of 1992, the Mexican crisis of 1995, and the East Asian crisis of 1997-1998.

15.1 The History of Exchange Rates

The Classical Gold Standard

What the Gold Standard Is

In the generation before World War I nearly all of the world economy was on a particular fixed exchange rate system: the gold standard. A government would *define* a unit of its

currency unit as worth such-and-such an amount of gold. It would stand ready to buy or sell its currency for gold at that price at any time, for any amount. Such a currency was *convertible*, for it could be converted into gold freely (and gold could be converted into it freely). The currency's price in terms of gold was its *parity*.

When two countries were on the gold standard, their nominal exchange rate was fixed at the ratio of their gold parities. Someone wishing to turn British currency--pounds sterling--into U.S. currency--American dollars--could begin by taking British currency to the Bank of England and exchanging it for gold at the pound's parity. They would then ship the gold across the Atlantic to New York, take it to the U.S. Treasury office in New York, and exchange it for dollars.

At the post-World War II parities of the Bretton Woods "gold exchange" standard, the U.S. dollar was defined as equal to $1/35$ of a troy ounce of gold, and the British pound sterling was set equal to $1/15.58333$ ounces of gold. Thus the exchange rate of the dollar for the pound was $\text{£}1.00 = \$2.40$. At the parities that had prevailed from 1869 to 1931 (with an interruption for World War I), the dollar-pound exchange rate was $\text{£}1.00 = \$4.86$.

Suppose that supply and demand in the market for foreign exchange in 1910 had balanced not at $\text{£}1.00 = \$4.86$ but at some other value--say $\text{£}1.00 = \$5.00$. Someone with an idle pound sterling note could then get \$5 for it if they sold it on the foreign exchange market. But with their \$5 they could then buy enough gold at the U.S. Treasury to recover their original £1, and have fourteen cents left over. So if the market exchange rate ever drifted up from $\text{£}1.00 = \$4.86$ to $\text{£}1.00 = \$5.00$, a huge mass of people selling

pounds would enter the market and drive the exchange rate back to $\text{£}1.00 = 4.86$ as they attempted to carry out this *currency arbitrage* outlined at greater length in Box 15.1.

Thus under the gold standard nominal exchange rates were fixed at the ratio of countries' gold parities. The gold standard was a fixed exchange rate system:

This system grew up gradually. Its origins came when Sir Isaac Newton, in his government job as Master of the Mint in Britain, fixed the gold parity of the British pound sterling. Because the industrial revolution began in Britain, Britain became the largest trading nation in the world in the nineteenth century. Other countries' governments sought easy access to the British market for the products made by their citizens. A fixed gold parity meant the prices their countries' producers charged would appear stable to British customers. A fixed gold parity meant that British investors would not fear that depreciation and devaluation would erode the value of the principal that they had lent. Throughout the late nineteenth century country after country joined the gold standard. By the eve of World War I the overwhelming fraction of world commerce and investment flowed between countries all on the gold standard.

Box 15.1—Example: Currency Arbitrage Under the Gold Standard

As long as central banks or Treasuries stood ready to keep their currencies *convertible* at their gold parities, the ratio of the two gold *parities* determined the nominal exchange rate. Why? Because of currency arbitrage. Anyone buying or selling one currency at any price other than the ratio of the two gold parities

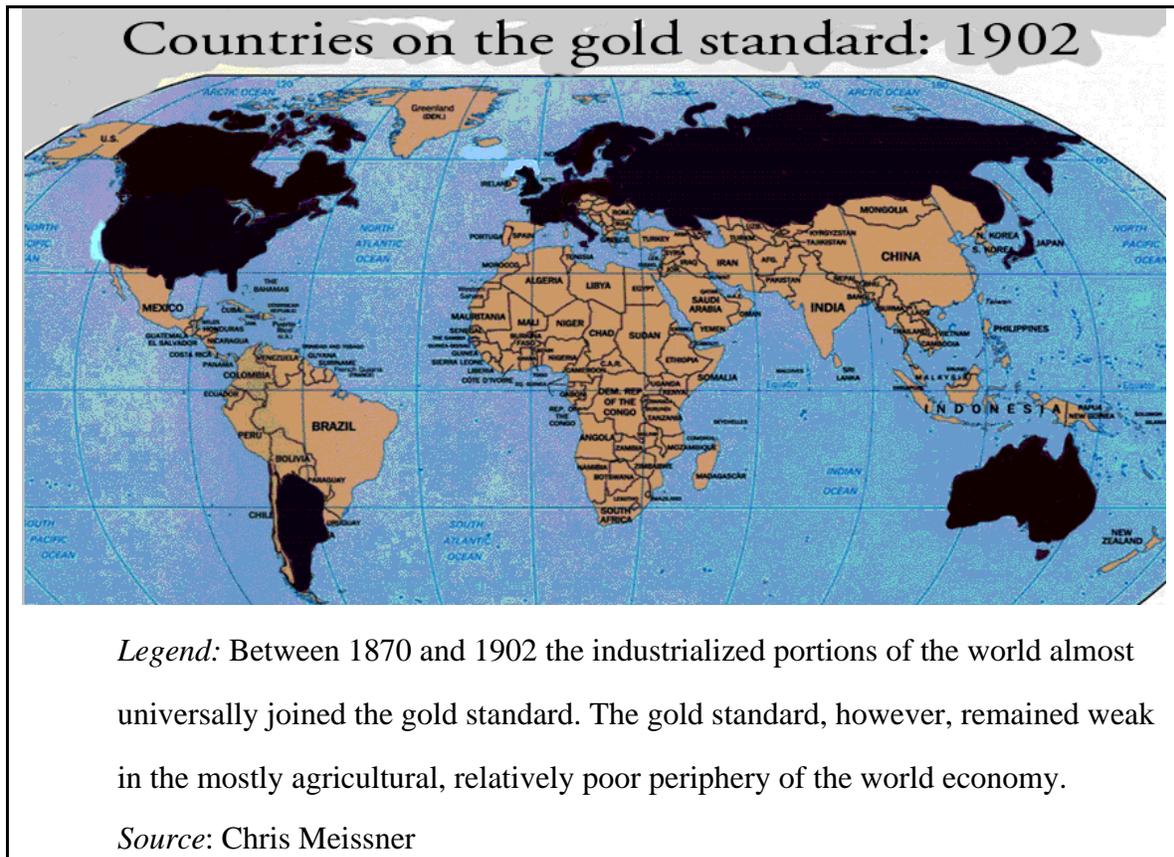
would find themselves facing an unlimited demand, and would soon find themselves losing a nearly-unlimited amount of money.

Suppose that—as was originally envisioned under the Bretton Woods system—the U.S. Treasury stood ready to buy or sell gold from qualified parties at the price of \$35 an ounce, that the British Treasury stood ready to buy or sell gold from qualified parties at the price of £15.58333 an ounce, but that the pound sterling was trading in the foreign exchange market not for the \$2.40 that was the ratio of the gold parities, but instead for 10% more--\$2.64.

Then someone with an ounce of gold could:

- Trade it to the British Treasury for £15.583333...
- Then trade those pounds sterling for dollars in the foreign-exchange market and wind up with \$38.50...
- Trade that \$38.50 to the U.S. Treasury for 1.1 ounces of gold...
- Repeat the process as rapidly as possible, making a 10% profit each time the circle is completed.

And those who sell dollars for pounds at the rate of $\$2.64 = \text{£}1.00$ are losing 10% of their value each time the circle is completed. The only things hindering this round-trip “arbitrage” process—as long as currencies remain convertible and parities remain fixed--are the costs of transporting and insuring the gold. Thus there can be very small fluctuations of exchange rates within the “gold points,”



A Gold Standard Tends to Produce Contractionary Policies

Even in its turn-of-the-last-century heyday around 1900 it was already apparent that the gold standard had certain serious weaknesses as an international monetary system. The most important of these weaknesses was that the gold standard tended to be deflationary. It tended in some circumstances to push countries to raise their interest rates to reduce production and raise unemployment. And it never provided a countervailing push to other countries to lower their interest rates to raise production and to lower unemployment.

To see why, we need to digress for a moment into the role played under a gold standard by a country's gold and other foreign-exchange reserves. If the exchange rate is floating, foreigners' domestic-currency earnings must be used to buy domestic exports or be invested in the home country: there is nothing else that can be done with them. Under a floating rate system a country's net exports, NX , plus net investment from abroad NIA must add up to zero:

$$NX + NFI = 0$$

And the exchange rate moves up or down in response to the supply and demand for foreign exchange in order to make this so.

Under a gold standard things are different. There is an extra participant in the market: the country's Treasury or central bank. There is something else that you can do with your foreign-currency earnings other than using them to buy imports or for investments abroad. You can also take your foreign-currency earnings to the foreign country's Treasury, turn them into gold, ship the gold back home, take the gold to your own Treasury, and turn your gold into real spendable ready cash. Under a gold standard it is net exports, plus net investment from abroad, minus the flow of gold into your country— FG —that together add up to zero:

$$NX + NIA - FG = 0$$

What happens if a country finds that net exports plus net investment from abroad are less than zero? Its Treasury will find itself losing gold, as a long line of foreigners come into

its office, demand gold in exchange for currency, and then ship the gold out of the country. With each such transaction the country's gold reserves shrink. Eventually the government's gold reserves are gone.

At this point the country has a choice. One option is for it to abandon the fixed exchange rate system. It "closes the gold window," announces that the country will no longer buy back its currency at the established gold parity, abandon its fixed exchange rate, and let the exchange rate float. The only other option is to solve its gold-outflow problem by making it more attractive for foreigners to invest. The way to increase net investment from abroad is to raise domestic interest rates. If net investment from abroad rises enough, gold will no longer flow out.

Thus under a gold standard countries running persistent balance of payments deficits--losing gold—must eventually raise interest rates to stay on the gold standard. However, surplus countries—those gaining gold--face no symmetrical crisis in which they must lower interest to stay on the gold standard. Their central banks can lower interest rates if they wish. But if they do not so wish, they can keep interest rates constant and watch their gold reserves grow.

This asymmetry means that a fixed exchange-rate system like the gold standard puts periodic contractionary pressure on the world economy. Such pressure turned the interwar period into a disaster, for such contractionary pressure on countries to raise interest rates imposed by the gold standard played a major role in generating the worldwide Great Depression of the 1930s.

The Collapse of the Gold Standard

The international gold standard was suspended when World War I began in 1914. Every country used inflation to help finance its massive war expenditures. Inflation was inconsistent with the gold standard. Under the gold standard attempted inflation simply leads everyone to immediately trade their currency into solid gold.

After the destruction of World War I was over, politicians and central bankers sought to restore the gold standard. They believed that the pre-World War I gold-standard fixed exchange-rate system had been a success. They believed that restoring it was an important step to restoring general economic prosperity. The pre-World War I gold standard had, after all, delivered forty years of more rapid economic and industrial growth than the world had ever before seen.

