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CHAPTER 24

Crises in Emerging Markets

The globalization of financial markets, a trend that Chapter 21 examined at length, has come increasingly to encompass not only industrialized countries, but developing countries as well. The term *emerging market* attained popularity in the early 1990s, to describe middle-income countries where financial markets had begun to develop and to open up to global investors.

Modern financial markets have many advantages. As the analysis of Section 21.5 showed, a capital-poor country can finance investment more cheaply by borrowing from abroad than if it had to do it entirely out of domestic saving. Nevertheless, financial markets have disadvantages as well. Financial crises hit many borrowing countries in Latin America in 1982, Mexico in 1994, East Asia in 1997, Russia in 1998, Turkey in 2001, and Argentina in 2002. As currency values and securities prices plummeted, the adverse effects went far beyond losses to international investors. Most of these countries suffered severe recessions. Living standards fell, particularly for many who had only managed to lift themselves out of poverty relatively recently. Such trials and tribulations have motivated the emerging market governments, along with the international financial community, to think hard about what can be done to reduce the frequency and severity of crises.

24.1 Inflows to Emerging Markets

We can view recent history in cycles. There was a boom in loans to developing countries in the late 1970s and early 1980s; it turned to bust with the debt crisis that began in Mexico in 1982 and soon spread to other debtors. A new boom began after 1990 as the dark line in Figure 24.1 shows. Capital flooded back into Latin America after the seven-year hiatus, reached record levels in East Asia, and found its way also to countries in Central Europe and other corners of the globe. A new bust phase followed in the latter half of the 1990s. The years 2001 to 2005 saw the beginning of a new phase of inflows. We consider the origins of 1990s-type inflows in this section, and the bust phase in subsequent sections.

Origins

In the early 1990s, or again in the years 2001 to 2005, a typical emerging market country found itself in the situation of point B in Figure 24.1: above the $BP = 0$ line. In other words, it ran a surplus on the overall balance of payments, generally consisting of

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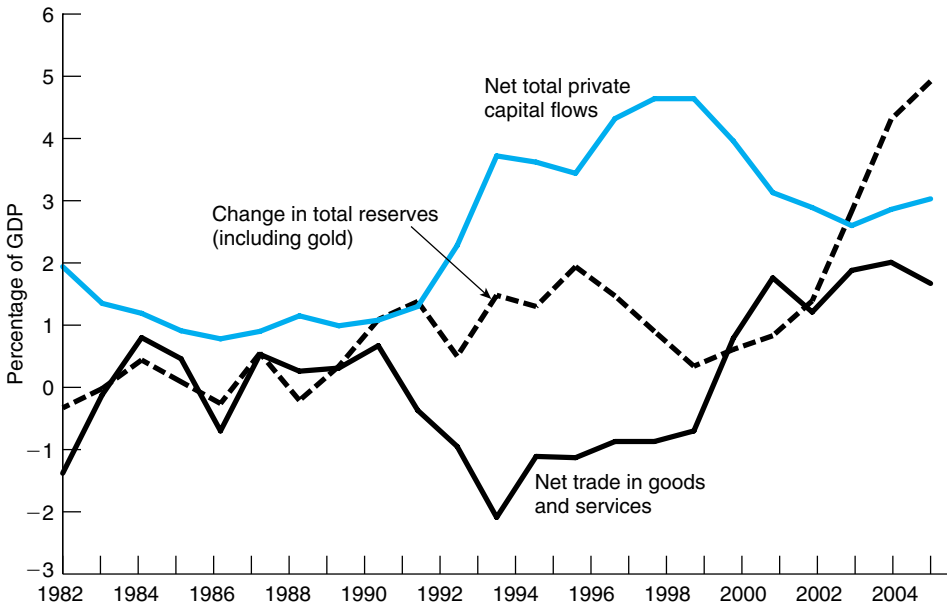
FIGURE 24.1

Flows to Developing Countries (Low and Middle Income)
Capital Account Surplus, Current Account, and Change in Reserves
(as a percentage of total GDP)

Capital flows fell off after the crises of 1982 and 1998, in each case requiring countries to reverse the trade deficits they had been financing up to that point. A new capital account boom started in the years 2002 to 2005, but this time the borrowers were more cautious: They used the inflows to build up reserves sharply, rather than to run current account deficits as in the previous two cycles.



Source: World Development Indicators.

large capital inflows that were more than enough to finance any current account deficit. How had it gotten there?

Although the situation of course varied from country to country, the causal factors generally fell into two broad categories: internal and external. Each factor can be considered in terms of Figure 24.1.

The first set of causes consisted of internal policy reforms and other domestic factors.

1. *Monetary stabilization.* Countries that had experienced high rates of inflation in the 1970s and 1980s—in some cases even hyperinflation—had succeeded in bringing their inflation rates down sharply by the early 1990s. Examples include Bolivia, Israel, Mexico, Argentina, and Brazil. Contraction of the real money supply was often a component of the stabilization plan, which would be a leftward shift of the *LM* curve. Where expectations were successfully stabilized, there was also an increase in money

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demand, which again shifts the *LM* curve leftward. Either way, the economy would end up at a point like *B*, where the monetary stabilization attracts a capital inflow.

2. *Spending boom.* Economic liberalization can lead to a boom in investment, as firms respond to a better environment for business. It can also lead to a boom in consumption as households respond to newly available consumer goods and newly available consumer credit. Mexico after NAFTA went into effect in January 1994 was a good example. Either way, the *IS* curve shifts out, which is again a way to get to a point like *B*. The payments surplus is analogous to the Dutch disease discussed in Section 20.2.

3. *Capital account liberalization.* Many countries removed previously existing controls on the inflow of capital.[1] A financial opening of this sort is an increase in the degree of capital mobility, k, and an increase in $\overline{KA}$ as well. It rotates the $BP = 0$ curve downward. A country may be initially sitting at point *B* with a $BP = 0$ line running right through it, and then find after capital-account liberalization that the same point now corresponds to a balance of payments surplus.

Other reforms accompanying liberalization helped promote the capital inflow. Liberalization with respect to trade and finance created a market-oriented environment in which foreigners felt more welcome than in the past. Privatization of state-owned enterprises (airlines, power utilities, telephone companies) offered new assets for investors to buy. Policies to peg or target the exchange rate reduced fears of devaluation.

The other set of factors consisted of external developments.

1. *Low rates of return in industrialized countries.* U.S. interest rates fell in the years 1990 to 1993, as the result of a U.S. recession. Investors accustomed to high interest rates in the 1980s looked around for new places to put their money. High rates of return in the emerging markets caught their attention. In terms of the graph, a fall in i^* is a vertical downward shift of the $BP = 0$ curve. Even if there has been no increase in the domestic interest rate at point *B*, the country now finds itself in the surplus zone.[2] The same thing happened again in the 2001–2003 period: The Federal Reserve under Chairman Alan Greenspan responded to a U.S. recession by cutting interest rates to the lowest levels in half a century, encouraging money to flow to emerging markets. Borrowing at low U.S. interest rates and lending elsewhere is called the "carry trade."

2. *The Brady Plan.* In the late 1980s some economists had argued that the existence of a large debt overhang constituted a disincentive to the debtor countries. The overhang discouraged them from investing in projects that would generate earnings of foreign exchange because they feared that the payoff would just go to the foreign creditors. The argument was that outright forgiveness or writing-down of the debt would encourage investment and growth, and result in a larger economic pie for all parties to

[1]Some countries also removed existing controls on capital outflows. Investors may be reluctant to put their funds into a country if they are unsure of being able to get them out again. Thus liberalization of outflows can sometimes encourage inflows.

[2]Guillermo Calvo, Leo Leiderman, and Carmen Reinhart, "Capital Inflows and Real Exchange Rate Appreciation in Latin America: The Role of External Factors," *IMF Staff Papers* 40, no. 1 (1993): 108–150.

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share.[3] The Brady Plan, put forth by the U.S. Treasury in 1989, was a step in the direction of debt reduction, with the remaining loans securitized as so-called *Brady bonds.* The timing of subsequent capital inflows into countries that underwent Brady restructuring is very suggestive: There had been a cleaning of the slate that, at a minimum, provided a psychological boost for new lending.

3. *Financial innovations* to enhance the availability of funds. Innovations such as *country funds, American Depository Receipts* (ADRs), and Global Depositary Receipts (GDRs) have made it easier than previously for investors in rich countries to buy securities in emerging markets. Country funds offer foreign investors a selected basket of securities in a particular country, even when the local stock market in general has not been opened up to them directly. ADRs can be bought conveniently in New York but are certificates of ownership of equities in another country. Even more conveniently for rich-country investors, some companies in middle-income countries such as Mexico and Israel have decided to list their shares directly on the New York Stock Exchange or Nasdaq. Others, however, have recently been deterred by higher standards for corporate reporting.

