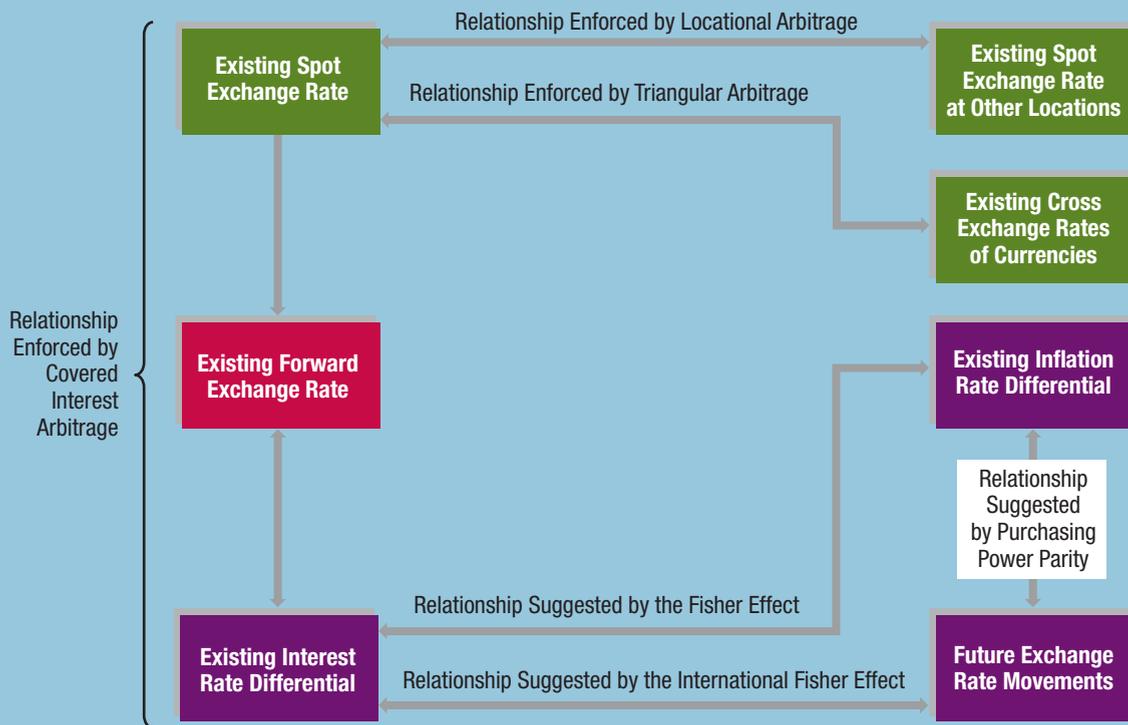




Part 2: Exchange Rate Behavior

Part 2 (Chapters 6 through 8) focuses on critical relationships pertaining to exchange rates. Chapter 6 explains how governments can influence exchange rate movements and how such movements can affect economic conditions. Chapter 7 explores the relationships among foreign currencies. It also explains how the forward exchange rate is influenced by the differential between interest rates of any two countries. Chapter 8 discusses prominent theories regarding the impact of inflation on exchange rates and the impact of interest rate movements on exchange rates.





6: Government Influence on Exchange Rates

As explained in Chapter 4, government policies affect exchange rates. Some government policies are specifically intended to affect exchange rates. Other policies are intended to affect economic conditions but indirectly influence exchange rates. Because the performance of an MNC is affected by exchange rates, financial managers need to understand how the government influences exchange rates.

The specific objectives of this chapter are to:

- describe the exchange rate systems used by various governments,
- explain how governments can use direct intervention to influence exchange rates,
- explain how governments can use indirect intervention to influence exchange rates, and
- explain how government intervention in the foreign exchange market can affect economic conditions.

Exchange Rate Systems

Exchange rate systems can be classified according to the degree by which exchange rates are controlled by the government. Exchange rate systems normally fall into one of the following categories:

- Fixed
- Freely floating
- Managed float
- Pegged

Each of these exchange rate systems is discussed in turn.

Fixed Exchange Rate System

In a **fixed exchange rate system**, exchange rates are either held constant or allowed to fluctuate only within very narrow boundaries. A fixed exchange rate would be beneficial to a country for the following reasons. First, exporters and importers could engage in international trade without concern about exchange rate movements of the currency to which their local currency is linked. Any firms that accept the foreign currency as payment would be insulated from the risk that the currency could depreciate over time. In addition, any firms that need to obtain that foreign currency in the future would be insulated from the risk of the currency appreciating over time. Another benefit is that firms could engage in direct foreign investment, without concern about exchange rate movements of that currency. They would be able to convert their foreign currency earnings into their home currency without concern that the foreign currency denominating their earnings might weaken over time. Thus, the management of an MNC would be much easier.

In addition, investors would be able to invest funds in foreign countries, without concern that the foreign currency denominating their investments might weaken over

time. A country with a stable exchange rate can attract more funds as investments because the investors would not have to worry about the currency weakening over time. Funds are needed in any country to support economic growth. Countries that attract a large amount of capital flows normally have lower interest rates. This can stimulate their economies.

If an exchange rate begins to move too much, governments intervene to maintain it within the boundaries. In some situations, a government will **devalue** or reduce the value of its currency against other currencies. In other situations, it will **revalue** or increase the value of its currency against other currencies. A central bank's actions to devalue a currency in a fixed exchange rate system is referred to as **devaluation**. The term *devaluation* is normally used in a different context than depreciation. Devaluation refers to a downward adjustment of the exchange rate by the central bank. Conversely, **revaluation** refers to an upward adjustment of the exchange rate by the central bank. The methods used by governments to alter the value of a currency are discussed later in this chapter.

Bretton Woods Agreement. From 1944 to 1971, exchange rates were typically fixed according to a system planned at the Bretton Woods conference (held in Bretton Woods, New Hampshire, in 1944) by representatives from various countries. Because this arrangement, known as the **Bretton Woods Agreement**, lasted from 1944 to 1971, that period is sometimes referred to as the Bretton Woods era. Each currency was valued in terms of gold; for example, the U.S. dollar was valued as 1/35 ounce of gold. Since all currencies were valued in terms of gold, their values with respect to each other were fixed. Governments intervened in the foreign exchange markets to ensure that exchange rates drifted no more than 1 percent above or below the initially set rates.

Smithsonian Agreement. During the Bretton Woods era, the United States often experienced balance-of-trade deficits, an indication that the dollar's value may have been too strong, since the use of dollars for foreign purchases exceeded the demand by foreign countries for dollar-denominated goods. By 1971, it appeared that some currency values would need to be adjusted to restore a more balanced flow of payments between countries. In December 1971, a conference of representatives from various countries concluded with the **Smithsonian Agreement**, which called for a devaluation of the U.S. dollar by about 8 percent against other currencies. In addition, boundaries for the currency values were expanded to within 2.25 percent above or below the rates initially set by the agreement. Nevertheless, international payments imbalances continued, and as of February 1973, the dollar was again devalued. By March 1973, most governments of the major countries were no longer attempting to maintain their home currency values within the boundaries established by the Smithsonian Agreement.

Advantages of Fixed Exchange Rates to MNCs. In a fixed exchange rate environment, MNCs may be able to engage in international trade, direct foreign investment, and international finance without worrying about the future exchange rate. Consequently, the managerial duties of an MNC are less difficult.

Disadvantages of Fixed Exchange Rates to MNCs. One disadvantage of a fixed exchange rate system is that there is still risk that the government will alter the value of a specific currency. Although an MNC is not exposed to continual movements in an exchange rate, it does face the possibility that its government will devalue or revalue its currency.

A second disadvantage is that from a macro viewpoint, a fixed exchange rate system may make each country and its MNCs more vulnerable to economic conditions in other countries.

EXAMPLE

Assume that there are only two countries in the world: the United States and the United Kingdom. Also assume a fixed exchange rate system and that these two countries trade frequently with each other. If the United States experiences a much higher inflation rate than the United Kingdom, U.S. consumers should buy more goods from the United Kingdom and British consumers should reduce their imports of U.S. goods (due to the high U.S. prices). This reaction would force U.S. production down and unemployment up. It could also cause higher inflation in the United Kingdom due to the excessive demand for British goods relative to the supply of British goods produced. Thus, the high inflation in the United States could cause high inflation in the United Kingdom. In the mid- and late 1960s, the United States experienced relatively high inflation and was accused of “exporting” that inflation to some European countries.

Alternatively, a high unemployment rate in the United States will cause a reduction in U.S. income and a decline in U.S. purchases of British goods. Consequently, productivity in the United Kingdom may decrease and unemployment may rise. In this case, the United States may “export” unemployment to the United Kingdom. ■

Freely Floating Exchange Rate System

In a **freely floating exchange rate system**, exchange rate values are determined by market forces without intervention by governments. Whereas a fixed exchange rate system allows no flexibility for exchange rate movements, a freely floating exchange rate system allows complete flexibility. A freely floating exchange rate adjusts on a continual basis in response to demand and supply conditions for that currency.

Advantages of a Freely Floating Exchange Rate System.

One advantage of a freely floating exchange rate system is that a country is more insulated from the inflation of other countries.

EXAMPLE

Continue with the previous example in which there are only two countries, but now assume a freely floating exchange rate system. If the United States experiences a high rate of inflation, the increased U.S. demand for British goods will place upward pressure on the value of the British pound. As a second consequence of the high U.S. inflation, the reduced British demand for U.S. goods will result in a reduced supply of pounds for sale (exchanged for dollars), which will also place upward pressure on the British pound's value. The pound will appreciate due to these market forces (it was not allowed to appreciate under the fixed rate system). This appreciation will make British goods more expensive for U.S. consumers, even though British producers did not raise their prices. The higher prices will simply be due to the pound's appreciation; that is, a greater number of U.S. dollars are required to buy the same number of pounds as before.

In the United Kingdom, the actual price of the goods as measured in British pounds may be unchanged. Even though U.S. prices have increased, British consumers will continue to purchase U.S. goods because they can exchange their pounds for more U.S. dollars (due to the British pound's appreciation against the U.S. dollar). ■

Another advantage of freely floating exchange rates is that a country is more insulated from unemployment problems in other countries.

EXAMPLE

Under a floating rate system, the decline in U.S. purchases of British goods will reflect a reduced U.S. demand for British pounds. Such a shift in demand can cause the pound to depreciate against the dollar (under the fixed rate system, the pound would not be

allowed to depreciate). The depreciation of the pound will make British goods look cheap to U.S. consumers, offsetting the possible reduction in demand for these goods resulting from a lower level of U.S. income. As was true with inflation, a sudden change in unemployment will have less influence on a foreign country under a floating rate system than under a fixed rate system. ■

As these examples illustrate, in a freely floating exchange rate system, problems experienced in one country will not necessarily be contagious. The exchange rate adjustments serve as a form of protection against “exporting” economic problems to other countries.

An additional advantage of a freely floating exchange rate system is that a central bank is not required to constantly maintain exchange rates within specified boundaries. Therefore, it is not forced to implement an intervention policy that may have an unfavorable effect on the economy just to control exchange rates. Furthermore, governments can implement policies without concern as to whether the policies will maintain the exchange rates within specified boundaries. Finally, if exchange rates were not allowed to float, investors would invest funds in whatever country had the highest interest rate. This would likely cause governments in countries with low interest rates to restrict investors’ funds from leaving the country. Thus, there would be more restrictions on capital flows, and financial market efficiency would be reduced.

Disadvantages of a Freely Floating Exchange Rate System. In the previous example, the United Kingdom is somewhat insulated from the problems experienced in the United States due to the freely floating exchange rate system. Although this is an advantage for the country that is protected (the United Kingdom), it can be a disadvantage for the country that initially experienced the economic problems.

EXAMPLE

If the United States experiences high inflation, the dollar may weaken, thereby insulating the United Kingdom from the inflation, as discussed earlier. From the U.S. perspective, however, a weaker U.S. dollar causes import prices to be higher. This can increase the price of U.S. materials and supplies, which will in turn increase U.S. prices of finished goods. In addition, higher foreign prices (from the U.S. perspective) can force U.S. consumers to purchase domestic products. As U.S. producers recognize that their foreign competition has been reduced due to the weak dollar, they can more easily raise their prices without losing their customers to foreign competition. ■

In a similar manner, a freely floating exchange rate system can adversely affect a country that has high unemployment.