It took more than half a decade to fully restore the gold standard. But the revived gold standard did not produce prosperity. Instead, in less than half a decade the Great Depression began, and the restored gold standard broke apart. The consensus of economic historians today is that the Great Depression had its principal origin in the United States, where for reasons not fully understood some combination of small shocks set off a downward spiral of destabilizing deflation. But a combination of mistaken policies and flaws in the functioning of the post-World War I gold standard then quickly amplified the Great Depression and propagated it around the world.

Economists Barry Eichengreen and Ben Bernanke argue that four factors made the post-World War I gold standard a much less secure monetary system than the pre-World War I gold standard:

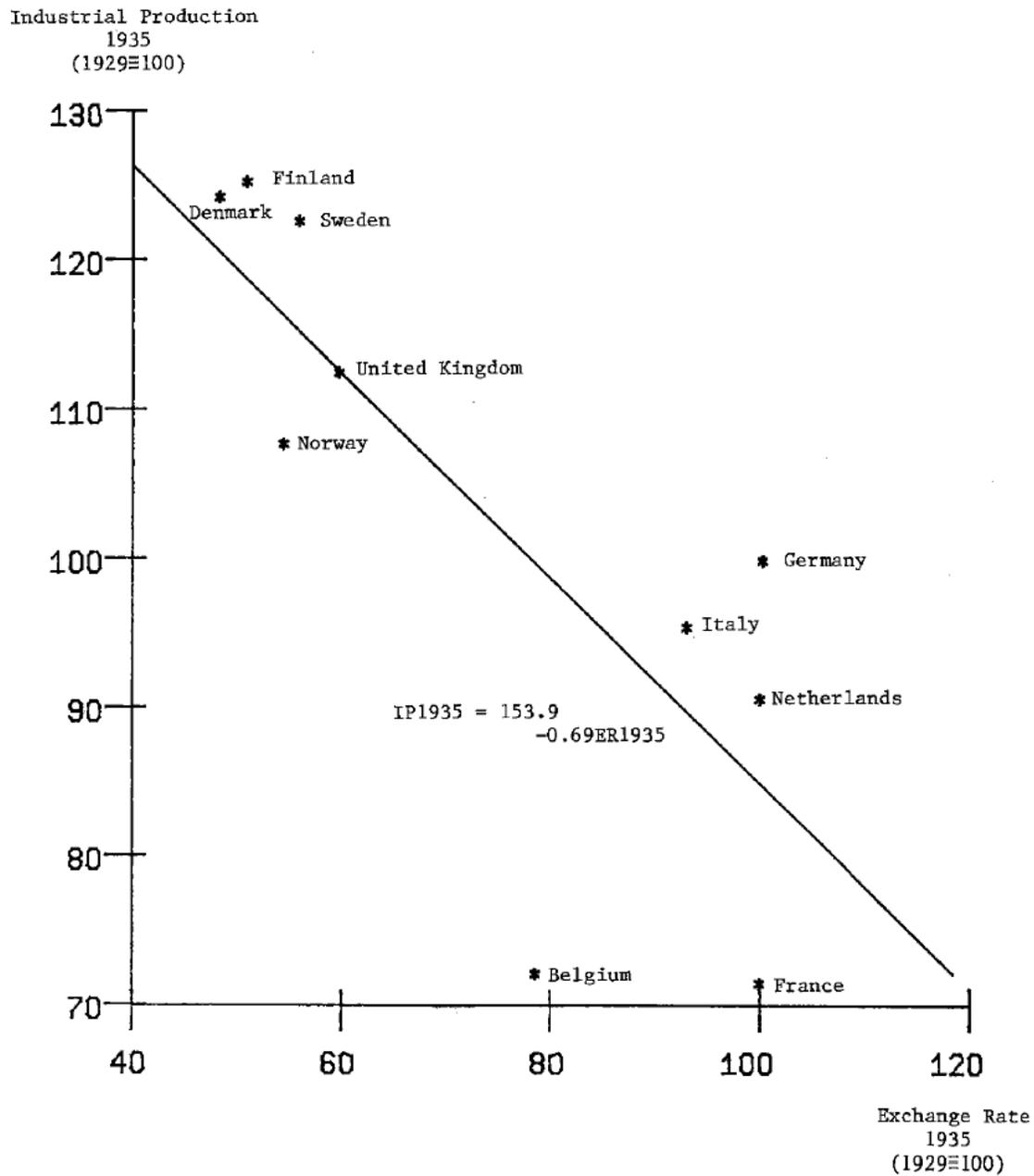
- Everyone knew that governments could abandon their gold parities in an emergency. After all, they had done so during World War I. Thus everyone was eager to turn their holdings of currency into gold at the first sign of trouble. This meant countries had to maintain much larger gold reserves in order to keep the gold standard functioning.
- Everyone knew that governments had taken on the additional responsibility of trying to keep interest rates low enough to produce full employment.
- Countries after World War I held their reserves not in gold but in foreign currencies. This was fine in normal times, but it meant that at the first sign of trouble not only would citizens show up trying to turn their currency into gold, but foreign central banks would do so too--greatly multiplying the magnitude of the gold outflow.
- The post-World War I surplus economies, the United States and France, did not lower their interest rates as gold flowed in.

These factors meant that as soon as a recession set in and gold drains began from countries with weak currencies, their governments found themselves under immediate and massive pressure to raise interest rates and lower output further if they were to stay on the gold standard. If they stayed on the gold standard, they guaranteed themselves

high real interest rates and deep depression. If they abandoned the gold standard, they went against all the advice of bankers and gold standard advocates.

There was a clear divergence in the 1930s between those countries that abandoned the gold standard early in the Depression and those that stubbornly clung to gold. Those that clung to their gold parities found themselves forced to raise interest rates and contract their money supplies in order to avoid large gold losses that would rapidly exhaust their reserves. Those that abandoned the gold bloc and floated their exchange rates could avoid deflation, and avoid the worst of the Great Depression. By the middle of the 1930s the Great Depression was in full swing, and the gold standard was over.

Figure 15.2: Economic Performance and Degree of Exchange Rate Depreciation During the Great Depression



Note: The exchange rate is in units of gold per unit of domestic currency.

Legend: The further countries moved away from their gold-standard exchange rates, the faster they recovered from the Great Depression.

Source: Barry Eichengreen and Jeffrey Sachs (1985), "Exchange Rates and Economic Recovery in the 1930s," *Journal of Economic History* (December): 925-46.

The Bretton Woods System

After World War II, everyone took careful note of what they thought had gone wrong after World War I. Led by Harry Dexter White for the United States and John Maynard Keynes for Great Britain, governments tried to set up an international monetary system that would have all the advantages and none of the drawbacks of the gold standard. The system they set up came to be called the "Bretton Woods system," after a New Hampshire mountain resort town that was the location in late 1944 of a key international monetary conference.

Three principles guided this post-World War II international monetary system.

- In ordinary times, exchange rates should be fixed: fixed exchange rates encouraged international trade by making the prices of goods made in a foreign country predictable, and so had powerful advantages.

- In extraordinary times--whenever a country found itself in recession with a significantly overvalued currency that discouraged its exports, or found itself suffering from inflation because an undervalued currency raised the prices of imports and stimulated export demand--exchange rates should be changed. Such “fundamental disequilibrium” could be fixed by revaluing or devaluing the currency, and should be fixed.
- An institution was needed--the International Monetary Fund--to watch over the international financial system. The IMF would make bridge loans to countries that were adjusting their economic policies. It would ensure that countries did not abuse their privilege of changing exchange rates. Exchange rate devaluation and revaluation would remain an exceptional measure for times of “fundamental disequilibrium,” rather than becoming a standard tool of economic policy.

Our Current Floating-Rate System

The Bretton Woods system in its turn broke down in the early 1970s. The United States saw inflation accelerate in the 1960s. It found itself with an overvalued exchange rate and a significant trade deficit at the end of the 1960s. The United States sought to devalue its currency: to reduce the value of the dollar in terms of other currencies, so that exports would rise and imports would fall.

Policy makers in other countries thought that the United States should--instead--raise interest rates. Higher United States interest rates would make foreigners more willing to

invest in the United States. The foreign currency committed to those investments could then be used to finance the excess of imports over exports that was the U.S. trade deficit. In the end the deadlock was broken by unilateral American action, and the Bretton Woods system fell apart.

Since the early 1970s the exchange rates at which the currencies of the major industrial powers trade against each other have been “floating” rates. The exchange rate is fixed by the government, but fluctuates according to the balance of demand and supply on that day in the foreign exchange market. There seem to be few if any prospects for a restoration of a global system of fixed exchange rates over the next generation. Thus this book has assumed as its standard case that exchange rates are free to float and are set by market forces.

Nevertheless, the older system is worth studying for three reasons. First, understanding the functioning of a fixed-rate system sheds light on how a floating rate system works. Second, economic policy makers are and will continue to debate the costs and benefits of fixed rate relative to our current floating-rate system. Third, perhaps the pendulum will swing back in a generation and we will find ourselves once more in a fixed exchange rate system.

15.2 How a Fixed Exchange Rate System Works

High Capital Mobility

Begin by distinguishing between two different economic environments in which a fixed exchange rate system works. The first is an environment of very high capital mobility, like the situation the advanced industrial countries face today. Foreign exchange speculators buy and sell bonds denominated in different currencies with a few presses on a keyboard. Hot money flows around the world nearly instantaneously in response to differences in expected rates of return. Governments find themselves in large part dancing to the tune called by international currency speculators.

The second is an environment of lower capital mobility. The ability of individuals in one country to invest their money in a second is low and limited. Flows of capital out of one country into another are limited. And governments that are willing to do so can shift the exchange rate for a time by using their foreign-exchange reserves to intervene in the foreign-exchange market.