The share of saving in rich countries invested by institutional investors, rather than by individuals, has been steadily increasing. Institutional investors include pension funds, mutual funds, and hedge funds. Hedge funds are speculative funds catering to wealthy individuals.[4] Institutional investor managers are better able to acquire the information needed to invest in foreign securities than are most individual investors. They often find emerging markets attractive for two reasons. First, they expect the returns to be high. A country with a high marginal product of investment will experience a capital inflow if it opens up to international investors (as illustrated formally in Figure 21.4). Second, these markets offer fund managers an opportunity to diversify their portfolios, and thus reduce their overall risk (as explained in Chapter 28).

4. *Moral hazard.* When some form of insurance protects people against the worst consequences of disaster, they may no longer have the incentive to take actions that could help prevent the damage from arising in the first place. This principle is called moral hazard. Some critics argue that capital flows to emerging markets in the 1990s were encouraged by moral hazard: Borrowers and lenders believed that the IMF or G7 would "bail them out" in the event of a crisis, and thus they lacked the incentive to be sufficiently careful. Some, for example, believe that the enlarged amount of money used to save Mexico in January 1995 encouraged reckless capital flows to East Asia and Russia thereafter. When the G7 and IMF finally "pulled the plug" on Russia in August 1998, they usefully served notice that such debtors would not be bailed out indefinitely.

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[3]Paul Krugman, "Financing versus Forgiving a Debt Overhang," *Journal of Development Economics,* 1989.
[4]The name "hedge funds" sounds puzzling because they are famous for exposure to risk. The explanation is that, at least according to the original theory, hedge funds place bets where prices are out of line with fundamentals—for example, arbitraging a difference in interest rates—and then use derivatives to hedge any risks that are not logically connected to the particular bet they are making. But a more accurate description is they are funds that are exempt from regulatory constraints because each is held by a small number of wealthy investors who are presumed to be able to look out for themselves.

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Management of Capital Inflows

Although most countries want to attract investment from abroad, there can be too much of a good thing. Anyone who runs up a large debt runs the danger that there will be trouble in the future if creditors suddenly demand repayment, or even if they merely lose willingness to continue lending new money. Figure 24.1 shows that in the early 1990s, developed countries used their rising private capital inflows to finance trade deficits, which they were then forced to reverse abruptly when capital inflows fell after the Asia/Russia crises of 1998. The same thing had happened after the international debt crisis of 1982. This can be a reason to try to limit the magnitude of indebtedness. In any case, capital inflows pose questions of macroeconomic management that must be answered one way or another.

Figure 24.2 illustrates four major possible macroeconomic strategies for dealing with a capital inflow.

(A) *Allow inflow of money*. First, as the level of reserves increases through the balance-of-payments surplus, the central bank could passively allow it to feed through as an increase in the money supply. In this case the *LM* curve shifts outward over time, as we saw in our discussion of the monetary approach to the balance of payments. The advantage of this path is that the surplus is automatically self-correcting.

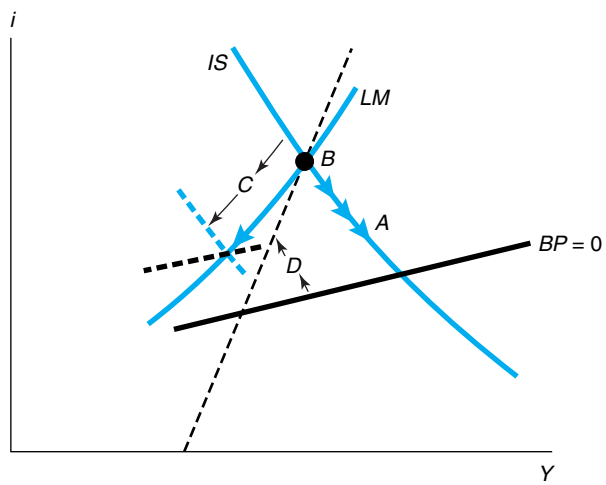
The disadvantage is that the increase in the money supply can be inflationary. In terms of the Mundell-Fleming model, one could imagine that output is already at the level of potential output $\overline{Y}$ at point *B*, and that any movement further to the right will overheat the economy and eventually put upward pressure on prices. More generally, increases in the money supply tend to lead to inflation in the long run. For a country that has in the past suffered chronically from inflation, and recently defeated it with great difficulty, this path is worrisome. (We consider inflation in more detail in Chapter 26.)

Hong Kong is an example of an economy that allowed surpluses in the early 1990s to increase the money supply. Indeed, under its currency board arrangement, it had no choice. Prices, especially for real estate, boomed as a result.

FIGURE 24.2

Alternative Ways of Managing Capital Inflows

At point *B*, the country is experiencing a surplus in the balance of payments. It can allow the money to flow in, moving over time in the direction indicated by point *A*; sterilize the inflow, remaining at point *B*; allow the currency to appreciate, moving in the direction of *C*; or impose capital controls, swinging the *BP* = 0 line toward *D*.



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(B) *Sterilize inflow.* When reserves are flowing in through the balance of payments, the alternative to allowing them to increase the money supply is to sterilize them. Under the sterilization option, the economy for the time being simply remains at point *B*. Because the upward pressure on the money supply and aggregate demand has been shut off, inflation need not be a concern.

One disadvantage of sterilization is that it can be difficult. In the United States, with its deep, liquid securities markets, sterilizing an increase in reserves is a simple matter of open market sales of securities by the central bank, to take money out of the hands of the public. This is often more difficult in a country where domestic financial markets are less well developed. A central bank can require commercial banks to hold extra domestic reserves, and thereby try to eliminate any positive effect on M1. But this places a burden on the banks that may be inconsistent with plans to make them competitive. Alternatively, the central bank can create a new security, a "sterilization bond," that it sells to the public at large thereby taking domestic money out of circulation. But it may have to pay a high interest rate to induce the public to take these new assets voluntarily. Thereafter—because the interest rate that the central bank pays out on these sterilization bonds exceeds the interest rate it is earning on its holdings of U.S. Treasury bills or other international reserves—the central bank incurs what is called a *quasi-fiscal deficit.*

A related disadvantage to sterilization of a capital inflow is that it cannot be sustained indefinitely. By keeping the domestic interest rate high at point *B*, the central bank prolongs the capital inflow and forestalls adjustment. This is especially true if capital mobility is high. In the limiting perfect-capital mobility case of Section 23.3, sterilization quickly becomes impossible.

In the early 1990s Colombia, Korea, Indonesia, and some other countries attempted to sterilize large capital inflows. Although the central banks were able to "buy time" by this strategy, they eventually gave it up because there was no end in sight to the pattern of high interest rates and accumulating debt. The case of China's sterilized inflows after 2001 is discussed in the next subsection.

(C) *Allow appreciation.* The alternative to allowing the money supply to adjust automatically is to allow the exchange rate to adjust automatically. In response to a balance of payments surplus, this means allowing the currency to appreciate. The loss of price competitiveness has a negative effect on net exports, which can eventually return the overall balance of payments to zero. In terms of Figure 24.2, the *IS* curve shifts left to point *C*.

The advantage of appreciation is that weak demand and direct downward pressure on import prices both put a strong lid on inflation. One disadvantage is the danger of recession, especially in the tradable goods sectors that lose competitiveness from the currency appreciation. A second reason why some governments are reluctant to let their currencies float arises if they are strongly attached to a long-term strategy of pegging the exchange rate, for example, because it was instrumental in an earlier program of monetary stabilization. The arguments for fixed versus floating exchange rates are summarized in Chapter 26.

Korea allowed its currency to appreciate in the late 1980s, in response to large balance of payments surpluses.

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(D) *Impose controls.* The fourth choice is to impose—or reimpose—controls on capital inflows. If the controls are effective, they will tilt the $BP = 0$ line upward. If the shift goes far enough, the new $BP = 0$ line may run through point B, which means that the balance of payments surplus has been eliminated. At times in the early 1990s, Chile, Colombia, and Malaysia imposed controls to discourage capital inflows. China and India delayed removing the controls that they had long maintained. The clearest disadvantage to controls on capital inflows is that the country passes up an opportunity to finance its development by borrowing abroad at a relatively lower interest rate. Instead, it has to finance investment out of higher-cost domestic funds.

A fifth possible option is a fiscal contraction, to shift the *IS* curve leftward. Many of these countries had already made substantial progress at eliminating large budget deficits, however, despite political difficulties. Indeed, to the extent that budget deficits lack long-run sustainability and undermine confidence in monetary stability, their elimination can sometimes be a cause of capital inflows rather than the reverse.