EXAMPLE

If the U.S. unemployment rate is rising, U.S. demand for imports will decrease, putting upward pressure on the value of the dollar. A stronger dollar will then cause U.S. consumers to purchase foreign products rather than U.S. products because the foreign products can be purchased cheaply. Yet, such a reaction can actually be detrimental to the United States during periods of high unemployment. ■

As these examples illustrate, a country’s economic problems can sometimes be compounded by freely floating exchange rates. Under such a system, MNCs will need to devote substantial resources to measuring and managing exposure to exchange rate fluctuations. Nonetheless, since exchange rate movements can affect economic conditions within a country, most governments want the flexibility to directly or indirectly control their exchange rates when necessary.

Managed Float Exchange Rate System

The exchange rate system that exists today for some currencies lies somewhere between fixed and freely floating. It resembles the freely floating system in that exchange rates are allowed to fluctuate on a daily basis and there are no official boundaries. It is similar to the fixed rate system in that governments can and sometimes do intervene to prevent their currencies from moving too far in a certain direction. This type of system is known as a **managed float** or “dirty” float (as opposed to a “clean” float where rates float freely without government intervention). The various forms of intervention used by governments to manage exchange rate movements are discussed later in this chapter.

At times, the governments of various countries including Brazil, Russia, South Korea, and Venezuela have imposed bands around their currency to limit its degree of movement. Later, however, they removed the bands when they found that they could not maintain the currency’s value within the bands.

Criticism of a Managed Float System. Critics suggest that a managed float system allows a government to manipulate exchange rates in a manner that can benefit its own country at the expense of others. For example, a government may attempt to weaken its currency to stimulate a stagnant economy. The increased aggregate demand for products that results from such a policy may reflect a decreased aggregate demand for products in other countries, as the weakened currency attracts foreign demand. Although this criticism is valid, it could apply as well to the fixed exchange rate system, where governments have the power to devalue their currencies.

Pegged Exchange Rate System

Some countries use a **pegged exchange rate** arrangement, in which their home currency’s value is pegged to a foreign currency or to some unit of account. While the home currency’s value is fixed in terms of the foreign currency (or unit of account) to which it is pegged, it moves in line with that currency against other currencies.

Some governments peg their currency’s value to that of a stable currency, such as the dollar, because that forces the value of their currency to be stable. First, this forces their currency’s exchange rate with the dollar to be fixed. Second, their currency will move against nondollar currencies by the same degree as the dollar. Since the dollar is more stable than most currencies, it will make their currency more stable than most currencies.

Limitations of a Pegged Exchange Rate. While countries with a pegged exchange rate may attract foreign investment because the exchange rate is expected to remain stable, weak economic or political conditions can cause firms and investors to question whether the peg will hold. For example, if the country suddenly experiences a recession, it may experience capital outflows as some firms and investors withdraw funds because they believe there are better investment opportunities in other countries. These transactions result in an exchange of the local currency for dollars and other currencies, which places downward pressure on the local currency’s value. The central bank would need to offset this by intervening in the foreign exchange market (as explained shortly) but might not be able to maintain the peg. If the peg is broken and the exchange rate is dictated by market forces, the local currency’s value could decline immediately by 20 percent or more.

If foreign investors fear that a peg may be broken, they quickly sell their investments in that country and convert the proceeds into their home currency. These transactions place more downward pressure on the local currency of that country. Even the local residents may consider selling their local investments and converting

their funds to dollars or some other currency if they fear that the peg may be broken. They can exchange their currency for dollars to invest in the United States before the peg breaks. They may leave their investment in the United States until after the peg breaks, and their local currency's value is reduced. Then they can sell their investments in the United States and convert the dollar proceeds back to their currency at a more favorable exchange rate. Their initial actions to convert their money into dollars placed more downward pressure on the local currency.

For the reasons explained here, countries have difficulty maintaining a pegged exchange rate when they are experiencing major political or economic problems. While a country with a stable exchange rate can attract foreign investment, the investors will move their funds to another country if there are concerns that the peg will break. Thus, a pegged exchange rate system could ultimately create more instability in a country's economy. Several examples of pegged exchange rate systems follow.

Creation of Europe's Snake Arrangement. One of the best-known pegged exchange rate arrangements was established by several European countries in April 1972. Their goal was to maintain their currencies within established limits of each other. This arrangement became known as the **snake**. The snake was difficult to maintain, however, and market pressure caused some currencies to move outside their established limits. Consequently, some members withdrew from the snake arrangement, and some currencies were realigned.

Creation of the European Monetary System (EMS). Due to continued problems with the snake arrangement, the European Monetary System (EMS) was pushed into operation in March 1979. The EMS concept was similar to the snake, but the specific characteristics differed. Under the EMS, exchange rates of member countries were held together within specified limits and were also tied to the European Currency Unit (ECU), which was a unit of account. Its value was a weighted average of exchange rates of the member countries; each weight was determined by a member's relative gross national product and activity in intra-European trade. The currencies of these member countries were allowed to fluctuate by no more than 2.25 percent (6 percent for some currencies) from the initially established values.

The method of linking European currency values with the ECU was known as the **exchange rate mechanism (ERM)**. The participating governments intervened in the foreign exchange markets to maintain the exchange rates within boundaries established by the ERM.

Demise of the European Monetary System. In the fall of 1992, however, the exchange rate mechanism experienced severe problems, as economic conditions and goals began to vary among European countries. The German government was mostly concerned about inflation because its economy was relatively strong. It increased local interest rates to prevent excessive spending and inflation. Other European governments, however, were more concerned about stimulating their economies to lower their high unemployment levels, so they wanted to reduce interest rates. In October 1992, the British and Italian governments suspended their participation in the ERM because they could not achieve their own goals for a stronger economy while their interest rates were so highly influenced by German interest rates.

In 1993, the ERM boundaries were widened substantially, allowing more fluctuation in exchange rates between European currencies. The demise of the exchange rate mechanism caused European countries to realize that a pegged system would work in Europe only if it was set permanently. This provided momentum for the single European currency (the euro), which began in 1999 and is discussed later in this chapter.

HTTP://

http://europa.eu.int/index_en.htm

Access to the server of the European Union's Parliament, Council, Commission, Court of Justice, and other bodies; includes basic information on all related political and economic issues.

How Mexico's Pegged System Led to the Mexican Peso Crisis.

In 1994, Mexico's central bank used a special pegged exchange rate system that linked the peso to the U.S. dollar but allowed the peso's value to fluctuate against the dollar within a band. The Mexican central bank enforced the link through frequent intervention. In fact, it partially supported its intervention by issuing short-term debt securities denominated in dollars and using the dollars to purchase pesos in the foreign exchange market. Limiting the depreciation of the peso was intended to reduce inflationary pressure that can be caused by a very weak home currency. Mexico experienced a large balance-of-trade deficit in 1994, however, perhaps because the peso was stronger than it should have been and encouraged Mexican firms and consumers to buy an excessive amount of imports.

Many speculators based in Mexico recognized that the peso was being maintained at an artificially high level, and they speculated on its potential decline by investing their funds in the United States. They planned to liquidate their U.S. investments if and when the peso's value weakened so that they could convert the dollars from their U.S. investments into pesos at a favorable exchange rate. Ironically, the flow of funds from Mexico to the United States that was motivated by the potential devaluation in the peso put even more downward pressure on the peso because the speculators were converting pesos into dollars to invest in the United States.

By December 1994, there was substantial downward pressure on the peso. On December 20, 1994, Mexico's central bank devalued the peso by about 13 percent. Mexico's stock prices plummeted, as many foreign investors sold their shares and withdrew their funds from Mexico in anticipation of further devaluation of the peso. On December 22, the central bank allowed the peso to float freely, and it declined by 15 percent. This was the beginning of the so-called Mexican peso crisis. In an attempt to discourage foreign investors from withdrawing their investments in Mexico's debt securities, the central bank increased interest rates, but the higher rates increased the cost of borrowing for Mexican firms and consumers, thereby slowing economic growth.

As Mexico's short-term debt obligations denominated in dollars matured, the Mexican central bank used its weak pesos to obtain dollars and repay the debt. Since the peso had weakened, the effective cost of financing with dollars was very expensive for the central bank. Mexico's financial problems caused investors to lose confidence in peso-denominated securities, so they liquidated their peso-denominated securities and transferred their funds to other countries. These actions put additional downward pressure on the peso. In the 4 months after December 20, 1994, the value of the peso declined by more than 50 percent. Over time, Mexico's economy improved, and the paranoia that had led to the withdrawal of funds by foreign investors subsided. The Mexican crisis might not have occurred if the peso had been allowed to float throughout 1994 because the peso would have gravitated toward its natural level. The crisis illustrates that central bank intervention will not necessarily be able to overwhelm market forces; thus, the crisis may serve as an argument for letting a currency float freely.

The Break in China's Pegged Exchange Rate. From 1996 until 2005, China's yuan was pegged to be worth about \$.12 (8.28 yuan per U.S. dollar). During this period, the yuan's value would change against nondollar currencies on a daily basis to the same degree as the dollar. Because of the peg, the yuan's value remained at that level even though the United States was experiencing a trade deficit of more than \$100 billion per year with China. U.S. politicians argued that the yuan was being held at a superficially low level by the Chinese government, and if it was allowed to float, its value would rise by 10 to 20 percent. The politicians were being pressured by U.S. firms that lost business to Chinese exporters. In 2005, some

politicians argued that an explicit tariff (tax) of about 30 percent should be imposed on all products imported from China. In response to the growing criticism, China revalued its yuan by 2.1 percent in July 2005. It also agreed to allow its yuan to float subject to a .3 percent limit each day from the previous day's closing value against a set of major currencies. This adjustment by China seemed to reduce the criticism about the yuan being held to a superficially weak level, but it did not have a major impact on the trade imbalance between China and the United States. In May 2007, China widened its band so that the yuan's value could float subject to a .5 percent limit each day.

Even though the yuan is now allowed to float (within limits), the huge balance-of-trade deficit will not automatically force appreciation of the yuan. Large net capital flows from China to the United States (purchases of U.S. securities) could offset the trade flows.

Currency Boards Used to Peg Currency Values. A currency board is a system for pegging the value of the local currency to some other specified currency. The board must maintain currency reserves for all the currency that it has printed. The large amount of reserves may increase the ability of a country's central bank to maintain its pegged currency.

EXAMPLE

Hong Kong has tied the value of its currency (the Hong Kong dollar) to the U.S. dollar ($\text{HK}\$7.80 = \1.00) since 1983. Every Hong Kong dollar in circulation is backed by a U.S. dollar in reserve. In 2000, El Salvador set its currency (the colon) to be valued at 8.75 per U.S. dollar. ■

A currency board can stabilize a currency's value. This is important because investors generally avoid investing in a country if they expect the local currency will weaken substantially. If a currency board is expected to remain in place for a long period, it may reduce fears that the local currency will weaken and thus may encourage investors to maintain their investments within the country. However, a currency board is worth considering only if the government can convince investors that the exchange rate will be maintained.

EXAMPLE

When Indonesia was experiencing financial problems during the 1997–1998 Asian crisis, businesses and investors sold the local currency (rupiah) because of expectations that it would weaken further. Such actions perpetuated the weakness, as the exchange of rupiah for other currencies placed more downward pressure on the value of the rupiah. Indonesia considered implementing a currency board to stabilize its currency and discourage the flow of funds out of the country. Businesses and investors had no confidence in the Indonesian government's ability to maintain a fixed exchange rate, however, and feared that economic pressures would ultimately lead to a decline in the rupiah's value. Thus, Indonesia's government did not implement a currency board. ■

A currency board is effective only if investors believe that it will last. If investors expect that market forces will prevent a government from maintaining the local currency's exchange rate, they will attempt to move their funds to other countries where they expect the local currency to be stronger. When foreign investors withdraw their funds from a country and convert the funds into a different currency, they place downward pressure on the local currency's exchange rate. If the supply of the currency for sale continues to exceed the demand, the government will be forced to devalue its currency.

EXAMPLE

In 1991, Argentina established a currency board that pegged the Argentine peso to the U.S. dollar. In 2002, Argentina was suffering from major economic problems, and its government was unable to repay its debt. Foreign investors and local investors began to transfer their funds to other countries because they feared that their investments would earn poor

returns. These actions required the exchange of pesos into other currencies such as the dollar and caused an excessive supply of pesos for sale in the foreign exchange market. The government could not maintain the exchange rate of 1 peso = 1 dollar because the supply of pesos for sale exceeded the demand at that exchange rate. In March 2002, the government devalued the peso to 1 peso = \$.71 (1.4 pesos per dollar). Even at this new exchange rate, the supply of pesos for sale exceeded the demand, so the Argentine government decided to let the peso's value float in response to market conditions rather than set the peso's value. ■

Exposure of a Pegged Currency to Interest Rate Movements. A country that uses a currency board does not have complete control over its local interest rates because its rates must be aligned with the interest rates of the currency to which it is tied.