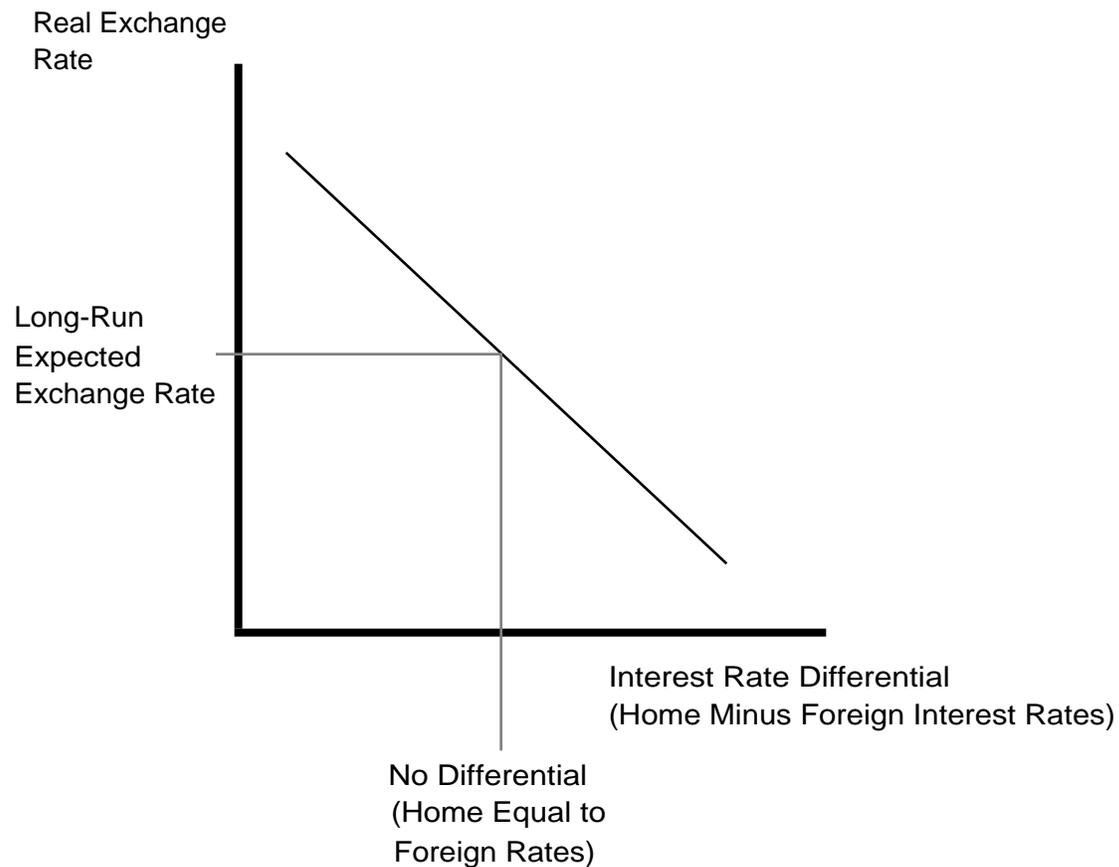
A fixed exchange rate is a commitment by a country to buy and sell its currency at fixed, unchanging prices in terms of other currencies. To carry out this commitment, the country's central bank and Treasury must maintain *foreign exchange reserves*. If people come to your central bank or Treasury under a fixed exchange-rate system wanting to exchange dollars for pounds sterling or gold bars, the central bank or Treasury must have the pounds sterling or the gold bars to trade to them.

But the foreign exchange reserves of a country are limited. With today's high degree of capital mobility there are a great many potential foreign-exchange speculators out there in the wide world. All of them are seeking to make sure that they have their wealth invested in the place that offers the highest expected return. Their decisions about where to invest

their money are the result of a delicate balance between greed and fear, and all the foreign exchange reserves a government has cannot materially alter the balance of foreign exchange supply and demand for more than a day or two. Under high capital mobility, countries' foreign exchange reserves are all but irrelevant. The real exchange rate is set by the same exchange-rate equation we have seen before, as greed balances fear in the mind of the typical foreign exchange speculator:

$$\varepsilon = \varepsilon_0 - \varepsilon_r (r - r^f)$$

Remember, in this equation ε_0 is foreign exchange speculators' beliefs about the long-run equilibrium value of the real exchange rate. $r - r^f$ is the difference between home and foreign real interest rates. ε_r is a parameter that tells at what point fear balances greed: it tells how much extra foreign exchange speculators would be willing to bid up the value of dollar-denominated assets if there were an extra one percentage point per year interest rate differential in favor of assets denominated in dollars. The higher the interest rate differential in favor of the home country, the lower is the exchange rate (which, you recall, is defined as the value of foreign currency).

Figure 15.3: The Real Exchange Rate, Long-Run Expectations, and Interest Rate**Differentials**

Legend: When there is no differential between home and foreign real interest rates,

the value of the real exchange rate is e_0 : what foreign exchange speculators' believe

and expect the long-run equilibrium value of the exchange rate to be. When home interest rates are higher than foreign interest rates, the value of the exchange rate is

lower. When home interest rates are lower than foreign interest rates, the value of the exchange rate is higher.

Why must this equation for the exchange rate hold? Suppose that the government sets a fixed parity such that the fixed value of foreign currency ϵ^* is lower than given by the equation above. Foreign exchange speculators see foreign currency as a bargain. The extra interest return and potential capital gain from appreciation they get from investing their money in foreign currency-denominated assets more than offsets any risks. So foreign exchange speculators come to the government to sell it the (overvalued) home currency and buy from it the (undervalued) foreign currency at the fixed exchange rate parity. The government spends down its reserves, buying its own currency in exchange for its stocks of other countries' currencies and of gold: it is a fixed exchange rate system after all.

The next day--or hour, or minute--the foreign exchange rate speculators do it again. And again. And again. The government rapidly runs out of reserves. When its reserves are gone, it can no longer buy and sell foreign currency for domestic currency at the fixed exchange rate parity because it no longer has any foreign currency--or gold--to sell. How long does this process take? Under high capital mobility, in hours or days. There are lots of potential foreign exchange speculators. They are all eager to profit by betting against a central bank, especially a central bank that is carrying out its exchange transactions not for economic but for political reasons.

Thus if the government wants to keep the exchange rate at ϵ^* , its central bank must set interest rates so that the equilibrium value of the exchange rate produced by the equation:

$$\epsilon = \epsilon_0 - \epsilon_r (r - r^f)$$

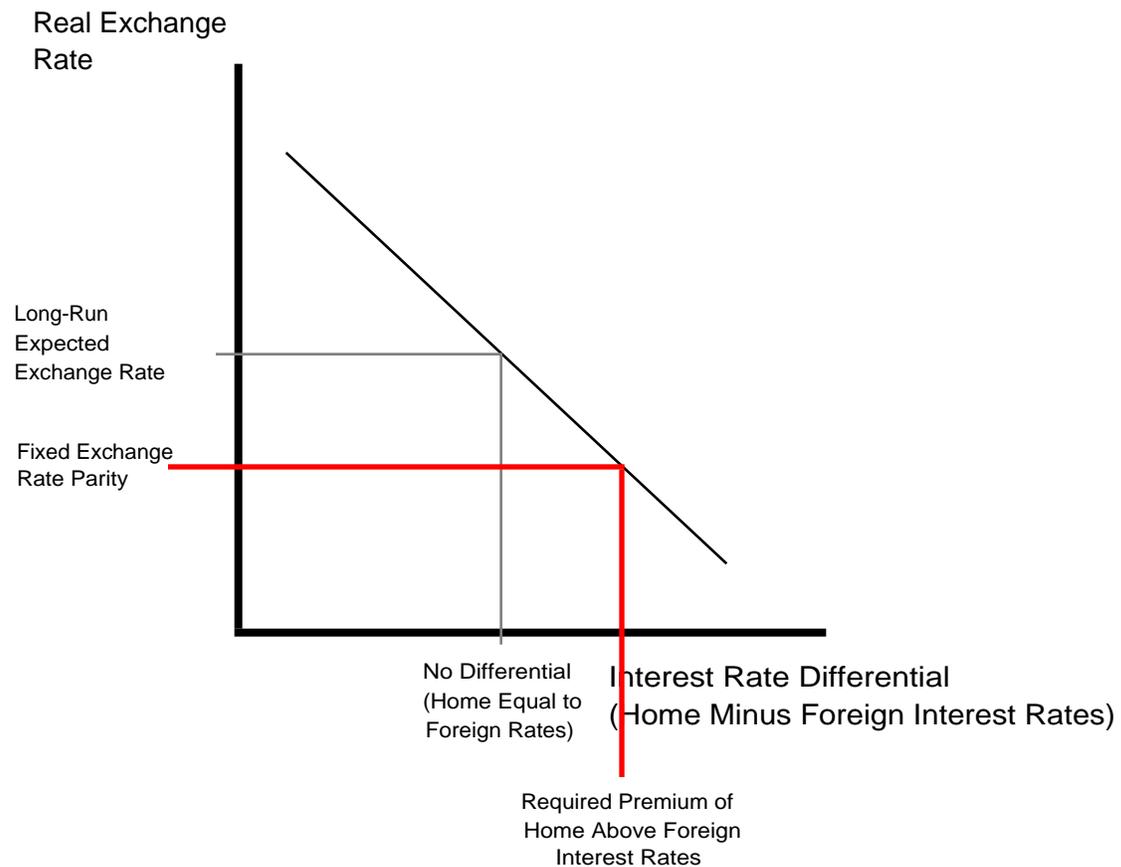
corresponds to the desired fixed exchange rate value ϵ^* .

In order for this equation to hold, the central bank must set the domestic real interest rate r to:

$$r = r^f + \frac{\epsilon_0 - \epsilon^*}{\epsilon_r}$$

Monetary policy no longer can play a role in domestic stabilization: you cannot ask the central bank to lower interest rates to fight unemployment or raise interest rates to fight inflation because the interest rate is already devoted to maintaining the fixed exchange rate system. Under a fixed exchange-rate system with high capital mobility, not macroeconomic policy makers but international currency speculators determine the exchange rate.

Figure 15.4: Domestic Interest Rates Are Set by Foreign-Exchange Speculators and the Exchange Rate Target



Legend: Under high capital mobility, maintaining a fixed exchange rate requires that the central bank ignore domestic conditions and focus on the exchange rate alone in setting interest rates.

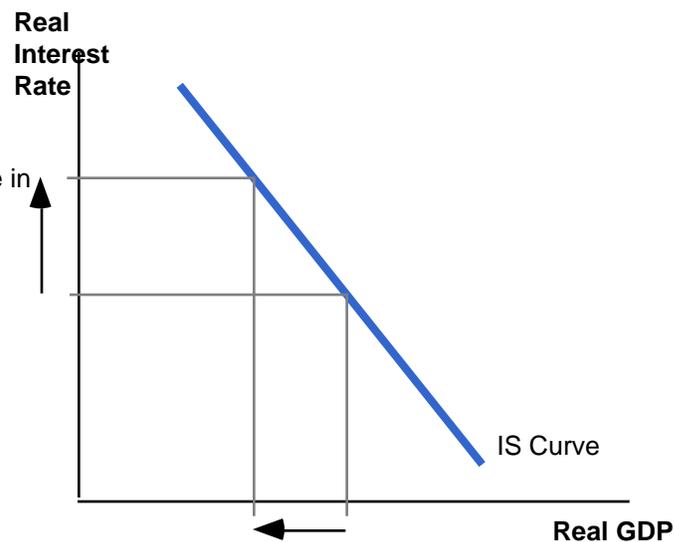
This means that international financial shocks coming from abroad are immediately transmitted to the domestic economy:

- An increase in foreign interest rates r^f requires an immediate, point-for-point increase in domestic interest rates--and a move up and to the left along the IS curve.
- An increase in foreign exchange speculators' view of the long-run fundamental value of the exchange rate ϵ_0 requires an immediate increase in domestic interest rates of ϵ_0/ϵ_r .

Figure 15.5: Effect of Foreign Shocks Under Fixed Exchange Rates

Under fixed exchange rates, a rise in foreign interest rates or an increase in foreign exchange speculators' view of the long-run fundamental exchange rate...

...requires a hike in interest rates to maintain the exchange rate parity...



...and produces a fall in real GDP-- unless fiscal policy can shift the IS curve out in time.