The Case of China's Balance-of-Payments Surplus

The large balance-of-payments surplus in China in the years following 2001 offers a good case study for these questions. It also had much in common with contemporaneous events in India and many other developing countries that found themselves at a point like *B* in Figure 24.2.

The Chinese surpluses had three components:

1. *Large inflows of foreign direct investment*. China encouraged inward FDI as a deliberate part of its successful development strategy because it lacked domestically technical and managerial know-how and high-quality systems of corporate governance and finance to go with its cheap manufacturing labor force.

2. *Large inflows of short-term portfolio capital*. These flows were motivated by speculation that the local currency—called the yuan or renminbi ("People's Currency")—would be revalued upward against the dollar. They circumvented capital controls and largely escaped official measurement, showing up only as the statistical discrepancy.

3. *A growing trade surplus*, including a large bilateral trade surplus with the United States. The importance of the latter was mainly political, as American manufacturers and members of Congress increasingly blamed China for the overall U.S. trade deficit and for slow growth in employment and real wages, even though the economic connection was small and tenuous. (Most of the goods that the United States has started buying from China in recent years would otherwise be bought from other Asian countries, not from domestic producers.)

China's exchange rate policy from 1997 to 2005 was in effect to peg the yuan to the U.S. dollar. China from 2002 to 2005 was like many other developing countries in that it decided to use the private capital inflows to build up strong holdings of foreign exchange reserves. Some expansion of the money supply was easily accepted as the counterpart to the very rapid growth of the overall economy. (It is appropriate for the

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money supply to increase if money demand is increasing.) But the primary response beginning in 2003 was to sterilize the monetary inflow. In other words, to manage the inflows the Chinese authorities mainly chose option (B). As a result, fears of overheating and inflation were not borne out. The sterilization largely took the form of raising the reserve requirements on domestic commercial banks, and also inducing them to absorb large quantities of sterilization bonds issued by the central bank at low interest rates. This policy was successful from the standpoint of the central bank but may have exacerbated the already-weak balance sheets of the commercial banks.

The government was under a lot of pressure to consider alternative (C), that is, to move to a more flexible exchange rate system, which, under the conditions of the period, would likely lead to strong appreciation of the yuan. The United States urged this option on China, under the reasoning that the dollar needed to depreciate to reduce the record U.S. trade deficits and the yuan was the last of the major currencies to cling to the dollar rather than allowing appreciation against it. Many economists found the appreciation alternative to be in China's interest as well, for a variety of reasons. China's balance-of-payments surplus was so large that it was piling up levels of foreign exchange reserves far higher than it was likely ever to need, surpassing Japan in 2006 and thereby becoming the world's largest holder of reserves. Much of these reserves is U.S. Treasury bills that pay much lower rates of return than the return China must pay for the capital that is flowing in. Appreciation would slow down the reserve accumulation and alleviate the choice between overheating and sterilization. Another argument is the Balassa-Samuelson effect (see Section 19.2), which implies that a country with productivity growth as rapid as China's must experience a real appreciation of the currency. More generally, there is the argument that a country as large as China needs to have its own independent currency (see Section 26.5)—to achieve expenditure switching through changes in the nominal exchange rate rather than the price level. Finally, experience shows that the best *exit strategy* from a peg is for the authorities to choose increased flexibility in good times (when the balance of payments is strong), rather than waiting until some future crisis forces the currency off its peg.

In 2005 the People's Bank of China finally announced it was moving to a more flexible, less dollar-oriented exchange rate policy. But the political leaders in Beijing did not get where they are today by doing anything suddenly. The move toward greater flexibility in the yuan/dollar exchange rate looked to be very gradual.

Warning Indicators and the Composition of Capital Inflows

Everyone would like to be able to predict ahead of time when a crisis will happen. This is not easy to do. Even private "rating services" professionals, who make their living by evaluating the risk of bonds from various issuers, have a poor track record. Indeed, if it were easy to predict the date of a crisis, according to the theory of efficient markets, investors would not have their money in the country at that date in the first place. But there are certain warning indicators that may signal that a country is at increased risk.[5]

[5]Graciela Kaminsky, Saul Lizondo, and Carmen Reinhart, "Leading Indicators of Currency Crises," *IMF Staff Papers* 5, no. 1 (1998): 1–48; and Jeffrey Frankel and Andrew Rose, "Currency Crashes in Emerging Markets," *Journal of International Economics,* 41, no. 3/4 (1996): 351–366.

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Traditional indicators are measures of aggregate indebtedness, such as the ratio of debt to GDP,[6] the ratio of debt service to exports, or the ratio of the current account to GDP. One long-standing rule of thumb, for example, is that current account deficits in excess of 4 percent of GDP enter a danger zone. Such predictors are of limited use, however, and not just because they have little basis in theory. Many countries are observed to run large current account deficits for years, and yet are able to finance them without getting into trouble. It depends how the funds are used.

Borrowing to finance large budget deficits is clearly problematic. For this reason, periodically someone will assert that a given country need not worry about a current account deficit because the government budget is in balance, and thus it is only the private sector that is borrowing from abroad. There is a certain logic to the argument that decisions made freely by consenting adults who face explicit price signals (interest rates, in this case) are less likely to get into trouble than governments spending somebody else's money. Nevertheless, this principle has gone wrong frequently enough to earn the name "Lawson fallacy" (after the British finance minister who downplayed fears regarding his country's current account deficit in the late 1980s). Examples of countries that borrowed to finance private deficits rather than public deficits and yet experienced crises include Chile in 1981 and Mexico in 1994.

Out of those experiences, a new guideline emerged: A country is more likely to get into trouble if an inflow goes to finance consumption, whether public or private, instead of investment. After all, the key to sustainable borrowing is to use the funds to build up a productive capital stock, so that the country will be able tomorrow to produce, export, and earn the foreign exchange that it will need to pay back the debt incurred today. East Asian countries in the 1990s, with their high rates of saving and investment, seemed by this criterion to be unimpeachable, despite their large current account deficits. Only when they too were hit by crises in 1997–1998 did the flaw in this logic become clear. Much of the finance had gone to investment in unprofitable heavy manufacturing and real estate. A Korean firm that borrows heavily in order to invest in auto or steel factories may have trouble paying the money back if those sectors already have excess capacity.

Indicators that concern the composition of capital inflow, rather than the total amount, appear to be statistically useful at predicting the probability of currency crashes. Countries that borrow funds short term are more likely to get into trouble, especially if those funds are intermediated through the banking system and denominated in dollars or other foreign currencies. Countries that borrow long term are less likely to get into trouble especially if the inflow takes the form of foreign direct investment rather than bank loans. One theory is that bank flows in particular are more vulnerable to moral hazard problems than are other modes of finance. A mismatch of short-term bank liabilities with longer-term bank assets (e.g., real estate) leaves a country vulnerable. FDI is thought to be relatively more stable than banking inflows. Likewise, flows of longer-term securities have the advantage that the price of a stock or bond adjusts automatically in the event of adverse developments ("risk sharing"), with

[6]A high debt/GDP ratio is problematic, not so much in itself, but because of the danger that the country will find itself on an explosive path of *rising* debt/GDP. See the chapter supplement on debt dynamics.

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fewer sticky issues of bankers' negotiating over terms of rollovers or restructuring. An alternative theory is that a run-up of short-term bank credit is a symptom of coming problems, rather than a cause, much as an individual who tries to charge his mortgage payments on his credit card reveals that he is overextended.

Countries that accumulate a high level of international reserves are less likely to have problems. The lesson drawn from past crises persuaded many developing countries to build up their reserves sharply in the period after 2001, as Figure 24.1 shows. One of the most useful summary indicators of danger is the ratio of short-term debt to reserves. As this ratio rises above 1, the danger of a crisis rises with it.[7]

24.2 Managing Outflows

There comes a day when capital flows are no longer sufficient to finance the current-account deficit. Perhaps the country has suffered a fall in world demand for its main exports. Examples include the fall in the price of oil and other basic commodities that hurt Mexico in the early 1980s or the overcapacity in the world market for semiconductors and other electronics goods that hit East Asia in 1996. Perhaps an increase in U.S. interest rates has slowed down capital flows, as it did to Latin American countries in the years 1980 to 1982 and again in 1994. Or perhaps local political instability has scared off investors, as did the assassination of the leading Mexican presidential candidate in January 1994 or the uncertainties over presidential succession in Indonesia in 1997–1998.

Figure 24.3 illustrates the plight of such a country. Point B now lies below the $BP = 0$ schedule, signaling that it is running a balance-of-payments deficit. How should the government manage these outflows? Once again, it has several macroeconomic policy options from which to choose.