EXAMPLE

Recall that the Hong Kong dollar is pegged to the U.S. dollar. If Hong Kong lowers its interest rates to stimulate its economy, its interest rate would then be lower than U.S. interest rates. Investors based in Hong Kong would be enticed to exchange Hong Kong dollars for U.S. dollars and invest in the United States where interest rates are higher. Since the Hong Kong dollar is tied to the U.S. dollar, the investors could exchange the proceeds of their investment back to Hong Kong dollars at the end of the investment period without concern about exchange rate risk because the exchange rate is fixed.

If the United States raises its interest rates, Hong Kong would be forced to raise its interest rates (on securities with similar risk as those in the United States). Otherwise, investors in Hong Kong could invest their money in the United States and earn a higher rate. ■

Even though a country may not have control over its interest rate when it establishes a currency board, its interest rate may be more stable than if it did not have a currency board. Its interest rate will move in tandem with the interest rate of the currency to which it is tied. The interest rate may include a risk premium that could reflect either default risk or the risk that the currency board will be discontinued.

EXAMPLE

While the Hong Kong interest rate moves in tandem with the U.S. interest rate, specific investment instruments may have a slightly higher interest rate in Hong Kong than in the United States. For example, a Treasury bill may offer a slightly higher rate in Hong Kong than in the United States. While this allows for possible arbitrage by U.S. investors who wish to invest in Hong Kong, they will face two forms of risk. First, some investors may believe that there is a slight risk that the Hong Kong government could default on its debt. Second, if there is sudden downward pressure on the Hong Kong dollar, the currency board could be discontinued. In this case, the Hong Kong dollar's value would be reduced, and U.S. investors would earn a lower return than they could have earned in the United States. ■

Exposure of a Pegged Currency to Exchange Rate Movements. A currency that is pegged to another currency cannot be pegged against all other currencies. If it is pegged to the U.S. dollar, it is forced to move in tandem with the dollar against other currencies. Since a country cannot peg its currency to all currencies, it is exposed to movements of currencies against the currency to which it is pegged.

EXAMPLE

As mentioned earlier, from 1991 to 2002, the Argentine peso's value was set to equal one U.S. dollar. Thus, if the dollar strengthened against the Brazilian real by 10 percent in a particular month, the Argentine peso strengthened against the Brazilian real by the exact same amount. During the 1991–2002 period, the dollar commonly strengthened against the Brazilian real and some other currencies in South America; therefore, the Argentine peso also strengthened against those currencies. Many exporting firms in Argentina were adversely

affected by the strong Argentine peso, however, because it made their products too expensive for importers. Now that Argentina's currency board has been eliminated, the Argentine peso is no longer forced to move in tandem with the dollar against other currencies. ■

Dollarization

Dollarization is the replacement of a foreign currency with U.S. dollars. This process is a step beyond a currency board because it forces the local currency to be replaced by the U.S. dollar. Although dollarization and a currency board both attempt to peg the local currency's value, the currency board does not replace the local currency with dollars. The decision to use U.S. dollars as the local currency cannot be easily reversed because the country no longer has a local currency.

EXAMPLE

From 1990 to 2000, Ecuador's currency (the sucre) depreciated by about 97 percent against the U.S. dollar. The weakness of the currency caused unstable trade conditions, high inflation, and volatile interest rates. In 2000, in an effort to stabilize trade and economic conditions, Ecuador replaced the sucre with the U.S. dollar as its currency. By November 2000, inflation had declined and economic growth had increased. Thus, it appeared that dollarization had favorable effects. ■

Classification of Exchange Rate Arrangements

Exhibit 6.1 identifies the currencies and exchange rate arrangements used by various countries. Many countries allow the value of their currency to float against others but intervene periodically to influence its value. Several small countries peg their currencies to the U.S. dollar.

The Mexican peso has a controlled exchange rate that applies to international trade and a floating market rate that applies to tourism. The floating market rate is influenced by central bank intervention. Chile intervenes to maintain its currency within 10 percent of a specified exchange rate with respect to major currencies. Venezuela intervenes to limit exchange rate fluctuations within wide bands.

Eastern European countries that have opened their markets have tied their currencies to a single widely traded currency. The arrangement was sometimes temporary, as these countries were searching for the proper exchange rate that would stabilize or enhance their economic conditions. For example, the government of Slovakia devalued its currency (the koruna) in an attempt to increase foreign demand for its goods and reduce unemployment.

Many governments attempt to impose exchange controls to prevent their exchange rates from fluctuating. When these governments remove the controls, however, the exchange rates abruptly adjust to a new market-determined level. For example, in October 1994, the Russian authorities allowed the Russian ruble to fluctuate, and the ruble depreciated by 27 percent against the U.S. dollar on that day. In April 1996, Venezuela's government removed controls on the bolivar (its currency), and the bolivar depreciated by 42 percent on that day.

After the 2001 war in Afghanistan, an exchange rate system was needed there. In October 2002, a new currency, called the new afghani, was created to replace the old afghani. The old currency was exchanged for the new money at a ratio of 1,000 to 1. Thus, 30,000 old afghanis were exchanged for 30 new afghanis. The new money was printed with watermarks to deter counterfeiters.

In 2003, three different currencies were being used in Iraq. The Swiss dinar (so called because it was designed in Switzerland) was created before the Gulf War but had not been printed since then. It traded at about 8 dinars per dollar and was used by the Kurds in northern Iraq. The Saddam dinar, which was used extensively before 2003, was printed in excess to finance Iraq's military budget and was easy to

Exhibit 6.1 Exchange Rate Arrangements

Floating Rate System			
Country	Currency	Country	Currency
Afghanistan	new afghani	Norway	krone
Argentina	peso	Paraguay	guarani
Australia	dollar	Peru	new sol
Bolivia	boliviano	Poland	zloty
Brazil	real	Romania	leu
Canada	dollar	Russia	ruble
Chile	peso	Singapore	dollar
Euro participants	euro	South Africa	rand
Hungary	forint	South Korea	won
India	rupee	Sweden	krona
Indonesia	rupiah	Switzerland	franc
Israel	new shekel	Taiwan	new dollar
Jamaica	dollar	Thailand	baht
Japan	yen	United Kingdom	pound
Mexico	peso	Venezuela	bolivar
Pegged Rate System			
The following currencies are pegged to the U.S. dollar.			
Country	Currency	Country	Currency
Bahamas	dollar	Hong Kong	dollar
Barbados	dollar	Saudi Arabia	riyal
Bermuda	dollar		

counterfeit. Its value relative to the dollar was very volatile over time. The U.S. dollar was frequently used in the black market in Iraq even before the 2003 war. In 2004, the new Iraqi dinar was created and replaced the Swiss dinar and Saddam dinar to become the national currency. Its initial value was set at about \$.0007. The new dinar's value is allowed to fluctuate in accordance with market forces but has been somewhat stable over time.

A Single European Currency

In 1991, the Maastricht Treaty called for the establishment of a single European currency. As of January 1, 1999, the euro replaced the national currencies of 11 European countries for the purpose of commercial transactions executed through electronic transfers and other forms of payment. By June 1, 2002, when the national currencies were to be withdrawn from the financial system and replaced with the euro, a twelfth country had qualified for the euro.

Membership

The agreement to adopt the euro was a major historical event. Countries that had previously been at war with each other at various times in the past were now willing to work together toward a common cause. Of the 27 countries that are members of the European Union (EU), 13 countries participate in the euro: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Slovenia, and Spain. Together, the participating countries comprise almost 20 percent of the world's gross domestic product, a proportion similar to that of the United States. Three countries that were members of the EU in 1999 (the United Kingdom, Denmark, and Sweden) decided not to adopt the euro at that time. The 10 countries in Eastern Europe (including the Czech Republic and Hungary) that joined the EU in 2004 are eligible to participate in the euro if they meet specific economic goals. Slovenia adopted the euro in 2007. Countries that participate in the EU are supposed to abide by the Stability and Growth pact before they adopt the euro. This pact requires that the country's budget deficit be less than 3 percent of its gross domestic product. However, there are frequent allegations that some of the existing EU countries that presently participate in the euro have a budget deficit that exceeds their allowable limit.

Impact on European Monetary Policy

The euro allows for a single money supply throughout much of Europe, rather than a separate money supply for each participating currency. Thus, European monetary policy is consolidated because any effects on the money supply will have an impact on all European countries using the euro as their form of money. The implementation of a common monetary policy may promote more political unity among European countries with similar national defense and foreign policies.

European Central Bank. The **European Central Bank (ECB)** is based in Frankfurt and is responsible for setting monetary policy for all participating European countries. Its objective is to control inflation in the participating countries and to stabilize (within reasonable boundaries) the value of the euro with respect to other major currencies. Thus, the ECB's monetary goals of price stability and currency stability are similar to those of individual countries around the world, but differ in that they are focused on a group of countries instead of a single country.

Implications of a European Monetary Policy. Although a single European monetary policy may allow for more consistent economic conditions across countries, it prevents any individual European country from solving local economic problems with its own unique monetary policy. European governments may disagree on the ideal monetary policy to enhance their local economies, but they must agree on a single European monetary policy. Any given policy used in a particular period may enhance conditions in some countries and adversely affect others. Each participating country is still able to apply its own fiscal policy (tax and government expenditure decisions), however. The use of a common currency may someday create more political harmony among European countries.

Impact on Business within Europe

The euro enables residents of participating countries to engage in cross-border trade flows and capital flows throughout the so-called euro zone (of participating countries) without converting to a different currency. The elimination of currency movements among European countries also encourages more long-term business arrangements between firms of different countries, as they no longer have to worry about adverse effects due to currency movements. Thus, firms in different European countries are

increasingly engaging in all types of business arrangements including licensing, joint ventures, and acquisitions.

Prices of products are now more comparable among European countries, as the exchange rate between the countries is fixed. Thus, buyers can more easily determine where they can obtain products at the lowest cost.

Trade flows between the participating European countries have increased because exporters and importers can conduct trade without concern about exchange rate movements. To the extent that there are more trade flows between these countries, economic conditions in each of these countries should have a larger impact on the other European countries, and economies of these countries may become more integrated.

Impact on the Valuation of Businesses in Europe

When firms consider acquiring targets in Europe, they can more easily compare the prices (market values) of targets among countries because their values are denominated in the same currency (the euro). In addition, the future currency movements of the target's currency against any non-European currency will be the same. Therefore, U.S. firms can more easily conduct valuations of firms across the participating European countries because when funds are remitted to the U.S. parent from any of the participating countries, the level of appreciation or depreciation will be the same for a particular period and there will be no differences in exchange rate effects.

European firms face more pressure to perform well because they can be measured against all other firms in the same industry throughout the participating countries, not just within its own country. Therefore, these firms are more focused on meeting various performance goals.

Impact on Financial Flows

A single European currency forces the interest rate offered on government securities to be similar across the participating European countries. Any discrepancy in rates would encourage investors within these European countries to invest in the currency with the highest rate, which would realign the interest rates among these countries. However, the rate may still vary between two government securities with the same maturity if they exhibit different levels of credit risk.

Stock prices are now more comparable among the European countries because they are denominated in the same currency. Investors in the participating European countries are now able to invest in stocks throughout these countries without concern about exchange rate risk. Thus, there is more cross-border investing than there was in the past.

Since stock market prices are influenced by expectations of economic conditions, the stock prices among the European countries may become more highly correlated if economies among these countries become more highly correlated. Investors from other countries who invest in European countries may not achieve as much diversification as in the past because of the integration and because the exchange rate effects will be the same for all markets whose stocks are denominated in euros. Stock markets in these European countries are also likely to consolidate over time now that they use the same currency.

Bond investors based in these European countries can now invest in bonds issued by governments and corporations in these countries without concern about exchange rate risk, as long as the bonds are denominated in euros. Some European governments have already issued bonds that are redenominated in euros because the secondary market for some bonds issued in Europe with other currency denominations is now less active. The bond yields in participating European countries are not

HTTP://

<http://www.ecb.int/home/html/index.en.html>
Information on the euro and monetary policy conducted by the European Central Bank.

necessarily similar even though they are now denominated in the same currency; the credit risk may still be higher for issuers in a particular country.