Legend: If the exchange rate is fixed and if capital mobility is high, external shifts in foreign exchange speculators' opinions or foreign interest rates have direct and

immediate effects on domestic interest rates and on domestic output.

Countries on fixed exchange rate systems find their interest rates tightly linked. This led John Maynard Keynes to warn in the 1920s against an attempt by Britain to return to the fixed exchange rate gold standard. It would, Keynes warned, force Britain to receive the full force of interest rate shocks delivered by the unstable U.S. economy. Earlier, back before World War I when Britain had been the leading industrial power, people expressed it differently: "when [the] London [money market] catches cold," they said, "Buenos Aires [or New York or Sidney] catches pneumonia."

Barriers to Capital Mobility

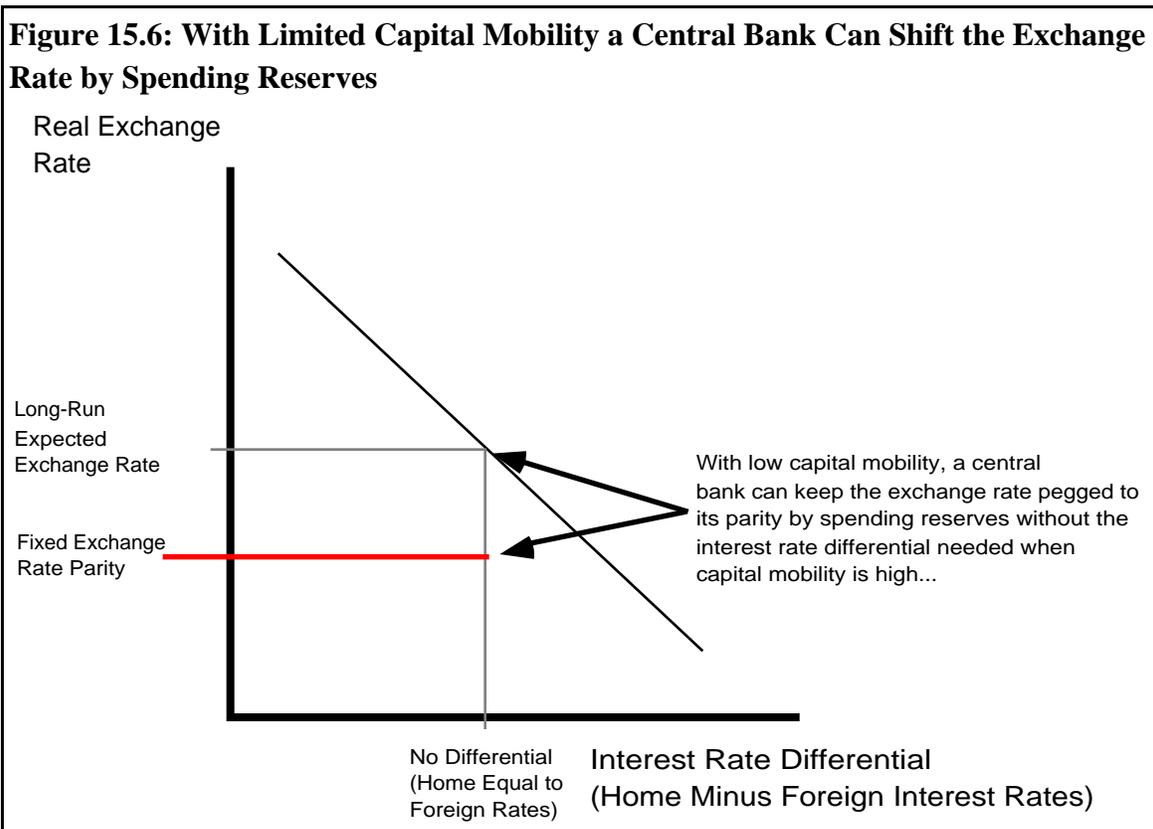
Now turn to the second case of lower capital mobility.. Suppose that there are sufficient barriers to international financial flows that it is difficult and costly to move money across national borders. The government's foreign-exchange reserves are sizable relative to flows of capital. Capital mobility today is limited for many developing countries with "thin" financial markets. Capital mobility was limited for all countries only a few decades in the past. Capital mobility may be limited in the future as well, either as future governments impose explicit controls on types of transactions or as small taxes on international transactions levied by future governments put "sand in the wheels" of international finance.

If capital mobility is low, the rate at which the government buys or sells its currency for foreign exchange has an impact on foreign exchange supply and demand and thus on the

current exchange rate. The exchange rate is determined by foreign currency speculators' expectations, interest rate differentials, and also by the speed at which the government is accumulating or spending its foreign exchange reserves R :

$$\varepsilon = \varepsilon_0 - \varepsilon_r \times (r - r^f) + \varepsilon_R \times \Delta R$$

A change ΔR in foreign exchange reserves raises the value of the exchange rate by an amount equal to the slope of a demand parameter ε_R , times the change in reserves. When the government is accumulating reserves, the value of foreign currency is higher than it would otherwise be: the government is in there buying foreign currency, raising the demand. When the government is spending reserves, the value of foreign currency is lower than it would otherwise be.



Under such barriers to capital mobility, the central bank regains some freedom of action to use monetary policy for domestic uses. It does not have to directly and immediately transmit adverse shocks to foreign exchange speculator confidence or to foreign interest rates to the domestic economy in the form of higher interest rates and a recession. As long as it has reserves, it can choose to let them run down for a while rather than raising domestic interest rates. The domestic interest rate r is not:

$$r = r^f + \frac{\epsilon_0 - \epsilon^*}{\epsilon_r}$$

Instead, it is:

$$r = r^f + \frac{\epsilon_0 - \epsilon^*}{\epsilon_r} + \frac{\epsilon_R}{\epsilon_r} \times \Delta R$$

But the amount of freedom of action for monetary policy is limited by the sensitivity of exchange rates to the magnitude of foreign-exchange market interventions performed by the central bank, and by the amount of reserves. The level of foreign-exchange reserves must be positive:

$$R \geq 0$$

Policies that spend reserves cannot be continued forever, because once the government's foreign-exchange reserves have fallen to zero it can no longer finance interventions in the foreign exchange market. (Note, however, that reserves can be replenished if they drop dangerously close to zero. That is what loans from the IMF, or from other major economy central banks, are for.)

15.3 The Choice of Exchange Rate Systems

Economists either applaud or deplore the breakdown of the Bretton Woods system and the resort to floating exchange rates, depending on their underlying philosophy. For some, like Nobel Prize-winner Milton Friedman, the exchange rate is a price. Economic freedom and efficiency requires that prices be set by market supply and demand. They should not be set by the decrees of governments. Thus the replacement of the fixed exchange-rate administered-price Bretton Woods system by the floating exchange-rate market-price system of today is a very positive change.

For others, like Nobel Prize-winner Robert Mundell, the exchange rate is the value that the government promises that the currency it issues will have. A stable exchange rate means that the government is keeping the contract it has made with investors in foreign countries. To let the exchange rate float is to break this contract--and everyone knows that markets only work if people do not break their contracts. Thus the replacement of the fixed exchange-rate administered-price Bretton Woods system by the floating exchange-rate market-price system of today is a very negative change.

I think that the right answer is "it depends." High philosophy is all very well, but what should really matter is how the choice of an exchange rates regime affects the economy.

Benefits of Fixed Exchange Rates

Under a floating exchange rate system, exporters and firms whose products compete with imported goods never know what their competitors' costs are going to be. Exchange rate-driven fluctuations in the costs of their foreign competitors are an extra source of risk, and businesses do not like unnecessary risks. The fact that exchange rates fluctuate discourages international trade, and makes the international division of labor less sophisticated than it would otherwise be. Fixed exchange rate systems avoid these costs. Fixed exchange rate systems encourage international trade by reducing exchange rate fluctuations as a source of risk. They avoid the churning of industrial structure--the pointless and inefficient shift of resources into and out of tradable goods sectors--as the exchange rate fluctuates around its fundamental value. That is an important advantage.

That advantage was behind the decision of nearly all western European countries at the start of 1999 to form a *monetary union*: to fix their exchange rates against each other irrevocably, so that even their national currencies will eventually disappear.

Fixed exchange rate systems avoid some political vulnerabilities as well. Large exchange rate swings are a powerful source of political turmoil. This political turmoil is avoided by fixed exchange rate systems.

Costs of Fixed Exchange Rates

Under fixed exchange rates, monetary policy is tightly constrained by the requirement of maintaining the exchange rate at its fixed parity. Interest rates that are too low for too long exhaust foreign exchange reserves, and are followed either by a sharp tightening of monetary policy or by an abandonment of the fixed exchange rate. A floating exchange rate allows monetary to concentrate on maintaining full employment and low inflation at home--on attaining what economists call *internal balance*. By contrast, under a fixed exchange rate system the level of interest rates must be devoted to maintaining *external balance*--the fixed exchange rate. And fixed exchange rates have the disadvantage of rapidly transmitting monetary or confidence shocks: interest rates move in tandem all across the world in response to shocks. The central bank must respond to any shift in international investors' expectations of future profitability or future monetary policy by shifting short-term interest rates.

This is the cost-benefit calculation facing those who have to choose between fixed and floating exchange rates. Is it more important to preserve the ability to use monetary policy to stabilize the domestic economy, rather than dedicating monetary policy to maintaining a constant exchange rate? Or is it more important to preserve the constancy of international prices, and thus expand the volume of trade and the scope for the international division of labor?

Canadian economist Robert Mundell set out the terms under which fixed exchange rates would be a better system than floating ones with his concept of an “optimal currency area.” The way Mundell put it, the major reason not to have fixed exchange rates was that floating exchange rates allowed adjustment to shocks that affected two countries differently. This benefit would be worth little if two countries suffered the same shocks, and reacted to them in the same way. This benefit would also be worth little if factors of production possessed high mobility: then the effects of shocks would be transient because labor and capital would rapidly adjust, and the benefits from different policy reactions to economic shocks would be small.

Box 15.2—Are Western Europe and the United States Optimal Currency Areas?

Today the two largest economic regions within which exchange rates are fixed are the United States and Western Europe’s “euro zone.” California does not have a separate exchange rate vis-a-vis the rest of the United States. Almost all of the countries of western Europe are now committed to establishing a common currency, the euro. Does this make economic sense? Or should there be a separate

“California dollar” to allow California to have a different monetary policy than the rest of America?

Few economists today would maintain that Western Europe’s “euro zone” meets Robert Mundell’s criteria for an optimal currency area. Shocks to the economy of Portugal are very different from shocks to the economy of West Germany. Southern Italy has few similarities in economic structure with Denmark. Vulnerability to different shocks would be relatively unimportant if factors of production were mobile. But the fact that different European countries speak different languages means that there is little chance that a boom in Denmark and a bust in Portugal will see large-scale migration to compensate.