(A) *Allow outflow of money.* If the central bank does not sterilize the reserve outflow, then the declining money supply will gradually shift the LM curve, moving the economy up and to the left. Higher interest rates will work to contract spending. The result will be slowing growth, perhaps exacerbated by domestic banking failures. Argentina is an example of an economy that allowed deficits in 1995 and 1999–2000 to impose a contractionary monetary policy. Under its quasi-currency board arrangement (which it called the convertibility plan), it had no choice. The result was sharp recessions both times.

(B) *Sterilize outflow.* Sterilizing the reserve outflow is an alternative to letting the money supply fall. The economy remains at point B in Figure 24.3, at least for the time being. This is a case of financing a deficit rather than adjusting. Sterilization can be a sensible strategy if there are grounds for hope that the deficit is temporary. Faced with a balance-of-payments deficit in 1994, the Bank of Mexico chose to sterilize, by expand-

[7]How much reserves is enough? The traditional rule of thumb was phrased in terms of trade: A country needs a minimum level of reserves that is enough to pay for three months of imports. As the source of a balance-of-payments crisis has shifted from the trade account to the capital account, a new rule of thumb has been proposed, the "Guidotti rule": A country should try to have enough reserves so that it could cover all debt coming due over the next year, in the event that creditors suddenly lost willingness to roll it over or extend new loans.

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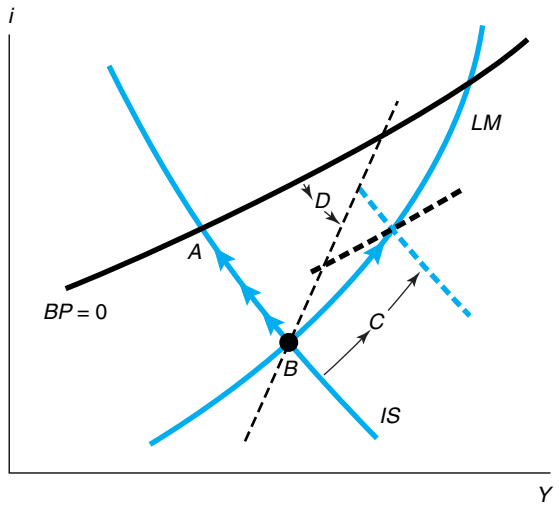
FIGURE 24.3

Alternative Ways of Managing Capital Outflows

At point *B*, the country is experiencing a deficit in the balance of payments. It can allow the money to flow out, moving over time in the direction indicated by point *A*; sterilize the outflow, remaining at point B; allow the currency to depreciate, moving in the direction of *C*; or impose capital controls, swinging the *BP* = 0 line toward *D*.



ing domestic credit. Policy makers were optimistic that inflows would return when the political situation stabilized. The ruling political party also did not want to risk contraction in an election year. As a result, reserves had been run down by the time the new government took office in December.

(C) *Allow depreciation.* The alternative to automatic adjustment by allowing the money supply to fall is automatic adjustment by allowing the currency to depreciate. The positive effect on net exports can eventually return the overall balance of payments to zero. In terms of Figure 24.3, the *IS* and *BP* = 0 curves shift right to point *C*.

(D) *Reimpose controls on capital outflow.* The fourth option is to impose, or reimpose, controls on capital outflows. The goal is usually to shift the *BP* = 0 line downward, thereby allowing a low domestic interest, to sustain growth, without accelerating a capital outflow that would threaten the currency. One disadvantage is that the controls may not be very effective. Malaysia adopted controls to prevent investors from taking money offshore in 1998. Tight administrative control made this strategy more effective than it might have been in a more open society. Even when such controls are enforceable, a second disadvantage is that they are likely to scare investors away from the country in the future.

Countries that postpone adjustment may find that it becomes more costly later on. Their options will be sharply limited if they fall victim to a speculative attack.

24.3 Speculative Attacks

When speculators fear that a devaluation may be coming, to protect themselves against the expected loss in the value of the domestic currency they will seek to trade it in for foreign currency. The central bank may very quickly lose large amounts of its foreign exchange reserves in such an episode, which is known as a *speculative attack*. Absent a

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successful defense, the authorities are forced to abandon their previous exchange rate target—to devalue or depreciate the currency. To resist is to face the loss of all their reserves, after which they have to depreciate anyway. Hemorrhaging of reserves was the proximate cause, for example, of the Bretton Woods system's final demise in 1973, Britain's departure from the European Exchange Rate Mechanism in 1992, Mexico's ill-fated devaluation in December 1994, the East Asian currency crises of 1997, the Russian crisis of 1998, the Brazilian devaluation of 1999, the Turkish devaluation of 2001, and many others.

Economists' theories of speculative attacks have organized themselves into three "generations." Each generation of models was launched by a seminal article or articles, of which a key feature was an attempt to answer the question, "Why do crises occur when they do?" Each relied on the assumption that speculators think ahead and form their expectations rationally. But before we consider the question of timing, it may be useful to explain the three categories in terms of their attempts to answer a less technical and more inflammatory question: Whose fault is the crisis? Generation I says domestic macroeconomic policy, Generation II says volatile international financial markets, and Generation III says domestic financial structure. In neutral language, the explanations are, respectively, excessive monetary and fiscal expansion, "multiple equilibria," and moral hazard. In finger-pointing language, the respective culprits are irresponsible domestic policy makers, crazy international investors, and crony capitalists.

First Generation: Overly Expansionary Macroeconomic Policy

The first generation of speculative attack models attributes speculative attacks ultimately to overly expansionary macroeconomic policies. Most textbook analysis falls into this category. Budget deficits must be financed by borrowing or monetary expansion. Either way, the result is a current account deficit. If nothing is done to adjust, eventually the country will run out of reserves. Macroeconomic overexpansion and overvaluation were the standard diagnoses of balance of payments crises in developing countries before 1995, and were the basis of most adjustment programs administered by the International Monetary Fund. The international debt crisis of the 1980s is an important example.

What determines the timing of the attack? The seminal article in the first generation approach was by Paul Krugman.[8] Consider a country in which, because of ongoing monetary or fiscal expansion, the balance-of-payments deficit is a steady $1 billion a year. If it has reserves of $5 billion, then apparently it can hold out for five years. Absent some change, it will run out of reserves at the end of that time and be forced to devalue or depreciate, by enough to eliminate the deficit.

Krugman's contribution was to identify, in a country that will eventually run out of reserves, the time at which the attack will come. It will be sooner than five years. If

[8]"A Model of Balance of Payments Crises," *Journal of Money, Credit and Banking,* 11 (1979): 311–325; reprinted in Krugman's *Currencies and Crises* (Cambridge, MA: MIT Press, 1992), pp. 61–76. Robert Flood and Peter Garber produced a more accessible version of the model: "Collapsing Exchange Rate Regimes: Some Linear Examples," *Journal of International Economics,* 17 (1984): 1–14.

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speculators are rational, they will not wait until then. To do so would mean holding an asset—domestic currency—while knowing that it will suffer a discrete loss in value in the immediate future. Any self-respecting speculator would instead shift his or her money out of the country at an earlier date. When they all do this, they move the date of the crisis forward. One might then try to take this logic to the other limit, reasoning that the attack must take place much earlier, the moment when the pattern of over-expansion and eventual devaluation first become clear. But this also is not the right solution. As long as the central bank has plenty of reserves to defend the exchange rate, speculators will be happy to wait. There is an intermediate date, when the remaining stock of reserves has been run down to just the right level: still high enough that the speculators can get their money out, but no higher than that. That is when the attack occurs. The remainder of the reserves are then suddenly depleted in a single day. This theory helps explain why the level of reserves is statistically a useful predictor, a low level of reserves signaling danger of crisis.

Second Generation: Multiple Equilibria

The second generation of models argue that more than one possible outcome—crisis and no-crisis—can be consistent with equilibrium, even if there has been no change in true fundamentals.[9] The multiple equilibrium approach took its inspiration from the crises in the European Exchange Rate Mechanism (ERM) of 1992–1993.

There had always been some who claimed that financial markets were excessively volatile, that they alternated waves of optimism and pessimism. But the usual view among academic economists as well as the international financial establishment had been that markets are based in economic fundamentals; so declining market prices or flows are merely the messenger or symptom of underlying problems. This view became harder to maintain as a sequence of currencies succumbed to attack. The attack on France in 1993 was particularly puzzling because the government had over the preceding years succeeded in attaining a level of macroeconomic discipline that by most indicators looked as great as that of Germany, its partner in the ERM. Moreover, after the bands were widened, the crisis passed without a substantial further depreciation of the franc, even though there had been no tightening of macroeconomic policy in the meantime. How then could the fundamentals have been responsible for the earlier speculative pressure? Also puzzling was that Sweden and the United Kingdom had shown a willingness to raise interest rates to extremely high levels to defend the krona and the pound in 1992, yet speculators were unimpressed and persisted in those attacks nonetheless. Such a response, known as the *interest rate defense,* is apparently no longer guaranteed to work.