Impact on Exchange Rate Risk

One major advantage of a single European currency is the complete elimination of exchange rate risk between the participating European countries, which could encourage more trade and capital flows across European borders. In addition, foreign exchange transaction costs associated with transactions between European countries have been eliminated. The single European currency is consistent with the goal of the Single European Act to remove trade barriers between European borders since exchange rate risk is an implicit trade barrier.

The euro's value with respect to the U.S. dollar changes continuously. The euro's value is influenced by the trade flows and capital flows between the set of participating European countries and the United States since these flows affect supply and demand conditions. Its value with respect to the Japanese yen is influenced by the trade flows and capital flows between the set of participating European countries and Japan.

European countries that participate in the euro are still affected by movements in its value with respect to other currencies such as the dollar. Furthermore, many U.S. firms are still affected by movements in the euro's value with respect to the dollar.

Status Report on the Euro

The euro has experienced a volatile ride since it was introduced in 1999. Its value initially declined substantially against the British pound, the U.S. dollar, and many other currencies. In October 2001, for example, 33 months after it was introduced, its value was \$.88, or about 27 percent less than its initial value. The weakness was partially attributed to capital outflows from Europe. By April 2007, however, the euro was valued at \$1.35, or 53 percent above its value in October 2001. The rebound in the euro was triggered by the relatively high European interest rates compared to U.S. interest rates in the 2001–2003 period, which attracted capital inflows into Europe.

Government Intervention

Each country has a central bank that may intervene in the foreign exchange markets to control its currency's value. In the United States, for example, the central bank is the Federal Reserve System (the Fed). Central banks have other duties besides intervening in the foreign exchange market. In particular, they attempt to control the growth of the money supply in their respective countries in a way that will favorably affect economic conditions.

Reasons for Government Intervention

The degree to which the home currency is controlled, or “managed,” varies among central banks. Central banks commonly manage exchange rates for three reasons:

- To smooth exchange rate movements
- To establish implicit exchange rate boundaries
- To respond to temporary disturbances

Smooth Exchange Rate Movements. If a central bank is concerned that its economy will be affected by abrupt movements in its home currency's value, it may attempt to smooth the currency movements over time. Its actions may keep

HTTP://

<http://www.bis.org/cbanks.htm>

Links to websites of central banks around the world; some of the websites are in English.

business cycles less volatile. The central bank may also encourage international trade by reducing exchange rate uncertainty. Furthermore, smoothing currency movements may reduce fears in the financial markets and speculative activity that could cause a major decline in a currency's value.

Establish Implicit Exchange Rate Boundaries. Some central banks attempt to maintain their home currency rates within some unofficial, or implicit, boundaries. Analysts are commonly quoted as forecasting that a currency will not fall below or rise above a particular benchmark value because the central bank would intervene to prevent that. The Federal Reserve periodically intervenes to reverse the U.S. dollar's upward or downward momentum.

Respond to Temporary Disturbances. In some cases, a central bank may intervene to insulate a currency's value from a temporary disturbance. In fact, the stated objective of the Fed's intervention policy is to counter disorderly market conditions.

EXAMPLE

News that oil prices might rise could cause expectations of a future decline in the value of the Japanese yen because Japan exchanges yen for U.S. dollars to purchase oil from oil-exporting countries. Foreign exchange market speculators may exchange yen for dollars in anticipation of this decline. Central banks may therefore intervene to offset the immediate downward pressure on the yen caused by such market transactions. ■

Several studies have found that government intervention does not have a permanent impact on exchange rate movements. In many cases, intervention is overwhelmed by market forces. In the absence of intervention, however, currency movements would be even more volatile.

Direct Intervention

HTTP://

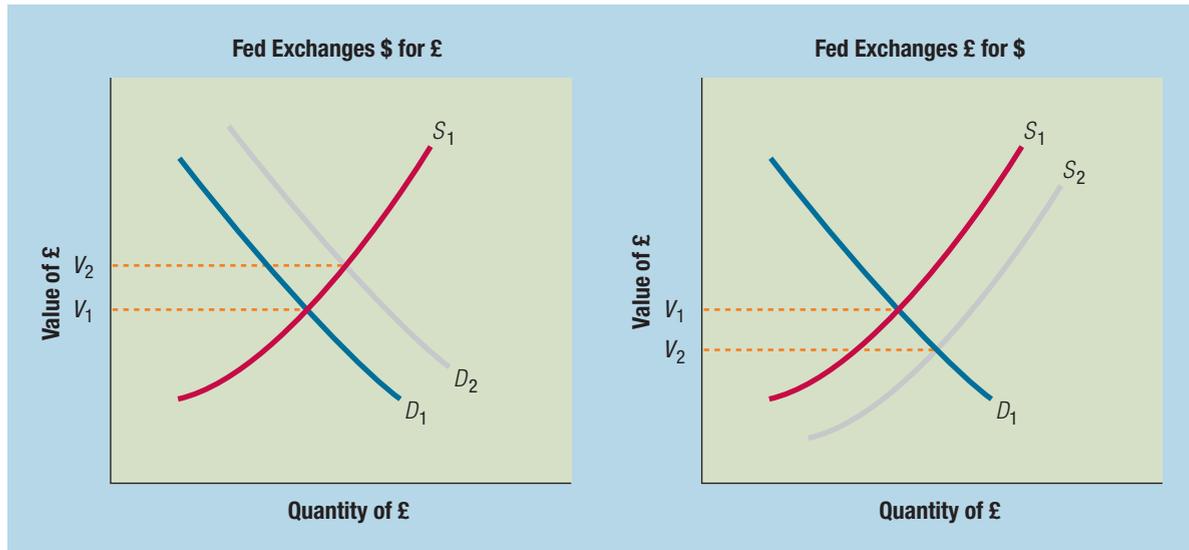
<http://www.ny.frb.org/markets/foregnex.html>
Information on the recent direct intervention in the foreign exchange market by the Federal Reserve Bank of New York.

To force the dollar to depreciate, the Fed can intervene directly by exchanging dollars that it holds as reserves for other foreign currencies in the foreign exchange market. By “flooding the market with dollars” in this manner, the Fed puts downward pressure on the dollar. If the Fed desires to strengthen the dollar, it can exchange foreign currencies for dollars in the foreign exchange market, thereby putting upward pressure on the dollar.

The effects of direct intervention on the value of the British pound are illustrated in Exhibit 6.2. To strengthen the pound's value (or to weaken the dollar), the Fed exchanges dollars for pounds, which causes an outward shift in the demand for pounds in the foreign exchange market (as shown in the graph on the left). Conversely, to weaken the pound's value (or to strengthen the dollar), the Fed exchanges pounds for dollars, which causes an outward shift in the supply of pounds for sale in the foreign exchange market (as shown in the graph on the right).

During early 2004, Japan's central bank, the Bank of Japan, intervened on several occasions to lower the value of the yen. In the first 2 months of 2004, the Bank of Japan sold yen in the foreign exchange market in exchange for \$100 billion. Then, on March 5, 2004, the Bank of Japan sold yen in the foreign exchange market in exchange for \$20 billion, which put immediate downward pressure on the value of the yen.

Direct intervention is usually most effective when there is a coordinated effort among central banks. If all central banks simultaneously attempt to strengthen or weaken the currency in the manner just described, they can exert greater pressure on the currency's value.

Exhibit 6.2 Effects of Direct Central Bank Intervention in the Foreign Exchange Market

Reliance on Reserves. The potential effectiveness of a central bank's direct intervention is the amount of reserves it can use. For example, the central bank of China has a substantial amount of reserves that it can use to intervene in the foreign exchange market. Thus, it can more effectively use direct intervention than many other countries in Asia. If the central bank has a low level of reserves, it may not be able to exert much pressure on the currency's value. Market forces would likely overwhelm its actions.

As foreign exchange activity has grown, central bank intervention has become less effective. The volume of foreign exchange transactions on a single day now exceeds the combined values of reserves at all central banks. Consequently, the number of direct interventions has declined. In 1989, for example, the Fed intervened on 97 different days. Since then, the Fed has not intervened on more than 20 days in any year.

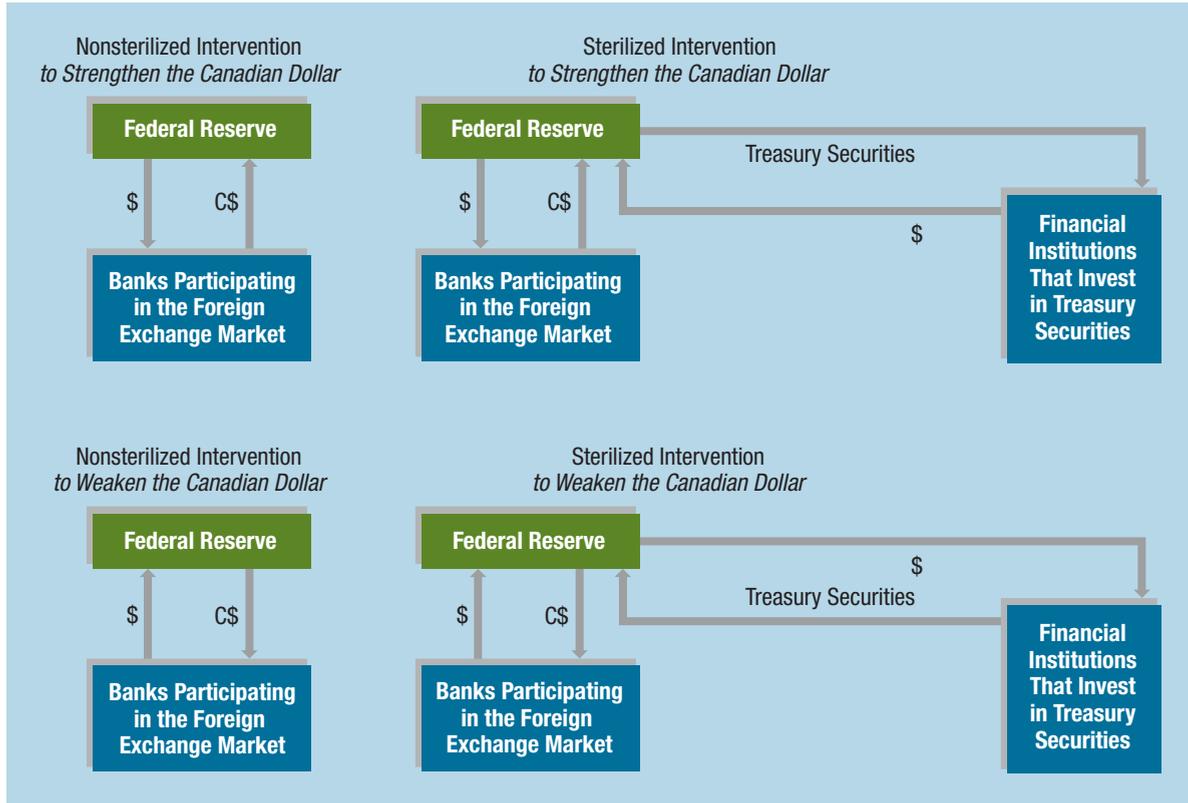
Nonsterilized versus Sterilized Intervention. When the Fed intervenes in the foreign exchange market without adjusting for the change in the money supply, it is engaging in a **nonsterilized intervention**. For example, if the Fed exchanges dollars for foreign currencies in the foreign exchange markets in an attempt to strengthen foreign currencies (weaken the dollar), the dollar money supply increases.

In a **sterilized intervention**, the Fed intervenes in the foreign exchange market and simultaneously engages in offsetting transactions in the Treasury securities markets. As a result, the dollar money supply is unchanged.

EXAMPLE

If the Fed desires to strengthen foreign currencies (weaken the dollar) without affecting the dollar money supply, it (1) exchanges dollars for foreign currencies and (2) sells some of its holdings of Treasury securities for dollars. The net effect is an increase in investors' holdings of Treasury securities and a decrease in bank foreign currency balances. ■

The difference between nonsterilized and sterilized intervention is illustrated in Exhibit 6.3. In the top section of the exhibit, the Federal Reserve attempts

Exhibit 6.3 Forms of Central Bank Intervention in the Foreign Exchange Market

to strengthen the Canadian dollar, and in the bottom section, the Federal Reserve attempts to weaken the Canadian dollar. For each scenario, the graph on the right shows a sterilized intervention involving an exchange of Treasury securities for U.S. dollars that offsets the U.S. dollar flows resulting from the exchange of currencies. Thus, the sterilized intervention achieves the same exchange of currencies in the foreign exchange market as the nonsterilized intervention, but it involves an additional transaction to prevent adjustments in the U.S. dollar money supply.