Why then has Western Europe embarked on monetary union? One reason is that some economists and policy makers hope that the benefits from economic integration are very large indeed—large enough to offset even substantial costs from adopting a common currency. But the main reason is that European monetary unification is not so much an economic as a political project: an attempt to knit Europe together as a single entity whether or not monetary union makes narrow economic sense.

Practically all economists today believe, by contrast, that the United States is an optimal currency area. The U.S. economy’s regions are no more subject to common shocks than Western Europe’s countries are. The mid-1980s saw the high dollar decimate midwestern manufacturing while leaving most of the rest of the country much less affected. The health of the economies of Texas and

Oklahoma still depends substantially on the price of oil. Southern California's defense-industry boom and bust of the 1980s and early 1990s and northern California's high-tech boom of the 1990s make it clear that California is so big a state that its component parts experience very different economic shocks. But even though the United States's component parts experience different shocks, factor mobility across the United States is remarkably high. Capital moves and workers move to where returns and wages are high with remarkable speed—fast enough that it is hard to believe that different parts of the U.S. could gain substantially from following the different monetary policies that separate currencies and floating exchange rates would allow.

As far as the U.S., western Europe, and Japan are concerned, the issue of fixed versus floating exchange rates appears to have been decided. The answer appears to be clear: none of these three powers is willing to sacrifice its freedom of action in monetary policy. Within western Europe the answer also appears clear: monetary union means that there is now one pan-European monetary policy, and Italy no longer retains the ability to use monetary policy to lower interest rates in Milan when unemployment is relatively high. Elsewhere in the world, the question is still under debate.

Moreover, fixed exchange rate systems have one more major disadvantage: they seem to make large scale currency crises more likely. The decade of the 1990s has seen three major large-scale currency crises, all of which have threatened prosperity in the immediately affected countries, and all of which raised fears (initially at least) of their much wider spread to the world economy as a whole.

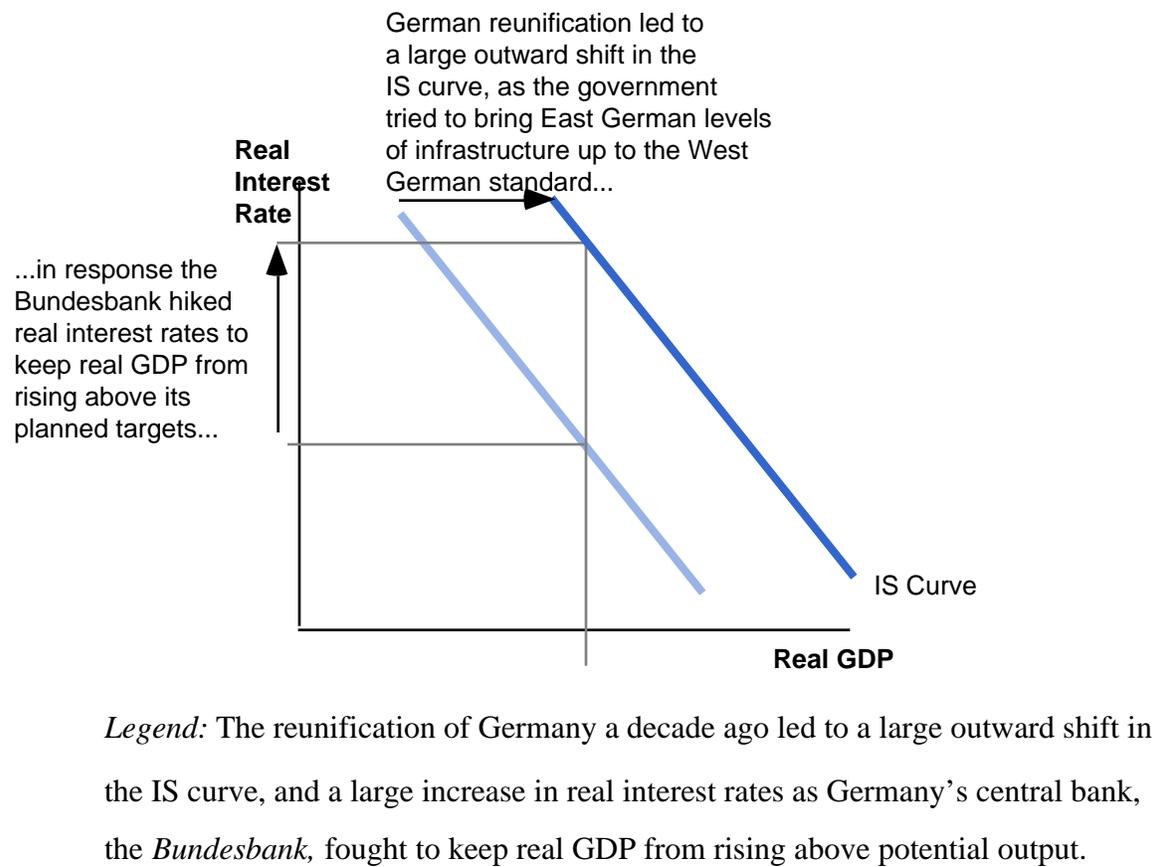
15.4 Currency Crises

The European Crisis of 1992

The first of the three major financial crises that hit the world economy in the 1990s came in the fall of 1992. In 1990 West German Chancellor Helmut Kohl reunified Germany, a country which had been divided since the end of World War II first into zones of occupation--French, British, American, and Russian--and then into two separate countries--East Germany and West Germany.

The two parts of Germany had had very similar levels of economic development and economic structures before World War II. But since World War II they had diverged. West Germany had become one of the richest and most developed economies on earth, while East Germany had turned into a standard Communist economy with dirty industry, inefficient factories, and inadequate infrastructure. Chancellor Kohl undertook a program of massive public investment to try to bring East Germany up to the West German standard as quickly as possible.

The expansion of German government purchases shifted the German IS curve to the right in the years after 1990. The German central bank, the Bundesbank, responded by raising real interest rates in order to keep real GDP in the range thought to be consistent with the Bundesbank's inflation targets.

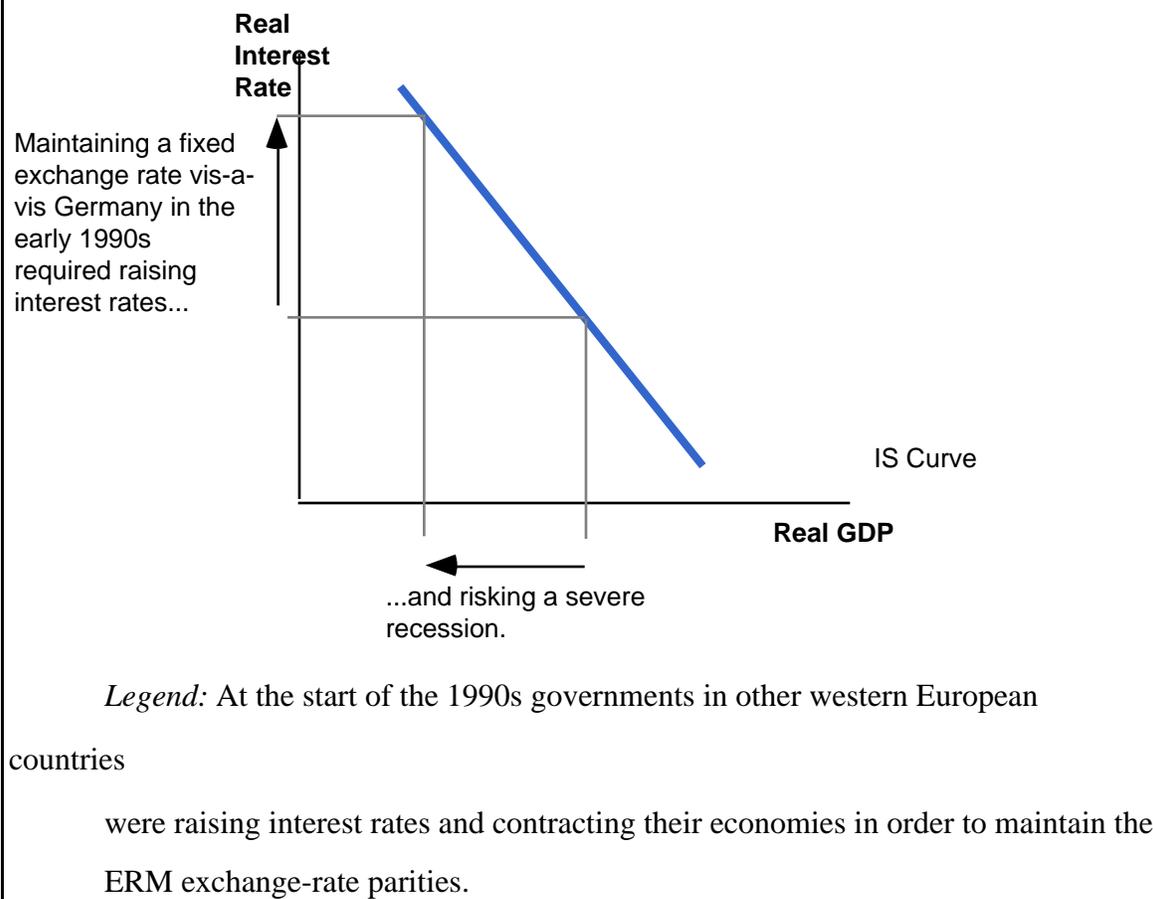
Figure 15.7: German Fiscal Policy and Monetary Response in the Early 1990s

The rise in the real interest rate generated a rise in the German exchange rate vis-à-vis the dollar and the yen, and a sharp fall in net exports as capital flowed into Germany. The other countries of western Europe had then fixed their exchange rates relative to the German mark as part of the European Exchange Rate Mechanism [ERM]. Britain, France, Italy, and other countries found themselves trapped: the rise in interest rates in Germany required that they increase interest rates too: r^f had risen in the equation:

$$r = r^f + \frac{\epsilon_0 - \epsilon^*}{\epsilon_r}$$

and r had to rise in response if the ERM was to be maintained. Without the surge of spending found in Germany and without the ability or desire to rapidly shift policy to run large deficits, such increases in interest rates threatened to send the other European economies into recession.

Figure 15.8: Other European Countries Found that Keeping the Exchange Rate Fixed Required High Interest Rates and Risked a Recession



Politicians in other European countries--Britain, Sweden, Italy, France, and elsewhere--promised that their commitment to their fixed exchange rate parity was absolute. The

promised that high interest rates and the risk of a domestic recession were prices worth paying for the benefits of a fixed exchange rate system within western Europe itself. But foreign exchange speculators did not believe them. Foreign exchange speculators did not believe that other western European governments would keep this promise to maintain the fixed exchange rate parity when unemployment began to rise.

Thus foreign exchange speculators' expectations of the long-run fundamental real value of the exchange rate, ϵ_0 , rose as well. And this expectation that other European currencies would lose value vis-à-vis the German mark in the long run caused their values to come under pressure in the short run as well.