The point is most easily understood as a game played among speculators, along the lines of the classic "prisoners' dilemma." Consider two large speculators. Each realizes that if the other sells, the resulting depreciation will reduce the value of his or her holdings of domestic currency. Neither wants to stand pat if the other might sell. Thus an

[9]Maurice Obstfeld, "The Logic of Currency Crises," *Cahiers Economiques et Monetaires,* 43 (1994): 189–213.

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equilibrium might entail both selling, even though everyone may be worse off after the devaluation.

Can one say anything about what conditions will make a country vulnerable to such an attack? If the fundamentals are particularly weak, both speculators will sell. For example, if the central bank holds a sufficiently low level of reserves, then each speculator knows that if he chooses to sell his domestic currency, he will deplete the central banks' holdings of foreign reserves, and thereby force a devaluation. Each knows this, and so will sell to avoid being the one left "holding the bag." If the fundamentals are particularly strong, there will be no attack. For example, if the level of reserves is sufficiently high that both speculators know they can't break the bank even acting together, they have no reason to attack. The interesting case comes in the intermediate range. If the fundamentals are bad but not terrible, then the country is vulnerable to an attack. But the game theory cannot predict what the outcome will be in this case. The attack and no-attack outcomes are equally valid equilibria. This is what we mean by multiple equilibria.

One variant is an international version of a standard model of domestic *bank runs*. Each bank depositor is motivated to take her money out of the bank only if she thinks others might do the same, so that there might not be enough cash to go around. The recommended solution is deposit insurance and adequate reserve holdings by the banks.[10]

Another variant treats monetary policy as endogenous. After all, why should governments decide to embark on a dangerous path of excessive money growth that they stubbornly maintain regardless of adverse developments? The ultimate fundamentals are not macroeconomic policies, but rather the political conditions that might make the benefits of devaluation and monetary expansion more likely to outweigh the costs, from the viewpoint of the monetary authorities. Some suggest that a key fundamental variable, determining whether a country is in the intermediate range where speculative attacks are a danger, is the level of unemployment; some say it is the level of debt.[11] If these indicators are at particularly high levels, then the tight monetary policy necessary to fight a speculative attack will involve particularly high costs relative to benefits. This is because the high interest rates may spark banking failures or social unrest. Speculators know that the high interest rates are not politically sustainable, which makes an attack more likely even if the policy makers sincerely do their best to hold the line.

Third Generation: "Crony Capitalism" and Moral Hazard

If crises of the 1970s and 1980s were represented by the first-generation approach, and if the 1992–1993 ERM crises inspired the second-generation models, then the East Asian crises of 1997–1998 provided motivation for the third-generation models.

Unlike Latin America and other parts of the world with a history of large budget deficits, high-inflation monetary policies, and overvalued currencies, East Asia in the

[10]Douglas Diamond and Philip Dybvig, "Bank Runs, Deposit Insurance, and Liquidity," *Journal of Political Economy,* 91 (June 1983): 401–419. An international version is Roberto Chang and Andres Velasco, "Liquidity Crises in Emerging Markets: Theory and Policy," in *NBER Macroeconomics Annual* (Cambridge, MA: MIT Press, 2000).

[11]Maurice Obstfeld, "Models of Currency Crises with Self-Fulfilling Features," *European Economic Review,* 90 (April 1996): 1037–1047.

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latter third of the twentieth century earned a reputation for fiscal discipline and monetary stability. This record was largely maintained right up until the crisis. True, Thailand and Korea clung to overvalued currencies in the sense that they depleted their net reserves in futile attempts to defend the exchange rate, before trying something else. But there had been little evidence of profligate monetary and fiscal policy on the part of these governments or of currencies that were overvalued in real terms. Indeed, westerners had argued earlier that such high-growth countries should experience real appreciations, under Balassa-Samuelson reasoning (Section 19.2, especially footnote 11).

The third-generation approach instead interprets recent crises as illustrations of the perils of moral hazard. Borrowers and lenders are less likely to be careful evaluating the true profitability of investment opportunities if they believe they will be bailed out in the event that the project goes badly. As already noted, some believe that international bailouts by the IMF and G-7 create the moral hazard problem. But in the third-generation models, the root-cause locus of moral hazard is at the national level rather than the international level. If moral hazard at the international level were the original and only root of the problem, then it would follow that the amount of capital flowing from rich to poor countries overall would be greater than socially optimal. But instead, the amount of capital flowing, on average, is *less* than predicted by neoclassical optimizing economic models of the type illustrated in Section 21.5. In other words, the large existing differences across countries in capital/labor ratios and therefore in the rate of return to capital predict that capital flow should be larger than what we observe, not smaller.

The phrase "crony capitalism" became suddenly popular in 1997 to describe newly evident flaws in the structure of Asian financial systems. In fairness, some of these same characteristics had been seen as strengths of Asian economies a short time earlier. Business deals are said to be dominated by personal connections (*guan xi* in China), large family-run conglomerates (*chaebol* in Korea), comprehensive clusters of allied firms (*keiretsu* in Japan), or insider links to the government (charges of corruption, collusion, and nepotism—which protesters sloganized as "KKN"—regarding President Suharto in Indonesia). Firms fund investments by borrowing from bankers with whom they have close personal or political ties. The loans may come from a bank to which the firm is affiliated, in which case they are called connected or related lending, or they may come under guidance by the government, in which case they are called directed lending. Corporations often pursue "empire building," seeking to maximize their size, without regard to profitability or shareholder value.

An idealized version of American capitalism is held up as a contrasting example: Transactions among corporations are said to be made at "arm's length," based on explicit contracts enforced under a transparent legal system. Corporations rely heavily on securities markets to fund investment, where rules require accounting by recognized standards, public disclosure of information, and pursuit by managers of maximization of returns to shareholders. The Asian system is termed "relationship based," and the American system "market based."[12]

[12]Beginning in 2001, U.S. corporations suffered accounting and management scandals of their own, suggesting that Americans needed to listen to some of the lectures they had been giving others.

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The third-generation model starts from the assumption that government officials have a pot of resources that can potentially be used to bail out political cronies if they get into financial difficulty.[13] This pot is mainly identified with the central banks' holdings of foreign exchange reserves, but it could also include funds that the country can borrow from the IMF, the government's claim on revenue from export taxes, or any profitable state-owned enterprises or other holdings that the government could sell off—whatever sources of hard currency the government can lay its hands on in the event of a crisis. Well-connected banks and businesspeople are able to borrow from abroad to finance risky projects—such as real estate development or a new factory in the already glutted steel industry. They are aware of the risk. But they believe that they will be bailed out by the government if things go badly. In the worst countries, they have been explicitly promised that they will be bailed out. In other cases, the government may have tried to declare in advance that it will not be responsible for private debts, but this disclaimer is not believed.[14]

Why does the crisis occur when it does? Asian countries did not suddenly develop critical structural flaws in their financial systems for the first time in 1997. The timing of the attack again comes out of the calculations of speculators who worry that if they wait too long, there will not be enough foreign exchange reserves to go around. But there is a key difference from the first-generation models, which watched reserves decline steadily over time and identified the timing of the attack as the point at which reserves sank to a particular critical level. The third-generation models watch liabilities rise steadily over time, artificially encouraged by moral hazard. They identify the timing of the attack with the point at which the liabilities have climbed to the critical level given by the level of reserves. At that point, speculators suddenly cash in their investments. If they waited any longer they might not be able to get their money out. The speculative attack, as usual, then forces the central bank to abandon the exchange rate.

24.4 Contagion

One distinctive feature of recent crises is that turmoil has spread beyond the country where it first surfaced. The tendency to spill over to other countries is called contagion.

Contagion is not a precisely defined financial term. It means something more than the evident fact that prices of stocks, bonds, and foreign exchange are correlated across countries. Such correlation could readily be explained by common shocks. A global fall

[13]The key references are Michael Dooley, "A Model of Crises in Emerging Markets," *Economic Journal,* 110, no. 460 (January 2000): 256–272, and Paul Krugman, "Balance Sheets Effects, the Transfer Problem and Financial Crises," in P. Isard, A. Razin, and A. Rose, eds., *International Finance and Financial Crises: Essays in Honour of Robert P. Flood, Jr.* (New York: Kluwer Academic Publishers, 1999): 31–34. Also Giancarlo Corsetti, Paolo Pesenti, and Nouriel Roubini, "What Caused the Asian Currency and Financial Crisis?*" Japan and the World Economy,* 11 (1999): 305–373.

[14]Carlos Diaz-Alejandro, "Good-bye Financial Repression; Hello Financial Crash," *Journal of Development Economics,* 19 (September 1985). A "no bailout" declaration lacks credibility particularly in the case of domestic banks. When the crisis comes, the pressure for the government to rescue insolvent banks will be irresistible for two reasons. (1) Most depositors are small savers, not sophisticated investors; and (2) bank failures can have a devastating effect on the rest of the economy, particularly because banks constitute the payments system.