Speculating on Direct Intervention. Some traders in the foreign exchange market attempt to determine when Federal Reserve intervention is occurring, and the extent of the intervention, in order to capitalize on the anticipated results of the intervention effort. Normally, the Federal Reserve attempts to intervene without being noticed. However, dealers at the major banks that trade with the Fed often pass the information to other market participants. Also, when the Fed deals directly with numerous commercial banks, markets are well aware that the Fed is intervening. To hide its strategy, the Fed may pretend to be interested in selling dollars when it is actually buying dollars, or vice versa. It calls commercial banks and obtains both bid and ask quotes on currencies, so the banks will not know whether the Fed is considering purchases or sales of these currencies.

Intervention strategies vary among central banks. Some arrange for one large order when they intervene; others use several smaller orders equivalent to \$5 million to \$10 million. Even if traders determine the extent of central bank intervention, they still cannot know with certainty what impact it will have on exchange rates.

Indirect Intervention

The Fed can also affect the dollar's value indirectly by influencing the factors that determine it. Recall that the change in a currency's spot rate is influenced by the following factors:

$$e = f(\Delta INF, \Delta INT, \Delta INC, \Delta GC, \Delta EXP)$$

where

e = percentage change in the spot rate

ΔINF = change in the differential between U.S. inflation and the foreign country's inflation

ΔINT = change in the differential between the U.S. interest rate and the foreign country's interest rate

ΔINC = change in the differential between the U.S. income level and the foreign country's income level

ΔGC = change in government controls

ΔEXP = change in expectations of future exchange rates

The central bank can influence all of these variables, which in turn can affect the exchange rate. Since these variables will likely have a more lasting impact on a spot rate than direct intervention, a central bank may use indirect intervention by influencing these variables. Although the central bank can influence all of these variables, it is likely to focus on interest rates or government controls when using indirect intervention.

Government Adjustment of Interest Rates. When countries experience substantial net outflows of funds (which places severe downward pressure on their currency), they commonly intervene indirectly by raising interest rates to discourage excessive outflows of funds and therefore limit any downward pressure on the value of their currency. However, this strategy adversely affects local borrowers (government agencies, corporations, and consumers) and may weaken the economy.

EXAMPLE

The Fed can attempt to lower interest rates by increasing the U.S. money supply (assuming that inflationary expectations are not affected). Lower U.S. interest rates tend to discourage foreign investors from investing in U.S. securities, thereby placing downward pressure on the value of the dollar. Or, to boost the dollar's value, the Fed can attempt to increase interest rates by reducing the U.S. money supply. It has commonly used this strategy along with direct intervention in the foreign exchange market. ■

EXAMPLE

In October 1997, there was concern that the Asian crisis might adversely affect Brazil and other Latin American countries. Speculators pulled funds out of Brazil and reinvested them in other countries, causing major capital outflows and therefore placing extreme downward pressure on the Brazilian currency (the real). The central bank of Brazil responded at the end of October by doubling its interest rates from about 20 percent to about 40 percent. This action discouraged investors from pulling funds out of Brazil because they could now earn twice the interest from investing in some securities there. Although the bank's action was successful in defending the real, it reduced economic growth because the cost of borrowing funds was too high for many firms.

In another example, during the Asian crisis in 1997 and 1998, central banks of some Asian countries increased their interest rates to prevent their currencies from weakening. The higher interest rates were expected to make the local securities more attractive and therefore encourage investors to maintain their holdings of securities, which would reduce the exchange of the local currency for other currencies. This effort was not successful for most Asian countries, although it worked for China and Hong Kong.

As a third example, in May 1998, the Russian currency (the ruble) had consistently declined, and Russian stock prices had fallen by more than 50 percent from their level 4 months earlier. Fearing that the lack of confidence in Russia's currency and stocks would cause massive outflows of funds, the Russian central bank attempted to prevent further outflows by tripling interest rates (from about 50 to 150 percent). The ruble was temporarily stabilized, but stock prices continued to decline because investors were concerned that the high interest rates would reduce economic growth. ■

Government Use of Foreign Exchange Controls. Some governments attempt to use foreign exchange controls (such as restrictions on the exchange of the currency) as a form of indirect intervention to maintain the exchange rate of their currency. Under severe pressure, however, they tend to let the currency float temporarily toward its market-determined level and set new bands around that level.

EXAMPLE

During the mid-1990s, Venezuela imposed foreign exchange controls on its currency (the bolivar). In April 1996, Venezuela removed its controls on foreign exchange, and the bolivar declined by 42 percent the next day. This result suggests that the market-determined exchange rate of the bolivar was substantially lower than the exchange rate at which the government artificially set the bolivar. ■

Intervention as a Policy Tool

The government of any country can implement its own fiscal and monetary policies to control its economy. In addition, it may attempt to influence the value of its home currency in order to improve its economy, weakening its currency under some conditions and strengthening it under others. In essence, the exchange rate becomes a tool, like tax laws and the money supply, that the government can use to achieve its desired economic objectives.

Influence of a Weak Home Currency on the Economy

A weak home currency can stimulate foreign demand for products. A weak dollar, for example, can substantially boost U.S. exports and U.S. jobs. In addition, it may also reduce U.S. imports.

Though a weak currency can reduce unemployment at home, it can lead to higher inflation. In the early 1990s, the U.S. dollar was weak, causing U.S. imports from foreign countries to be highly priced. This situation priced firms such as Bayer, Volkswagen, and Volvo out of the U.S. market. Under these conditions, U.S. companies were able to raise their domestic prices because it was difficult for foreign producers to compete. In addition, U.S. firms that are heavy exporters, such as Goodyear Tire & Rubber Co., Northrup Grumman, Merck, DuPont, and Whirlpool, also benefit from a weaker dollar.

Influence of a Strong Home Currency on the Economy

A strong home currency can encourage consumers and corporations of that country to buy goods from other countries. This situation intensifies foreign competition and

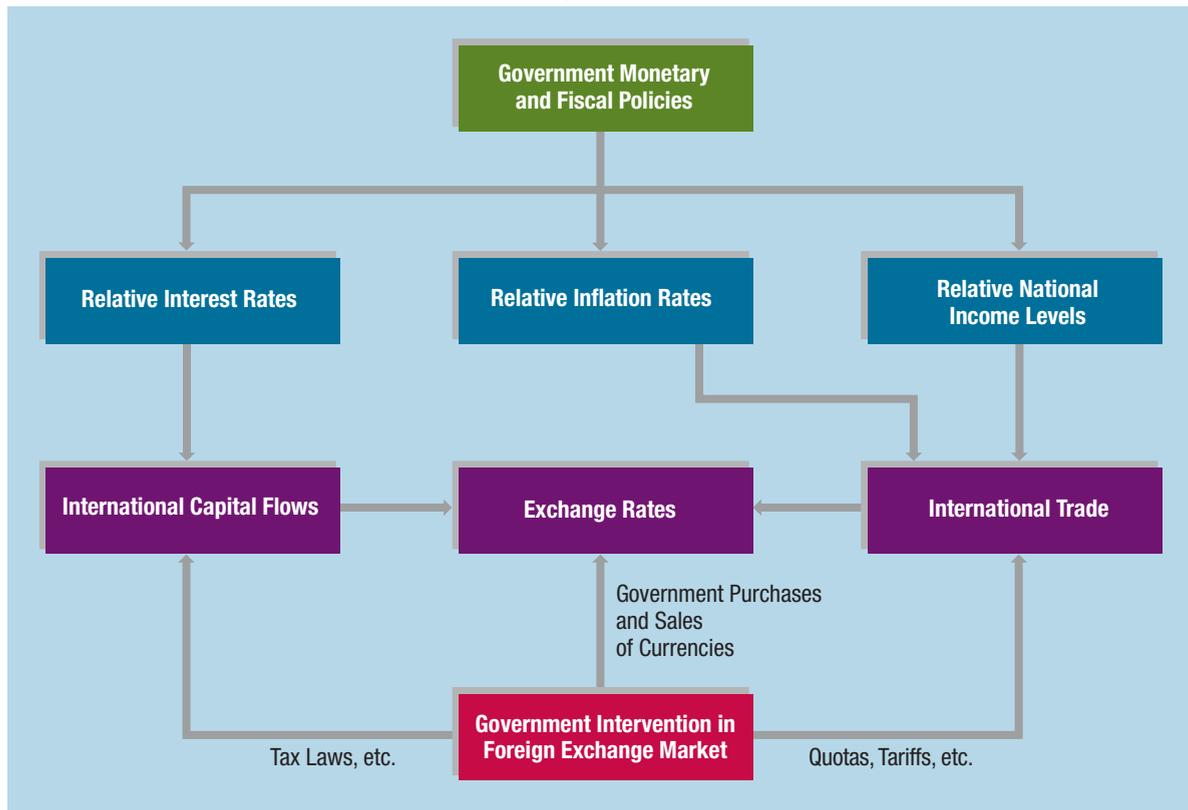
forces domestic producers to refrain from increasing prices. Therefore, the country's overall inflation rate should be lower if its currency is stronger, other things being equal.

Though a strong currency is a possible cure for high inflation, it may cause higher unemployment due to the attractive foreign prices that result from a strong home currency. The ideal value of the currency depends on the perspective of the country and the officials who must make these decisions. The strength or weakness of a currency is just one of many factors that influence a country's economic conditions.

By combining this discussion of how exchange rates affect inflation with the discussion in Chapter 4 of how inflation can affect exchange rates, a more complete picture of the dynamics of the exchange rate–inflation relationship can be achieved. A weak dollar places upward pressure on U.S. inflation, which in turn places further downward pressure on the value of the dollar. A strong dollar places downward pressure on inflation and on U.S. economic growth, which in turn places further upward pressure on the dollar's value.

The interaction among exchange rates, government policies, and economic factors is illustrated in Exhibit 6.4. As already mentioned, factors other than the home currency's strength affect unemployment and/or inflation. Likewise, factors other than unemployment and the inflation level influence a currency's strength. The cycles that have been described here will often be interrupted by these other factors and therefore will not continue indefinitely.

Exhibit 6.4 Impact of Government Actions on Exchange Rates



SUMMARY

■ Exchange rate systems can be classified as fixed rate, freely floating, managed float, and pegged. In a fixed exchange rate system, exchange rates are either held constant or allowed to fluctuate only within very narrow boundaries. In a freely floating exchange rate system, exchange rate values are determined by market forces without intervention. In a managed float system, exchange rates are not restricted by boundaries but are subject to government intervention. In a pegged exchange rate system, a currency's value is pegged to a foreign currency or a unit of account and moves in line with that currency (or unit of account) against other currencies.

■ Governments can use direct intervention by purchasing or selling currencies in the foreign exchange market, thereby affecting demand and supply conditions and, in turn, affecting the equilibrium values of the currencies. When a government purchases a currency in the foreign exchange market, it puts upward pressure on the currency's equilibrium value. When a government sells a currency in the foreign exchange market, it puts downward pressure on the currency's equilibrium value.

■ Governments can use indirect intervention by influencing the economic factors that affect equilibrium exchange rates.

■ When government intervention is used to weaken the U.S. dollar, the weak dollar can stimulate the U.S. economy by reducing the U.S. demand for imports and increasing the foreign demand for U.S. exports. Thus, the weak dollar tends to reduce U.S. unemployment, but it can increase U.S. inflation.

When government intervention is used to strengthen the U.S. dollar, the strong dollar can increase the U.S. demand for imports, thereby intensifying foreign competition. The strong dollar can reduce U.S. inflation but may cause a higher level of U.S. unemployment.

POINT COUNTER-POINT

Should China Be Forced to Alter the Value of Its Currency?

Point U.S. politicians frequently suggest that China needs to increase the value of the Chinese yuan against the U.S. dollar, even though China has allowed the yuan to float (within boundaries). The U.S. politicians claim that the yuan is the cause of the large U.S. trade deficit with China. This issue is periodically raised not only with currencies tied to the dollar but also with currencies that have a floating rate. Some critics argue that the exchange rate can be used as a form of trade protectionism. That is, a country can discourage or prevent imports and encourage exports by keeping the value of its currency artificially low.