With the domestic real interest rate required to maintain the exchange rate parity:

$$r = r^f + \frac{\epsilon_0 - \epsilon^*}{\epsilon_r}$$

rising not just because of higher real interest rates in Germany but because of foreign exchange speculators' more pessimistic expectations, the governments of much of western Europe found themselves in a trap. Different governments undertook different strategies:

- First they tried to avoid the consequences of the shift in expectations. They spent reserves like water in the hope that a demonstrated commitment to maintain the parity would reverse the shift in speculator expectations. All this did was give international currency traders like George Soros the opportunity to make profits measured in the billions by betting on the abandonment of the fixed exchange rate. Economists

Maurice Obstfeld and Ken Rogoff report that the British government may have lost \$7 billion in a few hours during the September 1992 speculative attack on the pound.

- Second they tried to demonstrate that they would defend the parity no matter how high the interest rate required to keep the exchange rate fixed. The Swedish government raised its overnight interest rate to 500% per year for a brief time. But all that this did was reinforce speculators' opinion that the political-economic cost of keeping the exchange rate parity was too high for governments that sought to win reelection to bear.
- Third, they abandoned their parity against the German mark, and let their currencies float as they turned monetary policy for a while to setting interest rates consistent with *internal balance*.

In less than two months what had seemed a durable framework of fixed exchange rates in western Europe had collapsed into a floating-rate system.

But governments interested in long-run exchange stability within Europe regrouped. And they proposed to try again to fix their exchange rates, with the European Monetary Union that began in January 1999. This time, however, they decided not to peg their exchange rates while keeping their national currencies (thus retaining at least the possibility of someday changing parities), but to eliminate their separate national currencies entirely: not fixed exchanged rates, but monetary union. The hope was to eliminate once and for all any fear or expectation that exchange rates might ever change again.

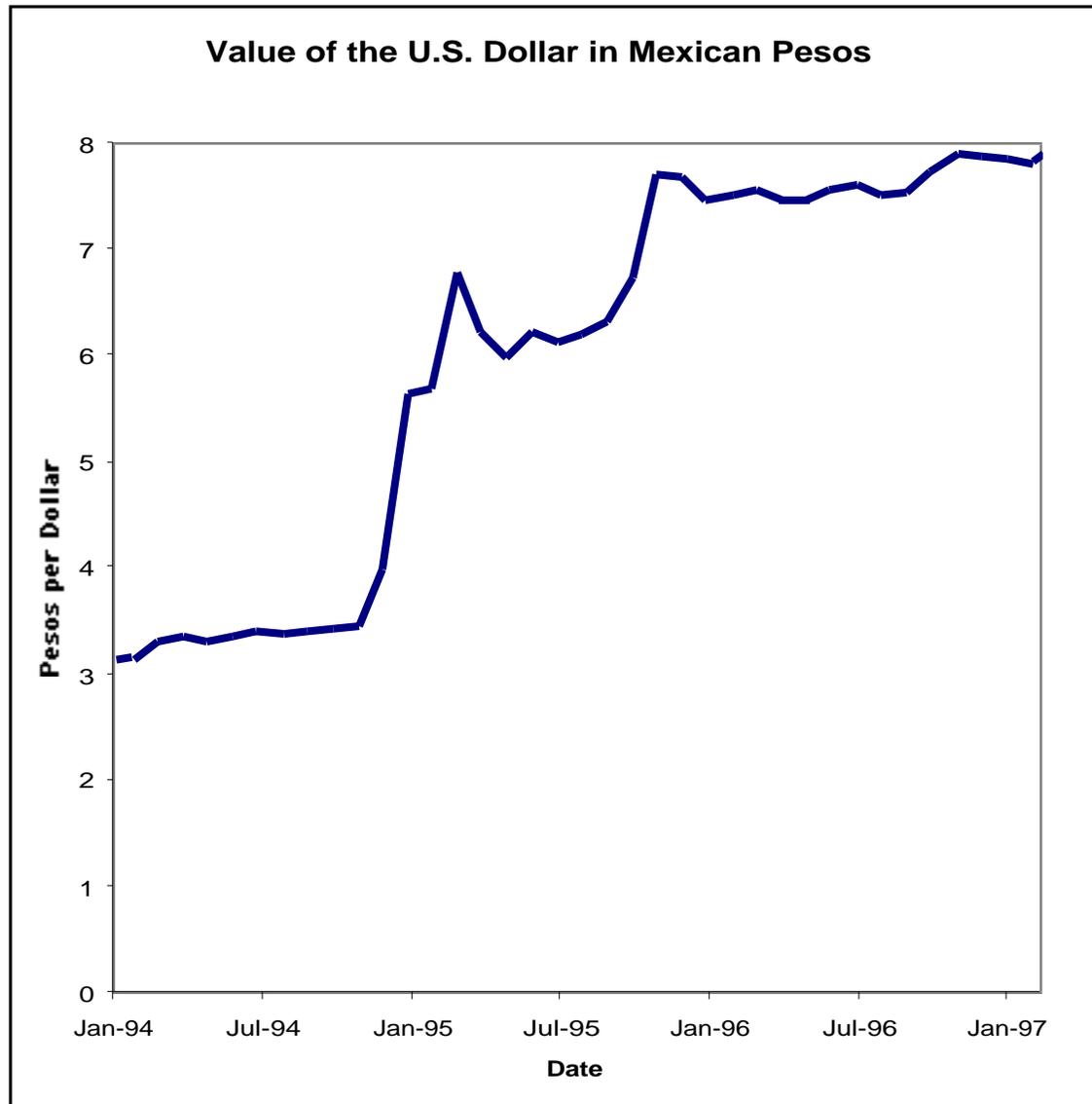
15.4.2 The Mexican Crisis of 1994-1995

In the winter of 1994-1995 the second of the major currency crises of the 1990s hit the world economy. The Mexican peso crisis came as a shock to economists and to economic policymakers. Previous speculative attacks on and collapses in the value of currencies had occurred for one of two reasons. In situations of limited capital mobility, governments with overvalued exchange rates and large inflation-financed budget deficits had suffered speculative attacks. And in cases like western Europe in 1992 currencies had suffered speculative attacks when speculators judged that the policies needed to maintain fixed exchange rates had become inconsistent with the government's political survival.

Mexico, however, fit neither of these two case. The government's budget was balanced--an outbreak of renewed inflation was not generally expected. The government's willingness to raise interest rates was not in question: in the end the government of Mexico raised real interest rates to forty percent per year during the crisis. The Mexican peso was not clearly overvalued: in the winter of 1993-1994 the Mexican government had conducted large exchange rate interventions and had eased monetary policy to try to keep the value of the peso from rising. Yet the Mexican peso lost half of its value in four months starting in December of 1994. The peso fell from about 3.5 to about 7 to the U.S. dollar, before recovering somewhat in the summer of 1995.

The sudden reversal of investor expectations about the long-run value of the Mexican peso startling. At the start of 1994 Mexico had just joined the world's club of

industrialized countries, the Organization for Economic Cooperation and Development [OECD]. It has just entered into the North American Free Trade Agreement [NAFTA] which granted Mexico guaranteed tariff-free markets for its products in the largest consumer economy on earth. Expectations were that the Mexican peso would strengthen in real terms in the future, and that the profits from investing in Mexico were high.

Figure 15.9: Mexico's Nominal Exchange Rate

Legend: The magnitude and rapidity of the collapse of the Mexican peso at the end

of 1994 came as a surprise.

Source: Federal Reserve Bank of St. Louis

Optimism eroded in 1994. At the start of the year a guerrilla uprising in the poor southern Mexican province of Chiapas cast doubt on political stability. Further doubt was cast by a wave of assassinations killed, among others, Luis Donaldo Colosio, the candidate of the ruling Party of the Revolution (Institutionalized) [PRI] and the designated successor to the then-Mexican President. During the presidential election year of 1994 itself the central bank raised the money supply, causing some international investors to worry that macroeconomic policy was more political and less "technocratic" than they had thought. All of these events plus a wave of pessimism reduced foreign exchange speculators' estimates of the long-run value of the Mexican peso, and raised their assessment of the value of the long-run exchange-rate fundamental ϵ_0 .

During 1994 the Mexican government spent \$50 billion in foreign exchange reserves supporting the peso, believing at each moment that the adverse shift in expectations had to turn around. It did not. By the end of 1994 the Mexican government was out of foreign exchange reserves. And so it devalued the peso, and let it float against the dollar.

The devaluation of the peso had destructive consequences, however. First, a great many--naïve--investors in New York and elsewhere had believed the Mexican government when it said that it would do whatever was necessary to defend the value of the peso. The increase in the value of the Mexican exchange rate ϵ led to a further fall in the perceived fundamental value of the peso--a rise in the exchange rate fundamental ϵ_0 --which put further pressure for further depreciation and a further rise in the exchange rate ϵ . It soon became clear that there was a more serious problem: much of the Mexican government's debt was indexed to the dollar in the form of securities called *tesebonos*. Each

depreciation of the peso raised the peso value of the Mexican government's debt, increased the temptation for the Mexican government to default on its debt, and the resulting financial distress led to further rises in foreign exchange speculators' opinions of ϵ_0 .

The Mexican government seemed faced with a horrible choice. The first option was to increase interest rates to defend the peso, but adverse movements in foreign exchange speculator expectations meant that the level of interest rates that would be required:

$$r = r^f + \frac{\epsilon_0 - \epsilon^*}{\epsilon_r}$$

was a level that would produce a Great Depression in Mexico. This first option would produce catastrophe.

The second option was to keep interest rates low and let the value of foreign currency rise much further. This would mean that Mexican companies—and the Mexican government—would be unable to pay their dollar-denominated and dollar-interest debts. Companies would declare bankruptcy. The government would default on its debt. Mexican exports would fall because foreign creditors would try to seize Mexican goods as soon as they left the country. Mexican imports would fall because foreign creditors would try to seize goods purchased by Mexico before they entered the country.

The result would be to delink Mexico from the world economy. Mexico's foreign trade would fall drastically. Meanwhile, international committees of lenders and creditors would thrash out a settlement of the bankruptcies with Mexican companies and the default with the Mexican government. This second option would produce catastrophe too.

The Mexican government of Presidents Salinas and Zedillo had bet Mexico's economic future on increased integration with the world economy and with the use of foreign capital to finance domestic industrialization.

The U.S. government and the IMF tried to give the Mexican government more options. The administration proposed loan guarantees to Mexico. But these guarantees fell through because neither then-Speaker of the House Newt Gingrich nor then-Majority Leader of the Senate Robert Dole was willing to spend political capital on the issues. The administration then made direct loans to Mexico out of the U.S. Treasury's Exchange Stabilization Fund. These built Mexico's foreign-exchange reserves back to a level where it could support the peso to some degree without pushing domestic interest rates to Great Depression-causing levels.

These loans allowed the Mexican government to refinance its debt, and helped restore confidence that the Mexican government would not be forced into hyperinflation or resort to default. As time passed, Wall Street investors calmed down too. They recognized that Mexico was still the same country with relatively bright economic growth prospects, with promises of financial support if necessary from the U.S. Treasury and the IMF, and with NAFTA-guaranteed tariff-free access to the largest market for exports in the world. Thus the Mexican economic meltdown of 1994-1995 was a short, sharp recession that reduced Mexican real GDP by about 6%, but that was then followed by resumed economic growth.