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in commodity prices will hurt all commodity exporters. Contagion carries the connotation that a shock may spread from one country to another for reasons other than economic fundamentals. The international debt crisis of the 1980s spread from Mexico to Argentina, Brazil, and other highly indebted countries around the world. But it was not generally called contagion, perhaps because it seemed explainable by adverse fundamentals.

Even a country with strong fundamentals may find, when a neighbor suffers a speculative attack, that it is attacked in turn. In 1995 the repercussions of the Mexican peso crisis soon hit Argentina and others in the hemisphere. They were labeled the "tequila effect," implying that even though it was Mexico who had had too much to drink, others shared the hangover.

The spillover need not reflect irrationality on the part of investors. If two countries are major trading partners, or if they compete in third-country export markets, the second country may find when the first devalues that the loss in export competitiveness forces it to devalue in turn. Because there is a heavy geographic pattern in trade, it is natural to suspect such competitiveness effects when the contagion runs along regional lines. For example, in July 1997, it had already been clear that Thailand was in trouble; but after the Thai devaluation, the crisis spread throughout the region, including to Taiwan, Hong Kong, Indonesia, and Malaysia. Some of these economies had been thought to have good macroeconomic fundamentals. The explanation is in part that they produce goods that compete with Thai exports. When Thailand devalued, Taiwan felt obliged to follow suit, to remain competitive. Another explanation for contagion involves financial linkages. Bankruptcies in Indonesia, for example, exacerbated pressures on firms in Hong Kong, Korea, and Singapore because they lost money that had been invested in Indonesian firms. Less directly, when one country gets into trouble a second may be impacted if Japanese or American banks that lent to both countries, or mutual funds that invested in both, are forced by losses in the first to sell assets in the second.

Figure 24.4 shows "sovereign spreads," that is, the premia that global investors demand to hold countries' bonds (relative to U.S. Treasury bills). It also shows an aggregate measure called the Emerging Market Bond Index (EMBI). The Mexican peso crisis was reflected in a sharp rise in spreads in Latin America and, to a lesser extent, emerging markets worldwide. Similarly, the Thai crisis of 1997 showed up as an increase in the interest rates that other Asian emerging market borrowers had to pay.

In the past, currency crises seemed to cluster largely along regional lines. But contagion more recently has jumped oceans. August 1998 brought a new round of trouble when attempts to stabilize Russia ended with default on its debt and devaluation of the ruble. Speculative pressure immediately turned to Brazil, even though the two countries share little in the way of trade links or other common characteristics. The Russian shock had a severe impact in Latin American. It also affected Asia, and the global EMBI index. The point is that crises are often now global.

A crash in one country can induce speculators to reevaluate their perceptions regarding others. The 1997 Thai crisis caused investors to switch from the previous interpretation of the tigers' growth records as an "Asian miracle," to the new "crony capitalist" view. The 1998 Russian crisis caused some to switch from the belief that the

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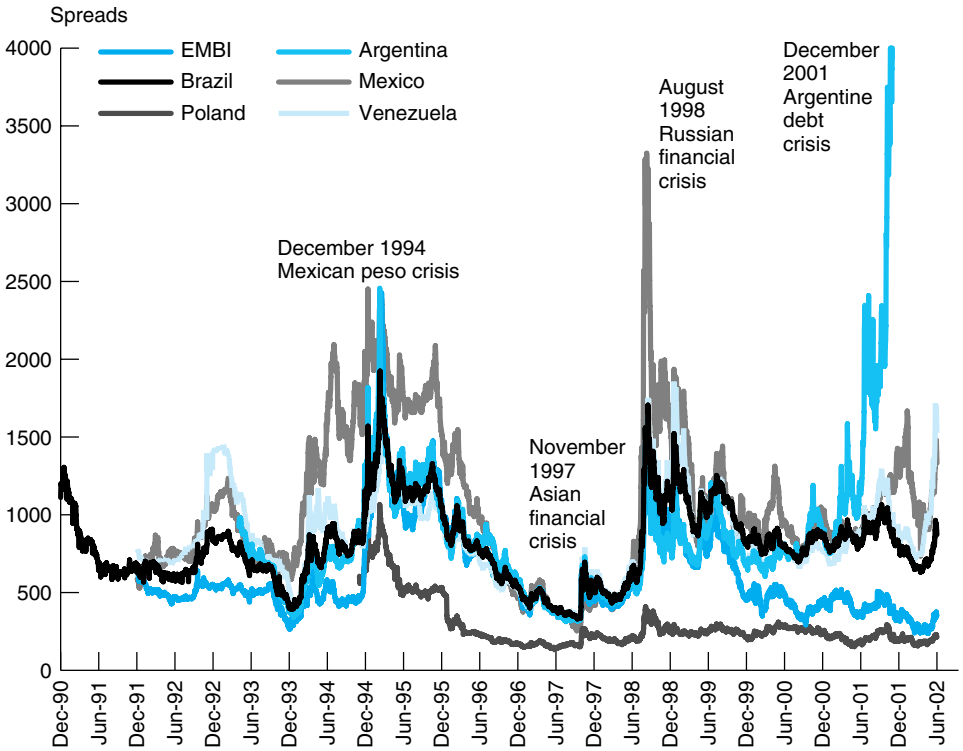
FIGURE 24.4

Emerging Market Bond Index (EMBI) and Spreads for Some Individual Countries

During the emerging market crises of the 1990s, sovereign spreads (the interest rates that debtor countries must pay on their bonds, above and beyond U.S. Treasury bill rates) were highly correlated. This is evidence of contagion.



IMF would rescue major debtors, to the logic that if a country as important as Russia could be allowed to default, anybody could. Other explanations for contagion involve herd behavior, increased risk aversion, an international drying up of liquidity, and even financial panic.

24.5 IMF Country Programs

What happens when a country's reserves run out, so that remaining at point *B* in Figure 24.3 is no longer an option? The choices can be stark.

Most countries in this position call in the International Monetary Fund, even if they were reluctant to do so earlier. If the victim is a relatively important country, then the G-7 powers may receive calls at the same time. "Important" here can mean either that it is large enough to have "systemic implications" (i.e., its default would threaten

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others with contagion) or that it has friends in high places because of geopolitical considerations (e.g., Russia's nuclear weapons make it difficult to ignore).

The first thing that the international financial community tries to do is ascertain if the problem is one of *liquidity* or of *solvency*. In a liquidity crisis, the economy is seen to be sound in terms of economic fundamentals and to need only short-term loans to tide it over. In such cases, the IMF operates as the international version of a *lender of last resort*. This refers to the classic role played at the national level by the central bank, when it lends freely to domestic banks that, although fundamentally sound, are caught short of liquidity. If the country is thought to be insolvent, this means its problems run deeper, requiring fundamental policy reforms and perhaps a restructuring of its international obligations. In practice, many crises are an uncomfortable mixture of liquidity and solvency problems.

IMF rescue programs have two big components. First, the international financial community tries to meet the financing gap in the country's balance of payments. Second, the country agrees to adjust or reform its policies. These promises are embodied in a *letter of intent* from the local government to the IMF.

Each of the two components is necessary. Financing is made conditional or contingent on policy reform, under the practice of *conditionality*. On the one hand, financing without policy reform would probably do little to restore investor confidence and, even if it did, might lead to another crisis down the road. On the other hand, plans for policy reform without financing would typically be insufficient to satisfy the immediate balance of payments constraint. Furthermore, conditionality provides an incentive for countries to agree to initiate painful but needed reforms and then to follow through on the plans under subsequent monitoring by IMF teams. Often these are policy changes such as cuts in public spending that the country's finance minister knew all along were desirable but that the government found politically difficult. Historically, one role of the IMF and World Bank has been to take the blame politically for unpopular policy measures. Recently, however, these two international financial institutions have lost enthusiasm for this role. The new wisdom is that countries must "take ownership" of their policy reforms, or else their promises may never in the end be genuinely fulfilled. This principle holds even more clearly for the sort of longer term reforms that are associated with World Bank programs.

Filling the Financing Gap

Even after accounting for the projected effect of improvements in macroeconomic policy on the trade balance and capital account of the crisis country, there is still likely to be a gap in the balance of payments that needs to be financed. The first source of financing in an IMF program is an IMF loan. Indeed, any member country is entitled, just for asking, to a first "tranche," which is commensurate with the amount of hard currency it put into the kitty when it originally joined the institution. Then, even if a country needs to go beyond a traditional "stand-by arrangement," further funds are available through a number of facilities at the IMF.