Counter-Point China might counter that its large balance-of-trade surplus with the United States has been due to the difference in prices between the two countries and that it should not be blamed for the high U.S. prices. It might argue that the U.S. trade deficit can be partially attributed to the very high prices in the United States, which are necessary to cover the

excessive compensation for executives and other employees at U.S. firms. The high prices in the United States encourage firms and consumers to purchase goods from China. Even if China's yuan is revalued upward, this does not necessarily mean that U.S. firms and consumers will purchase U.S. products. They may shift their purchases from China to Indonesia or other low-wage countries rather than buy more U.S. products. Thus, the underlying dilemma is not China but any country that has lower costs of production than the United States.

Who Is Correct? Use the Internet to learn more about this issue. Which argument do you support? Offer your own opinion on this issue.

SELF TEST

Answers are provided in Appendix A at the back of the text.

1. Explain why it would be virtually impossible to set an exchange rate between the Japanese yen and the U.S. dollar and to maintain a fixed exchange rate.
2. Assume the Federal Reserve believes that the dollar should be weakened against the Mexican peso. Explain how the Fed could use direct and indirect intervention to weaken the dollar's value with respect to the peso. Assume that future inflation in the United States is expected to be low, regardless of the Fed's actions.
3. Briefly explain why the Federal Reserve may attempt to weaken the dollar.

QUESTIONS AND APPLICATIONS

1. **Exchange Rate Systems.** Compare and contrast the fixed, freely floating, and managed float exchange rate systems. What are some advantages and disadvantages of a freely floating exchange rate system versus a fixed exchange rate system?
2. **Intervention with Euros.** Assume that Belgium, one of the European countries that uses the euro as its currency, would prefer that its currency depreciate against the U.S. dollar. Can it apply central bank intervention to achieve this objective? Explain.
3. **Direct Intervention.** How can a central bank use direct intervention to change the value of a currency? Explain why a central bank may desire to smooth exchange rate movements of its currency.
4. **Indirect Intervention.** How can a central bank use indirect intervention to change the value of a currency?
5. **Intervention Effects.** Assume there is concern that the United States may experience a recession. How should the Federal Reserve influence the dollar to prevent a recession? How might U.S. exporters react to this policy (favorably or unfavorably)? What about U.S. importing firms?
6. **Currency Effects on Economy.** What is the impact of a weak home currency on the home economy, other things being equal? What is the impact of a strong home currency on the home economy, other things being equal?
7. **Feedback Effects.** Explain the potential feedback effects of a currency's changing value on inflation.
8. **Indirect Intervention.** Why would the Fed's indirect intervention have a stronger impact on some currencies than others? Why would a central bank's indirect intervention have a stronger impact than its direct intervention?
9. **Effects on Currencies Tied to the Dollar.** The Hong Kong dollar's value is tied to the U.S. dollar. Explain how the following trade patterns would be affected by the appreciation of the Japanese yen against the dollar: (a) Hong Kong exports to Japan and (b) Hong Kong exports to the United States.
10. **Intervention Effects on Bond Prices.** U.S. bond prices are normally inversely related to U.S. inflation. If the Fed planned to use intervention to weaken the dollar, how might bond prices be affected?
11. **Direct Intervention in Europe.** If most countries in Europe experience a recession, how might the European Central Bank use direct intervention to stimulate economic growth?
12. **Sterilized Intervention.** Explain the difference between sterilized and nonsterilized intervention.
13. **Effects of Indirect Intervention.** Suppose that the government of Chile reduces one of its key interest rates. The values of several other Latin American currencies are expected to change substantially against the Chilean peso in response to the news.
 - a. Explain why other Latin American currencies could be affected by a cut in Chile's interest rates.
 - b. How would the central banks of other Latin American countries likely adjust their interest rates? How would the currencies of these countries respond to the central bank intervention?
 - c. How would a U.S. firm that exports products to Latin American countries be affected by the central bank intervention? (Assume the exports are denominated in the corresponding Latin American currency for each country.)

14. **Freely Floating Exchange Rates.** Should the governments of Asian countries allow their currencies to float freely? What would be the advantages of letting their currencies float freely? What would be the disadvantages?
15. **Indirect Intervention.** During the Asian crisis, some Asian central banks raised their interest rates to prevent their currencies from weakening. Yet, the currencies weakened anyway. Offer your opinion as to why the central banks' efforts at indirect intervention did not work.

Advanced Questions

16. **Monitoring of the Fed's Intervention.** Why do foreign market participants attempt to monitor the Fed's direct intervention efforts? How does the Fed attempt to hide its intervention actions? The media frequently report that "the dollar's value strengthened against many currencies in response to the Federal Reserve's plan to increase interest rates." Explain why the dollar's value may change even before the Federal Reserve affects interest rates.
17. **Effects of September 11.** Within a few days after the September 11, 2001, terrorist attack on the United States, the Federal Reserve reduced short-term interest rates to stimulate the U.S. economy. How might this action have affected the foreign flow of funds into the United States and affected the value of the dollar? How could such an effect on the dollar have increased the probability that the U.S. economy would strengthen?
18. **Intervention Effects on Corporate Performance.** Assume you have a subsidiary in Australia. The subsidiary sells mobile homes to local consumers in Australia, who buy the homes using mostly borrowed funds from local banks. Your subsidiary purchases all of its materials from Hong Kong. The Hong Kong dollar is tied to the U.S. dollar. Your subsidiary borrowed funds from the U.S. parent, and must pay the parent \$100,000 in interest each month. Australia has just raised its interest rate in order to boost the value of its currency (Australian dollar, A\$). The Australian dollar appreciates against the U.S. dollar as a result. Explain whether these actions would increase, reduce, or have no effect on:
- The volume of your subsidiary's sales in Australia (measured in A\$).
 - The cost to your subsidiary of purchasing materials (measured in A\$).
 - The cost to your subsidiary of making the interest payments to the U.S. parent (measured in A\$).
- Briefly explain each answer.
19. **Pegged Currencies.** Why do you think a country suddenly decides to peg its currency to the dollar or some other currency? When a currency is unable to maintain the peg, what do you think are the typical forces that break the peg?
20. **Impact of Intervention on Currency Option Premiums.** Assume that the central bank of the country Zakow periodically intervenes in the foreign exchange market to prevent large upward or downward fluctuations in its currency (called the zak) against the U.S. dollar. Today, the central bank announced that it will no longer intervene in the foreign exchange market. The spot rate of the zak against the dollar was not affected by this news. Will the news affect the premium on currency call options that are traded on the zak? Will the news affect the premium on currency put options that are traded on the zak? Explain.
21. **Impact of Information on Currency Option Premiums.** As of 10:00 A.M., the premium on a specific one-year call option on British pounds is \$.04. Assume that the Bank of England had not been intervening in the foreign exchange markets in the last several months. However, it announces at 10:01 A.M. that it will begin to frequently intervene in the foreign exchange market in order to reduce fluctuations in the pound's value against the U.S. dollar over the next year, but it will not attempt to push the pound's value higher or lower than what is dictated by market forces. Also, the Bank of England has no plans to affect economic conditions with this intervention. Most participants who trade currency options did not anticipate this announcement. When they heard the announcement, they expected that the intervention will be successful in achieving its goal. Will this announcement cause the premium on the one-year call option on British pounds to increase, decrease, or be unaffected? Explain.

Discussion in the Boardroom

This exercise can be found in Appendix E at the back of this textbook.

Running Your Own MNC

This exercise can be found on the Xtra! website at <http://maduraxtra.swlearning.com>.

BLADES, INC. CASE

Assessment of Government Influence on Exchange Rates

Recall that Blades, the U.S. manufacturer of roller blades, generates most of its revenue and incurs most of its expenses in the United States. However, the company has recently begun exporting roller blades to Thailand. The company has an agreement with Entertainment Products, Inc., a Thai importer, for a 3-year period. According to the terms of the agreement, Entertainment Products will purchase 180,000 pairs of “Speedos,” Blades’ primary product, annually at a fixed price of 4,594 Thai baht per pair. Due to quality and cost considerations, Blades is also importing certain rubber and plastic components from a Thai exporter. The cost of these components is approximately 2,871 Thai baht per pair of Speedos. No contractual agreement exists between Blades, Inc., and the Thai exporter. Consequently, the cost of the rubber and plastic components imported from Thailand is subject not only to exchange rate considerations but to economic conditions (such as inflation) in Thailand as well.

Shortly after Blades began exporting to and importing from Thailand, Asia experienced weak economic conditions. Consequently, foreign investors in Thailand feared the baht’s potential weakness and withdrew their investments, resulting in an excess supply of Thai baht for sale. Because of the resulting downward pressure on the baht’s value, the Thai government attempted to stabilize the baht’s exchange rate. To maintain the baht’s value, the Thai government intervened in the foreign exchange market. Specifically, it swapped its baht reserves for dollar reserves at other central banks and then used its dollar reserves to purchase the baht in the foreign exchange market. However, this agreement required Thailand to reverse this transaction by exchanging dollars for baht at a future date. Unfortunately, the Thai government’s intervention was unsuccessful, as it was overwhelmed by market forces. Consequently, the Thai government ceased its intervention efforts, and the value of the Thai baht declined substantially against the dollar over a 3-month period.

When the Thai government stopped intervening in the foreign exchange market, Ben Holt, Blades’ CFO, was concerned that the value of the Thai baht would continue to decline indefinitely. Since Blades generates net inflow in Thai baht, this would seriously affect the company’s profit margin. Furthermore, one of the reasons Blades had expanded into Thailand was to appease the company’s shareholders. At last year’s annual shareholder meeting, they had demanded that senior management take action to improve the firm’s low profit

margins. Expanding into Thailand had been Holt’s suggestion, and he is now afraid that his career might be at stake. For these reasons, Holt feels that the Asian crisis and its impact on Blades demand his serious attention. One of the factors Holt thinks he should consider is the issue of government intervention and how it could affect Blades in particular. Specifically, he wonders whether the decision to enter into a fixed agreement with Entertainment Products was a good idea under the circumstances. Another issue is how the future completion of the swap agreement initiated by the Thai government will affect Blades. To address these issues and to gain a little more understanding of the process of government intervention, Holt has prepared the following list of questions for you, Blades’ financial analyst, since he knows that you understand international financial management.

1. Did the intervention effort by the Thai government constitute direct or indirect intervention? Explain.
2. Did the intervention by the Thai government constitute sterilized or nonsterilized intervention? What is the difference between the two types of intervention? Which type do you think would be more effective in increasing the value of the baht? Why? (Hint: Think about the effect of nonsterilized intervention on U.S. interest rates.)
3. If the Thai baht is virtually fixed with respect to the dollar, how could this affect U.S. levels of inflation? Do you think these effects on the U.S. economy will be more pronounced for companies such as Blades that operate under trade arrangements involving commitments or for firms that do not? How are companies such as Blades affected by a fixed exchange rate?
4. What are some of the potential disadvantages for Thai levels of inflation associated with the floating exchange rate system that is now used in Thailand? Do you think Blades contributes to these disadvantages to a great extent? How are companies such as Blades affected by a freely floating exchange rate?
5. What do you think will happen to the Thai baht’s value when the swap arrangement is completed? How will this affect Blades?

SMALL BUSINESS DILEMMA

Assessment of Central Bank Intervention by the Sports Exports Company

Jim Logan, owner of the Sports Exports Company, is concerned about the value of the British pound over time because his firm receives pounds as payment for footballs exported to the United Kingdom. He recently read that the Bank of England (the central bank of the United Kingdom) is likely to intervene directly in the foreign exchange market by flooding the market with British pounds.

1. Forecast whether the British pound will weaken or strengthen based on the information provided.
2. How would the performance of the Sports Exports Company be affected by the Bank of England's policy of flooding the foreign exchange market with British pounds (assuming that it does not hedge its exchange rate risk)?

INTERNET/EXCEL EXERCISES

The website for Japan's central bank, the Bank of Japan, provides information about its mission and its policy actions. Its address is <http://www.boj.or.jp/en>.

1. Use this website to review the outline of the Bank of Japan's objectives. Summarize the mission of the Bank of Japan. How does this mission relate to intervening in the foreign exchange market?
2. Review the minutes of recent meetings by Bank of Japan officials. Summarize at least one recent meeting that was associated with possible or actual intervention to affect the yen's value.
3. Why might the foreign exchange intervention strategies of the Bank of Japan be relevant to the U.S. government and to U.S.-based MNCs?