The central lessons were two. First, the views of foreign exchange speculators could change radically with extraordinary speed. Second, developing countries that had not

carefully prepared beforehand were extremely vulnerable to the shocks that such changes in international expectations could deliver.

The East Asian Crisis of 1997-1998

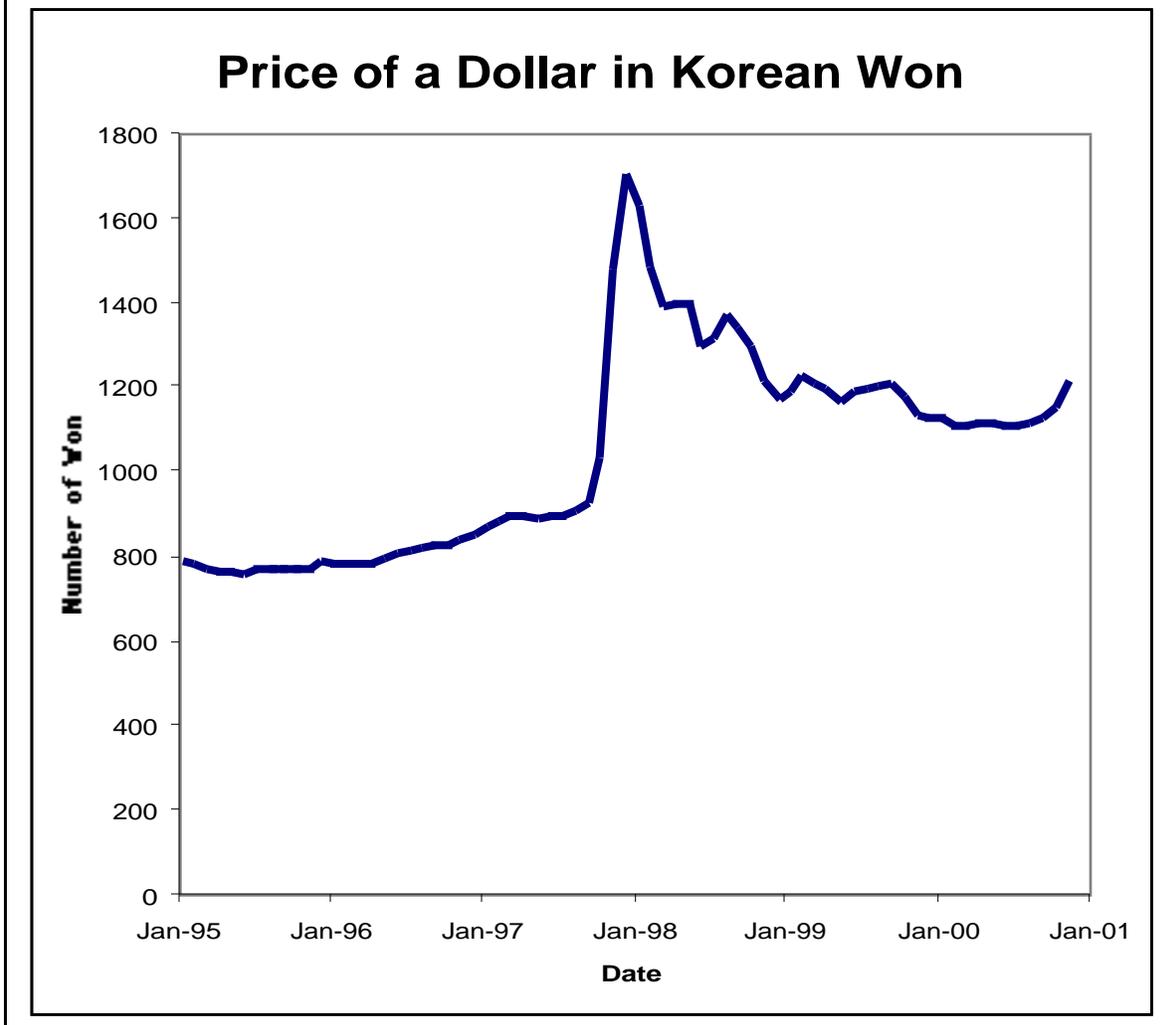
Two and a half years after the beginning of the Mexican crisis, the third international financial crisis of the 1990s hit the world economy. For twenty years before 1997 the economies of the East Asian Pacific rim had been the fastest-growing economies the world had ever seen. But in mid-1997 foreign investors began to worry about the long-run sustainability of the East Asian miracle, and began to change their opinions of the fundamental long-term value ϵ_0 of East Asia's exchange rates.

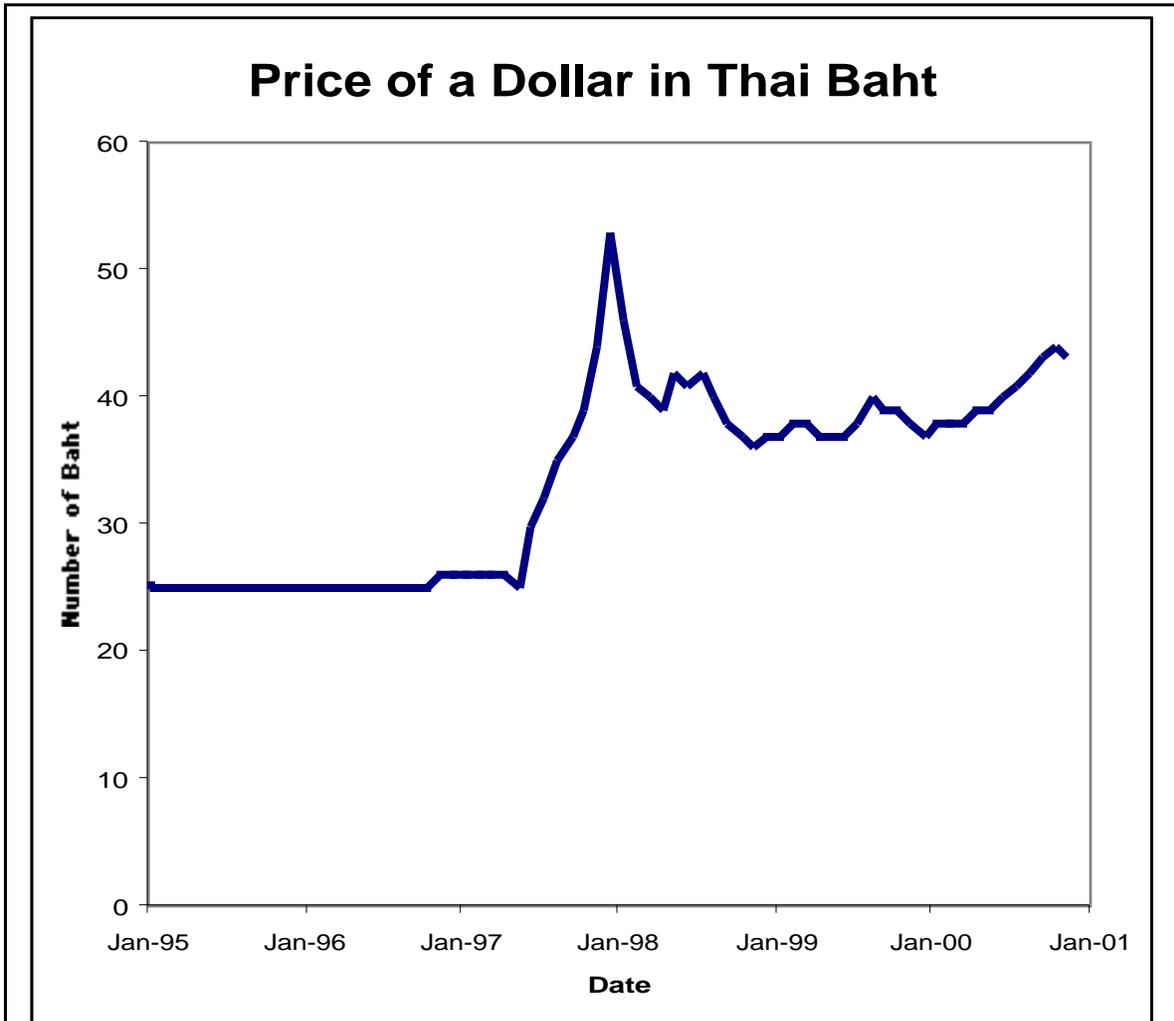
In Thailand, Malaysia, South Korea, and Indonesia the values of their currencies fell, and once again falling currency values caused a further swing in foreign exchange speculator expectations of the long-run exchange rate fundamental ϵ_0 . Indonesia was hit the worst, with real GDP falling by one-sixth in 1998; with the Indonesian currency, the rupiah, losing three-quarters of its nominal value against the dollar; and with short-term real interest rates rising to 30 percent and nominal interest rates rising to 60 percent.

Once foreign exchange speculators began lowering their estimates of the long-run value of investments in East Asia, other, deeper problems in the Asian economies became apparent and were magnified. As East Asian exchange rates fell, it became clear that many of East Asia's banks and companies had borrowed heavily abroad in amounts

denominated in dollars or yen. They had used those borrowings to make loans to the politically well-connected, or to make investments that turned out not to be profitable in the long run.

Figure 15.10: Exchange Rates During the Asian Currency Crisis





Legend Before 1997 everyone saw East Asia's economies as having the best growth prospects in the world. In 1997 foreign investor opinion suddenly became much more pessimistic. But now it is optimistic again: those who pulled their portfolios out of Korea, Thailand, and Malaysia during 1997 and 1998 have a hard time explaining what they were thinking.

Source: Federal Reserve Board.

The fact that East Asia's financial system was based on close links between governments, banks, and businesses--and that it was very difficult to get financial accounts out of any East Asian organization--increased fear that more East Asian banks and companies were bankrupt than had been thought. This caused a further increase in foreign-exchange speculators' views of the long-run exchange rate fundamental.

The vicious circle continued. Each loss of value on the part of the exchange rate increased the burden of foreign-denominated debt and increased the likelihood of general bankruptcy. Each increase in the perceived burden of foreign denominated debt caused a further loss of value on the part of the exchange rate. Poor banking-sector regulation had created a situation in which a small initial shock to exchange rate confidence could produce a major crisis. The shorter-term the debt held by a country and its citizens, the more easily could capital flee--and the larger was the impact of the crisis.

As the Asian crisis developed, the IMF stepped in with substantial loans to boost foreign exchange reserves, made in return for promises to improve banking-sector regulation and reform the financial system. The hope was that short-term loans would allow East Asian economies to avoid catastrophe until the pendulum of Wall Street expectations began to swing back. The hope proved sound. Since mid-1998, investors in New York and elsewhere have remembered that East Asia's economies had been the fastest-growing in the world in the previous generation, and were in all likelihood good places in which to invest.