Sometimes the IMF loans are not enough, however. In a few major crises, the package has included additional funds from several sources. One is the G-7, especially in some rescue programs where the magnitude of the loans needed to restore confidence

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has dwarfed the resources available from the IMF. In the so-called Paris Club, the major rich countries often agree to reschedule their government loans (many of which were originally made to encourage their countries' exports). Another source to help fill the financing gap is the General Arrangements to Borrow (GAB) and New Arrangements to Borrow (NAB), which include wider sets of countries that can afford to lend funds. A third source is the World Bank, even though its job is supposed to be longer-term development loans, rather than short-term balance-of-payments loans. All these loans pay interest, notwithstanding skepticism on this score from taxpayers in the creditor countries.

The goal of the country program is always to restore confidence and thereby restore the flow of private capital. The IMF's "seal of good housekeeping" signals private investors that it is okay to resume lending. When this works, the new private capital flows are much greater than the money actually put in by the IMF. In some major crises, it requires some twisting of the arms of individual investors, as we will see later in the discussion of private sector involvement.

Policy Conditionality

Traditional IMF programs typically involve some mixture of two sorts of macroeconomic policy adjustment: contractionary monetary (and fiscal) policy and devaluation. In Section 18.2, we called them expenditure-reducing policies and expenditure-switching policies. It is not hard to see why these same medicines are prescribed over and over again: They are designed to cure excessive current account deficits. An increase in interest rates has the additional goal of improving the capital account. Nevertheless, the appropriateness of these remedies has been increasingly questioned.

That IMF-inflicted austerity is wildly unpopular with internal political constituents is nothing new. A typical way for a desperate government to respond to the need to cut expenditure is to reduce existing subsidies on basic foodstuffs or fuel, for example. (The government is typically less willing to cut the Army's pay.) Sometimes the population reacts in riots, which can turn violent and in some cases have led to the overthrow of the head of state. No easy solution is likely to exist, however, if a government has been living beyond its means, and nobody is willing to put up the money to pay the bills.

The traditional macroeconomic prescription has been increasingly widely questioned on two grounds. First, the origins of the East Asia crisis did not seem to fit the traditional diagnosis—overexpansion and overvaluation—as closely as, for example, was true in earlier crises in Latin America. Second, the IMF programs were accompanied immediately by severe recessions.

That the origins of a crisis may lie in multiple equilibria or moral hazard rather than the usual macroeconomic excesses, is not necessarily a reason to abandon conditionality. Rather, it is a reason to make the program conditional on specific reforms tailored to the conditions in the country in question, perhaps deep reforms in the structure of the economy. Recent IMF programs have tended to emphasize *structural conditionality*. This trend began with the need for thorough market reforms in Russia and the other transition economies that emerged from the breakup of the former Soviet bloc in 1990. The trend grew in 1997–1998, in an attempt to address the flaws in

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East Asian economic structures popularly known as crony capitalism. Common elements of the reforms include improvements in corporate governance, prudential banking regulation, bankruptcy laws, and government treatment of protected monopolies. Critics charge that the IMF's lists of structural reforms are excessively long and detailed and represent an intrusion into local sovereignty. A famous example is the IMF's insistence that President Suharto agree to dismantle the monopoly that controlled Indonesia's clove industry. The IMF is accused of "mission creep," that is, attempting to expand its bureaucratic turf beyond its original mandate. It must be noted, however, that the criticism regarding excessively detailed conditionality tends to cut against another, equally common, criticism of the same programs—namely that they apply a "cookie-cutter" approach not individually tailored to the circumstances of each country.

The reforms, although never easy politically, are not necessarily imposed by the IMF on a reluctant government. In each of the three major East Asian programs, Thailand, Korea, and Indonesia, the reforms were not enacted until there was a change in government. Populations, angered by the crises, threw out the incumbents and gave the new governments enough political support to begin reforms. Admittedly, the IMF itself was a target of popular anger even more than the incumbent governments.

The other grounds that have led to widespread questioning of the traditional macroeconomic approach are the observation that the IMF programs seem to be followed by sharp recessions. Recall our framework of internal and external balance (illustrated by the Swan diagram of Figures 18.5 or 20.5). Why can't the external financing objective be met while simultaneously preserving internal balance? In the effort to restore external balance, the economy often overshoots internal balance and moves sharply into the zone of excess supply. One reason for the contractions is that macroeconomic austerity is still as important a part of IMF conditionality as are structural reforms. The initial programs in Thailand and Korea, for example, called for fiscal contractions and sharp increases in interest rates. Structural conditionality can also contribute to a contraction of the real economy, as when insolvent banks were closed down in Indonesia despite the absence of deposit insurance to protect depositors.

A key question is the desirable mix of monetary contraction and devaluation—alternative ways of addressing a balance-of-payments deficit. Critics have charged that the IMF forced the East Asian countries to raise interest rates too much. Banks and corporate borrowers that were not already insolvent were rendered insolvent by the high interest rates. The critics point out that an increase in interest rates may not even accomplish the desired aim of attracting a new capital inflow if investors know that the risk of default goes up when the interest rate goes up.[15]

We must ask what is the alternative to contraction, because something must be done to satisfy the external financing problem created when foreign investors pull out. Identifying the alternative—what would have happened in the absence of the IMF program—is always the difficulty in evaluating its success. We would not want to condemn

[15]For example, Jason Furman and Joseph Stiglitz, "Economic Crises: Evidence and Insights from East Asia," *Brookings Papers on Economic Activity,* 2 (1998): 115–135.

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hospitals on the grounds that their occupants die more often than residents of apartment buildings.

Some critics argue that an alternative combination, lower interest rates and more devaluation, could have achieved the same external balance while simultaneously maintaining internal balance. But by the time the country is in crisis, it may be too late. As we see in the next section—and contrary to the models of earlier chapters—devaluation can pose dangers of bankruptcy and recession similar to the dangers posed by monetary contraction. If a country has depleted its reserves and lost the confidence of its investors, there may no longer exist any combination of interest rate and exchange rate that can restore both external and internal balance.[16] There may be no way of avoiding a recession. The most important lesson is that countries should not postpone balance-of-payments adjustment until they have run out of reserves and investor confidence because at that point crisis may be inevitable.

24.6 Contractionary Effects of Devaluation

In the models of earlier chapters, a devaluation had a clearly expansionary effect on output and employment. As long as the Marshall-Lerner condition was satisfied, net foreign demand for domestic products—that is, the trade balance—increased, working to raise output and employment. However, countries forced to devalue, usually because they are running out of foreign exchange reserves, often express the view that devaluation has a contractionary effect on output and employment rather than an expansionary one.[17] There are a number of channels through which such effects could possibly occur. Although some are also very relevant for large industrialized countries, many are peculiar to small countries and developing countries. We will consider eight possible contractionary effects that can arise in various contexts, the first six operating through the demand for domestic goods and the last two operating through supply. Many of these concern structural characteristics of typical developing countries that are of interest in their own right.

Negative Effects on Aggregate Demand

The first problem arose in Chapter 16: If the country begins with a high initial volume of imports—and countries usually devalue only when they have a trade deficit—then, because the devaluation raises the cost of imports in domestic terms, the trade balance may worsen in domestic terms, even if the demand elasticities are high enough to satisfy the simple Marshall-Lerner condition. If domestic demand does not rise at the same time, then the total effect on the demand for domestic goods will be contractionary. Of course, sufficiently large elasticities will solve this problem. Developing countries often argue, however, that their elasticities are low. This is particularly true of

[16] See the problems at the end of the chapter.

[17] There are other drawbacks to devaluation, particularly the exacerbation of inflation, regardless of the effect on output. This aspect is considered further in Chapter 26.

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their elasticity of demand for imports they cannot produce domestically, such as oil, luxury consumer goods, or capital goods. Also, it can be argued that the world demand for the exports of even a small country may fall far short of the infinite elasticity that was assumed in Chapter 20. Textiles produced in Guatemala are not quite perfect substitutes for textiles produced in China.

Many of the products exported by developing countries face import barriers from the industrialized world (not to mention from other developing countries). If the devaluing country is constrained from increasing its exports, and its import bill increases with the devaluation, then domestic output will suffer from a loss in demand.