APPENDIX 6

Government Intervention during the Asian Crisis

From 1990 to 1997, Asian countries achieved higher economic growth than any other countries. They were viewed as models for advances in technology and economic improvement. In the summer and fall of 1997, however, they experienced financial problems, leading to what is commonly referred to as the “Asian crisis,” and resulting in bailouts of several countries by the International Monetary Fund (IMF).

Much of the crisis is attributed to the substantial depreciation of Asian currencies, which caused severe financial problems for firms and governments throughout Asia, as well as some other regions. This crisis demonstrated how exchange rate movements can affect country conditions and therefore affect the firms that operate in those countries.

The specific objectives of this appendix are to describe the conditions in the foreign exchange market that contributed to the Asian crisis, explain how governments intervened in an attempt to control their exchange rates, and describe the consequences of their intervention efforts.

Crisis in Thailand

Until July 1997, Thailand was one of the world’s fastest growing economies. In fact, Thailand grew faster than any other country over the 1985–1994 period. Thai consumers spent freely, which resulted in lower savings compared to other Southeast Asian countries. The high level of spending and low level of saving put upward pressure on prices of real estate and products and on the local interest rate. Normally, countries with high inflation tend to have weak currencies because of forces from purchasing power parity. Prior to July 1997, however, Thailand’s currency was linked to the U.S. dollar, which made Thailand an attractive site for foreign investors; they could earn a high interest rate on invested funds while being protected (until the crisis) from a large depreciation in the baht.

Bank Lending Situation

Normally, countries desire a large inflow of funds because it can help support the country’s growth. In Thailand’s case, however, the inflow of funds provided Thai banks with more funds than the banks could use for making loans. Consequently, in an attempt to use all the funds, the banks made many very risky loans. Commercial developers borrowed heavily without having to prove that the expansion was feasible. Lenders were willing to lend large sums of money based on the previous success of the developers. The loans may have seemed feasible based on the assumption that the economy would continue its high growth, but such high growth could not last forever. The corporate structure of Thailand also led to excessive lending. Many

corporations are tied in with banks, such that some bank lending is not an “arms-length” business transaction but a loan to a friend that needs funds.

Flow of Funds Situation

In addition to the lending situation, the large inflow of funds made Thailand more susceptible to a massive outflow of funds if foreign investors ever lost confidence in the Thai economy. Given the large amount of risky loans and the potential for a massive outflow of funds, Thailand was sometimes described as a “house of cards” waiting to collapse.

While the large inflow of funds put downward pressure on interest rates, the supply was offset by a strong demand for funds as developers and corporations sought to capitalize on the growth economy by expanding. Thailand’s government was also borrowing heavily to improve the country’s infrastructure. Thus, the massive borrowing was occurring at relatively high interest rates, making the debt expensive to the borrowers.

Export Competition

During the first half of 1997, the U.S. dollar strengthened against the Japanese yen and European currencies, which reduced the prices of Japanese and European imports. Although the dollar was linked to the baht over this period, Thailand’s products were not priced as competitively to U.S. importers.

Pressure on the Thai Baht

The baht experienced downward pressure in July 1997 as some foreign investors recognized its potential weakness. The outflow of funds expedited the weakening of the baht, as foreign investors exchanged their baht for their home currencies. The baht’s value relative to the dollar was pressured by the large sale of baht in exchange for dollars. On July 2, 1997, the baht was detached from the dollar. Thailand’s central bank then attempted to maintain the baht’s value by intervention. Specifically, it swapped its baht reserves for dollar reserves at other central banks and then used its dollar reserves to purchase the baht in the foreign exchange market (this swap agreement required Thailand to reverse this exchange by exchanging dollars for baht at a future date). The intervention was intended to offset the sales of baht by foreign investors in the foreign exchange market, but market forces overwhelmed the intervention efforts. As the supply of baht for sale exceeded the demand for baht in the foreign exchange market, the government eventually had to surrender in its effort to defend the baht’s value. In July 1997, the value of the baht plummeted. Over a 5-week period, it declined by more than 20 percent against the dollar.

Damage to Thailand

Thailand’s central bank used more than \$20 billion to purchase baht in the foreign exchange market as part of its direct intervention efforts. Due to the decline in the value of the baht, Thailand needed more baht to be exchanged for the dollars to repay the other central banks.

Thailand’s banks estimated the amount of their defaulted loans at over \$30 billion. Meanwhile, some corporations in Thailand had borrowed funds in other currencies (including the dollar) because the interest rates in Thailand were relatively high. This strategy backfired because the weakening of the baht forced these corporations to exchange larger amounts of baht for the currencies needed to pay off the loans. Consequently, the corporations incurred a much higher effective financing rate (which accounts for the exchange rate effect to determine the true cost of borrowing) than they would have paid if they had borrowed funds locally in Thailand. The higher borrowing cost was an additional strain on the corporations.

Rescue Package for Thailand

On August 5, 1997, the IMF and several countries agreed to provide Thailand with a \$16 billion rescue package. Japan provided \$4 billion, while the IMF provided \$4 billion. At the time, this was the second largest bailout plan ever put together for a single country (Mexico had received a \$50 billion bailout in 1994). In return for this monetary support, Thailand agreed to reduce its budget deficit, prevent inflation from rising above 9 percent, raise its value-added tax from 7 to 10 percent, and clean up the financial statements of the local banks, which had many undisclosed bad loans.

The rescue package took time to finalize because Thailand's government was unwilling to shut down all the banks that were experiencing financial problems as a result of their overly generous lending policies. Many critics have questioned the efficacy of the rescue package because some of the funding was misallocated due to corruption in Thailand.

Spread of the Crisis throughout Southeast Asia

The crisis in Thailand was contagious to other countries in Southeast Asia. The Southeast Asian economies are somewhat integrated because of the trade between countries. The crisis was expected to weaken Thailand's economy, which would result in a reduction in the demand for products produced in the other countries of Southeast Asia. As the demand for those countries' products declined, so would their national income and their demand for products from other Southeast Asian countries. Thus, the effects could perpetuate. Like Thailand, the other Southeast Asian countries had very high growth in recent years, which had led to overly optimistic assessments of future economic conditions and thus to excessive loans being extended for projects that had a high risk of default.

These countries were also similar to Thailand in that they had relatively high interest rates, and their governments tended to stabilize their currencies. Consequently, these countries had attracted a large amount of foreign investment as well. Thailand's crisis made foreign investors realize that such a crisis could also hit the other countries in Southeast Asia. Consequently, they began to withdraw funds from these countries.

Effects on Other Asian Currencies

In July and August of 1997, the values of the Malaysian ringgit, Singapore dollar, Philippine peso, Taiwan dollar, and Indonesian rupiah also declined. The Philippine peso was devalued in July. Malaysia initially attempted to maintain the ringgit's value within a narrow band but then surrendered and let the ringgit float to a level determined by market forces.

In August 1997, Bank Indonesia (the central bank) used more than \$500 million in direct intervention to purchase rupiah in the foreign exchange market in an attempt to boost the value of the rupiah. By mid-August, however, it gave up its effort to maintain the rupiah's value within a band and let the rupiah float to its natural level. This decision by Bank Indonesia to let the rupiah float may have been influenced by the failure of Thailand's costly efforts to maintain the baht. The market forces were too strong and could not be offset by direct intervention. On October 30, 1997, a rescue package for Indonesia was announced, but the IMF and Indonesia's government did not agree on the terms of the \$43 billion package until the spring of 1998. One of the main points of contention was that President Suharto wanted to peg the rupiah's exchange rate, but the IMF believed that Bank Indonesia would not be able to maintain the rupiah's exchange rate at a fixed level and that it would come under renewed speculative attack.

As the Southeast Asian countries gave up their fight to maintain their currencies within bands, they imposed restrictions on their forward and futures markets to

prevent excessive speculation. For example, Indonesia and Malaysia imposed a limit on the size of forward contracts created by banks for foreign residents. These actions limited the degree to which speculators could sell these currencies forward based on expectations that the currencies would weaken over time. In general, efforts to protect the currencies failed because investors and firms had no confidence that the fundamental factors causing weakness in the currencies were being corrected. Therefore, the flow of funds out of the Asian countries continued; this outflow led to even more sales of Asian currencies in exchange for other currencies, which put additional downward pressure on the values of the currencies.

Effects on Financing Expenses

As the values of the Southeast Asian currencies declined, speculators responded by withdrawing more of their funds from these countries, which led to further weakness in the currencies. As in Thailand, many corporations had borrowed in other countries (such as the United States) where interest rates were relatively low. The decline in the values of their local currencies caused the corporations' effective rate of financing to be excessive, which strained their cash flow situation.

Due to the integration of Southeast Asian economies, the excessive lending by the local banks across the countries, and the susceptibility of all these countries to massive fund outflows, the crisis was not really focused on one country. What was initially referred to as the Thailand crisis became the Asian crisis.

Impact of the Asian Crisis on Hong Kong

On October 23, 1997, prices in the Hong Kong stock market declined by 10.2 percent on average; considering the 3 trading days before that, the cumulative 4-day effect was a decline of 23.3 percent. The decline was primarily attributed to speculation that Hong Kong's currency might be devalued and that Hong Kong could experience financial problems similar to the Southeast Asian countries. The fact that the market value of Hong Kong companies could decline by almost one-fourth over a 4-day period demonstrated the perceived exposure of Hong Kong to the crisis.

During this period, Hong Kong maintained its pegged exchange rate system with the Hong Kong dollar tied to the U.S. dollar. However, it had to increase interest rates to discourage investors from transferring their funds out of the country.

Impact of the Asian Crisis on Russia

The Asian crisis caused investors to reconsider other countries where similar effects might occur. In particular, they focused on Russia. As investors lost confidence in the Russian currency (the ruble), they began to transfer funds out of Russia. In response to the downward pressure this outflow of funds placed on the ruble, the central bank of Russia engaged in direct intervention by using dollars to purchase rubles in the foreign exchange market. It also used indirect intervention by raising interest rates to make Russia more attractive to investors, thereby discouraging additional outflows.

In July 1998, the IMF (with some help from Japan and the World Bank) organized a loan package worth \$22.6 billion for Russia. The package required that Russia boost its tax revenue, reduce its budget deficit, and create a more capitalist environment for its businesses.

During August 1998, Russia's central bank commonly intervened to prevent the ruble from declining substantially. On August 26, however, it gave up its fight to defend the ruble's value, and market forces caused the ruble to decline by more than 50 percent against most currencies on that day. This led to fears of a new crisis, and the next day (called "Bloody Thursday"), paranoia swept stock markets around the

world. Some stock markets (including the U.S. stock market) experienced declines of more than 4 percent.

Impact of the Asian Crisis on South Korea

By November 1997, seven of South Korea's conglomerates (called *chaebols*) had collapsed. The banks that financed the operations of the chaebols were stuck with the equivalent of \$52 billion in bad debt as a result. Like banks in the Southeast Asian countries, South Korea's banks had been too willing to provide loans to corporations (especially the chaebols) without conducting a thorough credit analysis. The banks had apparently engaged in such risky lending because they assumed that economic growth would continue at a rapid pace and therefore exaggerated the future cash flows that borrowers would have available to pay off their loans. In addition, South Korean banks had traditionally extended loans to the conglomerates without assessing whether the loans could be repaid. In November, South Korea's currency (the won) declined substantially, and the central bank attempted to use its reserves to prevent a free fall in the won but with little success. Meanwhile, the credit ratings of several banks were downgraded because of their bad loans.

On December 3, 1997, the IMF agreed to enact a \$55 billion rescue package for South Korea. The World Bank and the Asian Development Bank joined with the IMF to provide a standby credit line of \$35 billion. If that amount was not sufficient, other countries (including Japan and the United States) had agreed to provide a credit line of \$20 billion. The total available credit (assuming it was all used) exceeded the credit provided in the Mexican bailout of 1994 and made this the largest bailout ever. In exchange for the funding, South Korea agreed to reduce its economic growth and to restrict the conglomerates from excessive borrowing. This restriction resulted in some bankruptcies and unemployment, as the banks could not automatically provide loans to all conglomerates needing funds unless the funding was economically justified.