Managing Crises

We can see the exchange-rate equation:

$$\varepsilon = \varepsilon_0 - \phi(r - r^f)$$

as offering a country a menu of choices for its value of the real exchange rate ε and its value of the domestic real interest rate r . The higher the domestic real interest rate r , the more appreciated is the exchange rate--the lower is the value of ε , the real domestic-currency price of foreign exchange. If for any of a large number of possible reasons international investors suddenly lose confidence in the future of a country's economy: their assessment of the exchange rate fundamental, ε_0 , suddenly and massively depreciates.

Thus the menu of choices that a country has for its combination interest rate r and exchange rate ε suddenly deteriorates. If the interest rate r is to remain unchanged, the exchange rate must depreciate--the value ε of the real home currency price of foreign exchange must rise by a lot. If the exchange rate ε is to remain unchanged, then the domestic real interest rate r must rise by a lot. Raising interest rates appears unattractive because it will create a recession. No domestic purpose would be served by such a recession: it is just the result of foreign investors' change of opinion.

Thus letting the exchange rate depreciate would seem to be the natural, the inevitable policy choice. A sudden panic by foreign-exchange speculators is a sudden fall in demand for your country's products: international investors are no longer willing to hold

your country's bonds at prices and interest rates that they were happy at last month. What does a business firm do when all of a sudden demand for the products it makes falls? The firm cuts its price. Perhaps a country faced with a sudden fall in demand for the products it makes should do the same: it should cut its price. And the easiest way for a country to cut its price is to let its exchange rate depreciate. And such a depreciation of the exchange rate would in fact tend to stimulate exports, and production.

Yet throughout the 1990s, whenever international investors have suddenly turned pessimistic about investing in a country, observers have reacted with shock and horror when the exchange rate depreciates. Policy makers have sought to minimize the depreciation of the exchange rate. Observers have wrung their hands over such an economic catastrophe. This was the story in the collapse of the European Monetary System in 1992, the collapse of the Mexican peso in 1994-5, and the East Asian financial crisis of 1997-8.

In all these cases the trigger of the crisis was a sudden change of heart on the part of investors in the world economy's industrial core--in New York, Frankfurt, London, and Tokyo. In Mexico in 1993 international investors poured some \$25 billion into the economy; in Mexico in 1995--even though the peso had been devalued by two-thirds, every piece of property and every business in Mexico was thus three times cheaper, and the country was the same country--international investors took perhaps \$10 billion out of the country. In East Asia in 1996 international investors poured perhaps \$70 billion into the region's economies. In 1998 the net private capital flow was about -\$40 billion.

Economists will long dispute whether it was the relative optimism of investors before the crisis or the relative pessimism of international investors after the crisis that was the irrational speculative wave. The right answer is probably "yes": financial markets were excessively enthusiastic before the crisis, and were excessively pessimistic afterwards.

But why did such changes in international investor sentiment cause a *crisis* rather than an embarrassment? Why not let the exchange rate depreciate, and keep domestic monetary and fiscal policy aimed at maintaining internal balance?

The answer appears to be that large scale depreciation is extremely dangerous your banks, businesses, and governments have borrowed massively abroad, and have done so not by promising to pay back their creditors in your home currency but by promising to pay back their creditors in foreign currencies: dollars, or yen, or euros, or pounds. Then a depreciation of the exchange rate bankrupts the economy: the foreign-currency value of all the foreign-currency and businesses' assets are halved by the depreciation, while the dollar value of their liabilities is unchanged. Such an interlinked chain of general bankruptcies destroys the economy's ability to transform household savings into investment expenditures. It shifts the IS curve far and fast back to the left just as the chain of bankruptcies caused by deflation shifted the IS curve far fast back to the left during the 1930s: such chains of bankruptcies are the stuff of which Great Depressions are made.

Moreover, such a situation appears to arise most easily in the context of a fixed exchange rate. If the exchange rate is fixed for the moment, no one seems to worry that much about what currency loans are denominated in: after all, the exchange rate doesn't change, so six of one is half a dozen of the other. This may be the most damaging Achilles heel of

fixed exchange rate systems in our day: the knee-jerk belief that the system will continue indefinitely allows people to ignore important sources of risk that in currency crises have disastrous consequences.

Thus there are some things that should surely have been done to reduce vulnerability to a crisis. Strongly discourage--tax--borrowers from borrowing in foreign currencies. If you are going to accept free international capital flows (in an attempt to use foreign financing for your industrial revolution) then be sure that your exchange rate can float without causing trouble for the domestic economy. If your exchange rate must stay fixed (for inflation-fighting or other reasons), then recognize that an important part of keeping it fixed are controls over capital movements.

But once the crisis has hit good options are rare. As we saw above, not depreciating the exchange rate is no solution. To avoid depreciation, interest rates must rise. And high interest rates choke off investment and cause recession as well.

So is there a possible path to safety? Can you raise interest rates enough to keep the depreciation from triggering bankruptcy and hyperinflation, while still avoiding a high interest rate-generated recession? Can you depreciate the exchange rate far enough to restore demand for home-produced goods without depreciating it so far as to bankrupt local businesses and banks?

Maybe.

The dilemmas are real. It is economic policy malpractice to claim that it is obvious that in a financial crisis interest rates should not be raised and the exchange rate allowed to find its own panicked-market level even if banks and firms have large foreign-currency debts. It is economic policy malpractice to claim that in a financial crisis interest rates should be raised high enough to keep the exchange rate from falling at all. It's not that simple.

So if sudden changes of opinion by international investors cause so much trouble, shouldn't we keep such sudden changes of opinion from having destructive effects? Shouldn't we use capital controls and other devices to keep international flows of investment small, manageable, and firmly corralled? Shouldn't we--as ruler Mahathir Muhammed did in Malaysia--impose capital controls?

Once again, maybe.

The first generation of post-World War II economists--John Maynard Keynes, Harry Dexter White, and their students--would have said "yes, of course." Sudden changes of opinion on the part of international investors can cause enormous damage to countries that allow free movement of capital. Such sudden changes of opinion are a frequent fact of life. Therefore make it illegal, or at least highly restricted, to borrow from and lend to, invest in or withdraw investments from foreign countries.

The second and third generations of post-World War II economists had a different view. They regretted that capital controls kept people with money to lend in the industrial core away from people who could make good use of the money to expand economic growth. The balance of opinion shifted to the view that too much was sacrificed in economic

growth at the periphery for whatever reduction in instability capital controls produced. Moreover, a regime of capital controls encouraged production. Often it was the cousin of the wife of the vice-minister of finance who received permission to borrow abroad. Thus capital controls paved the way to kleptocracy: rule by the thieves.

So today we have the benefits of free international flows of capital. The ability to borrow from abroad does promise to give successful emerging market economies the power to cut a decade or two off of the time it would take for them to industrialize. It promises to give investors in the world economy's industrial core the opportunity to earn higher rates of return. But this free flow of financial capital is also giving us one major international financial crisis every three years.

What is to be done will be one of the major economic policy debates of the next decade. Should we try to move toward a system in which capital is even more mobile than it is today but in which international financial crises may become an even more common occurrence? Or should we try to move toward a system in which capital is less mobile--more controlled--and in which some of the benefits of international investment are traded away in return for less vulnerability to financial crises? We don't have to have a global economy as vulnerable to currency crises as the economy of the 1990s has been.

15.5 Chapter Summary

Main Points

1. For most of the past century, the world has operated with fixed exchange rates--not, as today, with floating exchange rates.
2. Under fixed exchange rates monetary policy has only very limited freedom to respond to domestic conditions. Instead, the main goal of monetary policy is that of adjusting interest rates to maintain the fixed exchange rate.
3. Why would a country adopt fixed exchange rates? To make it easier to trade by making foreign prices more predictable and less volatile. Fixed exchange rate systems increase the volume of trade, and encourage the international division of labor.
4. Nevertheless, in the past generation most of the time countries have concluded that freedom to set their own monetary policies to satisfy domestic concerns is more important than the international integration benefits of fixed exchange rates.
5. An exception is western Europe, which is in the process of permanently and irrevocably fixing its exchange rates via a monetary union.
6. Wide swings in foreign exchange speculators' views of countries' future prospects have caused three major currency crises in the 1990s.
7. Such currency crises, although triggered by speculative changes in opinion, were greatly worsened by poor bank regulation and other policies that threatened to send economies subject to capital flight into a vicious spiral ending in depression and hyperinflation.

Important Concepts

Floating exchange rates

Fixed exchange rates

Currency arbitrage

Gold standard

Foreign exchange reserves

Devaluation

Depreciation

Revaluation

Appreciation

Internal balance

External balance

Currency crisis

Analytical Exercises

1. Why does a country's fixing the value of its currency in terms of gold also fix its nominal exchange rate?
2. Why do many economists think that a gold standard tends to put contractionary and deflationary pressure on economies that adhere to it?

3. What are the principal benefits of fixed exchange rates?
4. What are the principal costs of fixed exchange rates?
5. Why did the 1990s see so many international financial crises?

15.5.4 Policy-Relevant Exercises [to be updated every year...]

1. Suppose that foreign exchange speculators' beliefs about the long-run equilibrium value of the real exchange rate suddenly rise by 30%, from 100 to 130. How does the interest rate increase required to keep the exchange rate constant in the face of this shift depend on the interest sensitivity of the exchange rate parameter ϵ_r ? Under what circumstances would you think that the parameter ϵ_r would be large? Under what circumstances would you think that the parameter ϵ_r would be small?
2. Look in the back of the book for the annual values of the U.S. real exchange rate. Suppose that the parameter ϵ_r is 10—a one percentage-point swing in domestic real interest rates is associated with a 10 percent change in the exchange rate. By how much (and in which direction) would interest rates have to have changed in 1985 to push the real value of the U.S. exchange rate to the value it reached in 1990? By how much (and in which direction) would interest rates have to be changed today to push the real value of the exchange rate back to the value it reached in 1990? Would either of these shifts improve the condition of the domestic economy?

3. Suppose that a developing country under low capital mobility finds that foreign exchange speculators' views of the long-run value of its currency have suddenly shifted upwards to 130, but that it wishes to maintain its pegged exchange rate ε^* of 100 and also to keep domestic interest rates from rising above foreign interest rates.

$$r = r^f + \frac{\varepsilon_0 - \varepsilon^*}{\varepsilon_r} + \frac{\varepsilon_R}{\varepsilon_r} \times \Delta R$$

If $\varepsilon_R = 10$, $\varepsilon_r = 10$, and the relevant period of time is one month, how fast will the country lose reserves if it tries to maintain both its pegged exchange rate and the (relatively) low real interest rate? How high would it have to raise the domestic real interest rate above foreign rates to stop its loss of reserves?

4. Suppose you are asked to analyze whether Europe's monetary union was a mistake. What kinds of evidence would you look for to try to make up your mind?

5. Suppose you are asked whether some small Latin American country should *dollarize*—that is, fix its exchange rate with the U.S. once and for all by adopting the U.S. dollar as its own internal currency. What kinds of evidence would you look for to try to determine whether such *dollarization* is a good idea or not?