Impact of the Asian Crisis on Japan

Japan was also affected by the Asian crisis because it exports products to these countries, and many of its corporations have subsidiaries in these countries so their business performance is affected by the local economic conditions. Japan had also been experiencing its own problems. Its financial industry had been struggling, primarily because of defaulted loans. In November 1997, one of Japan's 20 largest banks failed. A week later, Yamaichi Securities Co. (a brokerage firm) announced that it would shut down. Yamaichi was the largest firm to fail in Japan since World War II. The news was shocking because the Japanese government had historically bailed out large firms such as Yamaichi because of the possible adverse effects on other firms. Yamaichi's collapse made market participants question the potential failure of other large financial institutions that were previously perceived to be protected ("too big to fail"). The continued weakening of the Japanese yen against the U.S. dollar during the spring of 1998 put more pressure on other Asian currencies; Asian countries wanted to gain a competitive advantage in exporting to the United States as a result of their weak currencies. In April 1998, the Bank of Japan used more than \$20 billion to purchase yen in the foreign exchange market. This effort to boost the yen's value was unsuccessful. In July 1998, Prime Minister Hashimoto resigned, causing more uncertainty about the outlook for Japan.

Impact of the Asian Crisis on China

Ironically, China did not experience the adverse economic effects of the Asian crisis because it had grown less rapidly than the Southeast Asian countries in the years prior

to the crisis. The Chinese government had more control over economic conditions because it still owned most real estate and still controlled most of the banks that provided credit to support growth. Thus, there were fewer bankruptcies resulting from the crisis in China. In addition, China's government was able to maintain the value of the yuan against the dollar, which limited speculative flows of funds out of China. Though interest rates increased during the crisis, they remained relatively low. Consequently, Chinese firms could obtain funding at a reasonable cost and could continue to meet their interest payments.

Nevertheless, concerns about China mounted because it relies heavily on exports to stimulate its economy; China was now at a competitive disadvantage relative to the Southeast Asian countries whose currencies had depreciated. Thus, importers from the United States and Europe shifted some of their purchases to those countries. In addition, the decline in the other Asian currencies against the Chinese yuan encouraged Chinese consumers to purchase imports instead of locally manufactured products.

Impact of the Asian Crisis on Latin American Countries

The Asian crisis also affected Latin American countries. Countries such as Chile, Mexico, and Venezuela were adversely affected because they export products to Asia, and the weak Asian economies resulted in a lower demand for the Latin American exports. In addition, the Latin American countries lost some business to other countries that switched to Asian products because of the substantial depreciation of the Asian currencies, which made their products cheaper than those of Latin America.

The adverse effects on Latin American countries put pressure on Latin American currency values, as there was concern that speculative outflows of funds would weaken these currencies in the same way that Asian currencies had weakened. In particular, there was pressure on Brazil's currency (the real) in late October 1997. Some speculators believed that since most Asian countries could not maintain their currencies within bands under the existing conditions, Brazil would be unable to stabilize the value of its currency.

The central bank of Brazil used about \$7 billion of reserves in a direct intervention to buy the real in the foreign exchange market and protect the real from depreciation. It also used indirect intervention by raising short-term interest rates in Brazil. This encouraged foreign investment in Brazil's short-term securities to capitalize on the high interest rates and also encouraged local investors to invest locally rather than in foreign markets. The adjustment of interest rates to maintain the value of the real signaled that the central bank of Brazil was serious about maintaining the currency's stability. The intervention was costly, however, because it increased the cost of borrowing for households, corporations, and government agencies in Brazil and thus could reduce economic growth. If Brazil's currency had weakened, the speculative forces might have spread to the other Latin American currencies as well.

The Asian crisis also caused bond ratings of many large corporations and government agencies in Latin America to be downgraded. Rumors that banks were dumping Asian bonds caused fears that all emerging market debt would be dumped in the bond markets. Furthermore, there was concern that many banks experiencing financial problems (because their loans were not being paid back) would sell bond holdings in the secondary market in order to raise funds. Consequently, prices of bonds issued in emerging markets declined, including those of Latin American countries.

Impact of the Asian Crisis on Europe

During the Asian crisis, European countries were experiencing strong economic growth. Many European firms, however, were adversely affected by the crisis. Like

firms in Latin America, some firms in Europe experienced a reduced demand for their exports to Asia during the crisis. In addition, they lost some exporting business to Asian exporters as a result of the weakened Asian currencies that reduced Asian prices from an importer's perspective. European banks were especially affected by the Asian crisis because they had provided large loans to numerous Asian firms that defaulted.

Impact of the Asian Crisis on the United States

The effects of the Asian crisis were even felt in the United States. Stock values of U.S. firms, such as 3M Co., Motorola, Hewlett-Packard, and Nike, that conducted much business in Asia declined. Many U.S. engineering and construction firms were adversely affected as Asian countries reduced their plans to improve infrastructure. Stock values of U.S. exporters to those countries fell because of the decline in spending by consumers and corporations in Asian countries and because of the weakening of the Asian currencies, which made U.S. products more expensive. Some large U.S. commercial banks experienced significant stock price declines because of their exposure (primarily loans and bond holdings) to Asian countries.

Lessons about Exchange Rates and Intervention

The Asian crisis demonstrated the degree to which currencies could depreciate in response to a lack of confidence by investors and firms in a central bank's ability to stabilize its local currency. If investors and firms had believed the central banks could prevent the free fall in currency values, they would not have transferred their funds to other countries, and Southeast Asian currency values would not have experienced such downward pressure.

Exhibit 6A.1 shows how exchange rates of some Asian currencies changed against the U.S. dollar during one year of the crisis (from June 1997 to June 1998). In particular, the currencies of Indonesia, Malaysia, South Korea, and Thailand declined substantially.

The Asian crisis also demonstrated how interest rates could be affected by flows of funds out of countries. Exhibit 6A.2 illustrates how interest rates changed from June

Exhibit 6A.1 How Exchange Rates Changed during the Asian Crisis (June 1997–June 1998)

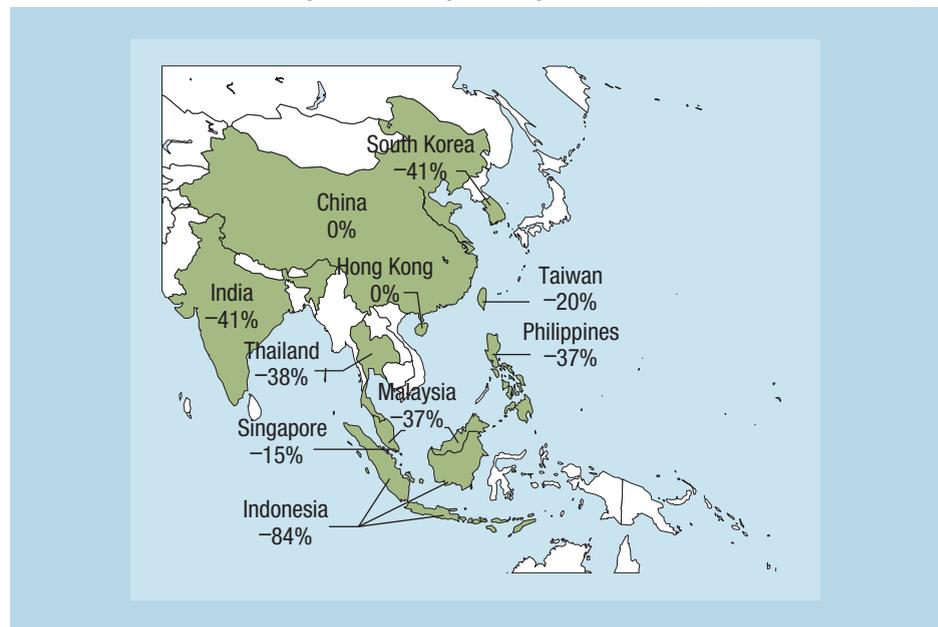


Exhibit 6A.2 How Interest Rates Changed during the Asian Crisis (Number before slash represents annualized interest rate as of June 1997; number after slash represents annualized interest rate as of June 1998)



1997 (just before the crisis) to June 1998 for various Asian countries. The increase in interest rates can be attributed to the indirect interventions intended to prevent the local currencies from depreciating further, or to the massive outflows of funds, or to both of these conditions. In particular, interest rates of Indonesia, Malaysia, and Thailand increased substantially from their pre-crisis levels. Those countries whose local currencies experienced more depreciation had higher upward adjustments. Since the substantial increase in interest rates (which tends to reduce economic growth) may have been caused by the outflow of funds, it may have been indirectly due to the lack of confidence by investors and firms in the ability of the Asian central banks to stabilize the local currencies.

Finally, the Asian crisis demonstrated how integrated country economies are, especially during a crisis. Just as the U.S. and European economies can affect emerging markets, they are susceptible to conditions in emerging markets. Even if a central bank can withstand the pressure on its currency caused by conditions in other countries, it cannot necessarily insulate its economy from other countries that are experiencing financial problems.

DISCUSSION QUESTIONS

The following discussion questions related to the Asian crisis illustrate how the foreign exchange market conditions are integrated with the other financial markets around the world. Thus, participants in any of these markets must understand the dynamics of the foreign exchange market. These discussion questions can be used in

several ways. They may serve as an assignment on a day that the professor is unable to attend class. They are especially useful for group exercises. The class could be segmented into small groups; each group is asked to assess all of the issues and determine a solution. Each group should have a spokesperson. For each issue, one of the groups will

be randomly selected and asked to present their solution, and then other students not in that group may suggest alternative answers if they feel that the answer can be improved. Some of the issues have no perfect solution, which allows for different points of view to be presented by students.

1. Was the depreciation of the Asian currencies during the Asian crisis due to trade flows or capital flows? Why do you think the degree of movement over a short period may depend on whether the reason is trade flows or capital flows?
2. Why do you think the Indonesian rupiah was more exposed to an abrupt decline in value than the Japanese yen during the Asian crisis (even if their economies experienced the same degree of weakness)?
3. During the Asian crisis, direct intervention did not prevent depreciation of currencies. Offer your explanation for why the interventions did not work.
4. During the Asian crisis, some local firms in Asia borrowed U.S. dollars rather than local currency to support local operations. Why would they borrow dollars when they really needed their local currency to support operations? Why did this strategy backfire?
5. The Asian crisis showed that a currency crisis could affect interest rates. Why did the crisis put upward pressure on interest rates in Asian countries? Why did it put downward pressure on U.S. interest rates?
6. It is commonly argued that high interest rates reflect high expected inflation and can signal future weakness in a currency. Based on this theory, how would expectations of Asian exchange rates change after interest rates in Asia increased? Why? Is the underlying reason logical?
7. During the Asian crisis, why did the discount of the forward rate of Asian currencies change? Do you think it increased or decreased? Why?
8. During the Hong Kong crisis, the Hong Kong stock market declined substantially over a 4-day period due to concerns in the foreign exchange market. Why would stock prices decline due to concerns in the foreign exchange market? Why would some countries be more susceptible to this type of situation than others?
9. On August 26, 1998, the day that Russia decided to let the ruble float freely, the ruble declined by about 50 percent. On the following day, called “Bloody Thursday,” stock markets around the world (including the United States) declined by more than 4 percent. Why do you think the decline in the ruble had such a global impact on stock prices? Was the markets’ reaction rational? Would the effect have been different if the ruble’s plunge had occurred in an earlier time period, such as 4 years earlier? Why?
10. Normally, a weak local currency is expected to stimulate the local economy. Yet, it appeared that the weak currencies of Asia adversely affected their economies. Why do you think the weakening of the currencies did not initially improve their economies during the Asian crisis?
11. During the Asian crisis, Hong Kong and China successfully intervened (by raising their interest rates) to protect their local currencies from depreciating. Nevertheless, these countries were also adversely affected by the Asian crisis. Why do you think the actions to protect the values of their currencies affected these countries’ economies? Why do you think the weakness of other Asian currencies against the dollar and the stability of the Chinese and Hong Kong currencies against the dollar adversely affected their economies?
12. Why do you think the values of bonds issued by Asian governments declined during the Asian crisis? Why do you think the values of Latin American bonds declined in response to the Asian crisis?
13. Why do you think the depreciation of the Asian currencies adversely affected U.S. firms? (There are at least three reasons, each related to a different type of exposure of some U.S. firms to exchange rate risk.)
14. During the Asian crisis, the currencies of many Asian countries declined even though their governments attempted to intervene with direct intervention or by raising interest rates. Given that the abrupt depreciation of the currencies was attributed to an abrupt outflow of funds in the financial markets, what alternative Asian government action might have been more successful in preventing a substantial decline in the currencies’ values? Are there any possible adverse effects of your proposed solution?