The second contractionary effect of devaluation is the real balance effect, first developed as part of the monetary approach in Chapter 19, then extended in Section 20.3. A devaluation raises the price of traded goods proportionately, thereby raising the general price level and reducing the real money supply to the extent that traded goods are important in the basket. The lower real money supply then reduces expenditure. In the flexible-price model, markets clear, by assumption, and so total output and employment do not fall. The contractionary effect on domestic spending is offset one for one by the stimulus to net exports, so the total is unchanged. However, if we allow for slowly adjusting prices of nontraded goods, the contractionary effect on domestic expenditure can translate into an excess supply of goods. Total output and employment in the economy may fall if the demand for nontraded goods falls by more than the net foreign demand for traded goods rises. To take an example, a feature of Poland's "shock therapy" reform program of January 1990 was a devaluation of almost 50 percent. The real balance effect, although helping to produce a trade surplus, also helped produce a sharp fall in output and employment.[18]

The third effect of a devaluation, attributed to Carlos Diaz-Alejandro, enters when we introduce distinctions between different classes of consumers.[19] When wages, W, are sticky, a devaluation reduces real wages by increasing prices. Indeed, the only way it stimulates the production of tradable goods is by reducing W/P_t, the real wage in terms of traded goods. It is easy to see why workers might object to a devaluation. However, if workers' share of national income falls, then firm owners' share of national income rises. Thus it is more difficult to see why there should be a contractionary effect on total demand, as is often claimed, rather than simply a negative effect on the equality of the distribution of income.

Diaz-Alejandro's argument is that different sectors have different marginal propensities to consume. Owners of firms might have a lower propensity to consume than workers. The specific example he had in mind was Argentina, where the most important tradable goods were traditionally wheat and cattle, which are raised by large landowners. A devaluation raises the prices of these commodities and causes a redistribution of real income away from urban workers (who consume wheat and meat and import other goods that are also now more expensive), and toward the landowners. If

[18]John Williamson, *The Economic Opening of Eastern Europe* (Washington, DC: Institute for International Economics, 1991).

[19]Carlos Diaz-Alejandro, "A Note on the Impact of Devaluation and the Redistribution Effect," *Journal of Political Economy* (December 1963): 577–580.

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the landowners have a lower propensity to consume than the urban workers do, the net effect on aggregate demand will be negative. Such distributional effects of a devaluation are likely to be more important for developing countries than for industrialized countries.[20]

The fourth potential contractionary effect of a devaluation, the *balance sheet* effect, has perhaps been the most important in recent emerging market crises. It concerns debt rather than money. Small countries that find they must devalue often have already accumulated sizable debts to the rest of the world, in the form of bonds they have sold to foreign residents or loans they have received from foreign banks. Such debts are usually denominated in dollars or other foreign currencies; foreign investors are reluctant to hold assets denominated in local currency precisely because they fear that the country will devalue the local currency and thereby reduce the value of those assets to foreigners. Because the inability to borrow in local currency often seems beyond the control of the developing country governments, it has been called the problem of *original sin*. Residents of the home country lose if their debt is denominated in a foreign currency, such as the dollar, and the country is forced to devalue. Because it now costs more units of local currency to buy one dollar, servicing the debt—that is, making the interest payments and paying off the principal in installments—is more expensive in terms of the local currency, the problem of *currency mismatch*. Households and firms may respond to the deterioration in their net wealth position (the increase in the valuation of their liabilities) and in their cash flow (the increase in their debt service requirements) by cutting back expenditures. This is the balance sheet effect.[21] After the sudden devaluation of the Mexican peso in December 1994, to take one example, the resulting increase in the cost of the large outstanding dollar debts bankrupted some businesses and contributed to a recession in Mexico. The same thing happened on a larger scale in 1997 and 1998 in Thailand, Indonesia, and Korea.

A fifth potential effect of a devaluation concerns the speculative buying of goods. Speculative buying of goods may be the only way that people can protect the real value of their wealth against high expected inflation rates, particularly in countries where a full range of bonds and stocks are not available because financial markets are not fully developed. If people think that a devaluation and consequent price increases are com-

[20]In developing countries, differences in income, and especially in wealth, are often greater than in industrialized countries. An increase in firms' profits is likely to be distributed less widely through the population. Furthermore, access to consumer credit is more limited. Those living closer to the margin of subsistence are likely to have little saving and even less scope for borrowing, so their marginal propensity to consume is likely to be very close to 1. This is why redistributional effects are likely to be larger in developing countries.

[21]The net wealth of the citizens of a country in the aggregate is a determinant of private spending, along with such variables as income. There is an interesting question as to what sort of bonds should be counted as part of net wealth. We usually do not count citizens' holdings of corporate debt because the corporations are owned by other citizens, so in total the assets and liabilities cancel out, much as with an IOU between two individuals. (This is called *piercing the corporate veil*.) Some economists argue analogously that citizens' holdings of bonds issued by their government should not be counted as net wealth. The argument is that an increase in the national debt means that the government will have to raise taxes at some point in the future, and far-sighted citizens will weigh those implicit future tax liabilities negatively when figuring their net wealth, and thus fully cancel out the positive effect of the bonds held. This doctrine is called *Ricardian equivalence.* The subject is addressed in the appendix to Chapter 21. In any case, it is clear that holdings of foreign bonds (or indebtedness to foreigners) count positively (or negatively) in net national wealth, as do holdings of physical capital.

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ing in the future, they may buy consumer durables and other such goods in anticipation. In Chile in the mid-1970s, for example, many residents believed that the government would be unable to maintain the peso at its high value; in anticipation of future devaluation, they bought consumer appliances and other durable goods.[22] Although such purchases can have an expansionary effect at the time of the purchases, the devaluation itself may remove this speculative motive for spending and result in a contraction.[23]

The sixth contractionary effect that has been identified arises when there are important tariffs on tradable goods. A devaluation will raise the price of the traded good proportionately and therefore the amount of tariff revenue that must be paid to the government. As with any tax increase, this will have a negative effect on the private sector's disposable income and therefore on its expenditures. This effect is likely to be more important in developing countries than in industrialized countries because only the former tend to rely on tariffs for a significant fraction of government revenue.[24]

Negative Effects on Aggregate Supply

The two remaining effects of devaluation arise in relation to aggregate supply rather than aggregate demand. They work to raise the price level for any given quantity of output supplied or, equivalently, to reduce the quantity of output supplied for any given price level. Thus they can be more troublesome than the six contractionary demand effects, which can in theory be offset by expansionary monetary or fiscal policy if desired.

Effect number seven, one of the most important for industrialized countries and developing countries alike, relates to the prices of raw materials and other imported inputs. (These are the intermediate goods or fragmented production of Chapter 9.) In Mexico in 1982–1983, for example, foreign exchange became very scarce, mostly because of successive devaluations of the peso in response to the international debt crisis. As a result, companies were forced to cut output severely—even of products for which there was adequate demand—for lack of necessary industrial materials, mechanical parts, and other inputs that had previously been imported. The same thing happened in Korea and some other East Asian countries after the currency crises of 1997.

For oil-importing countries, the most important input is usually oil. Energy is a factor of production like labor and capital. Most countries take the price of oil and other fossil fuels as determined completely on world markets. Thus a devaluation translates directly into a proportionate increase in the price that firms have to pay for fuel

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[22]Rudiger Dornbusch, reprinted as "Overborrowing: Three Case Studies," in R. Dornbusch, *Dollars, Debts and Deficits* (Cambridge, MA: MIT Press, 1986).

[23]Another potential explanation for observed coincidence of devaluation and recession arises if contractionary monetary and fiscal policies are imposed at the same time as a devaluation. Although the policy changes are distinct and have distinct effects, it can be difficult to disentangle them empirically. The tendency for such policy changes to occur at the same time may account for some claims that devaluations are observed to have a negative association with output. Richard Cooper, "Currency Devaluation in Developing Countries," *Essays in International Finance,* 86 (Princeton: Princeton University Press, 1971), offers a classic account of devaluation that presents the six contractionary effects discussed so far.

[24]Paul Krugman and Lance Taylor, in "Contractionary Effects of Devaluation," *Journal of International Economics,* 8, no. 3 (1978): 445–456.

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expressed in domestic currency. The increase in marginal cost relative to the price of the good the firm is producing will induce it to reduce output. The outcome can be analogous to the recession suffered by most countries in 1974 following the quadrupling of the world price of oil. The negative effect on a country's aggregate supply is the same, whether the reason for an increase in the price paid for imported oil is a worldwide price increase or an increase in the individual country's exchange rate.[25]

Eighth on the list, a parallel supply effect, again as important for many industrialized countries as for developing countries, concerns wages. When workers see increases in the prices of tradable goods that they consume, they may ask for increases in their nominal wages to make up for the loss in purchasing power. In some countries, particularly those with a recent history of high rates of inflation, wage contracts may be indexed. That is, they may be written so that increases in the consumer price index that occur during the period of the contract are automatically reflected in the wage rate. Thus a subsequent devaluation will, in part, be passed through to higher wages. The increase in labor costs means that firms again face higher marginal costs relative to the product price and may respond by reducing supply.[26]

Examples are not hard to find. When Chile devalued its currency in 1981 to speed up the adjustment of the relative price of nontraded goods, it found that its existing wage-indexation arrangements were an obstacle to adjustment.[27] Israel and Brazil are two countries that carried indexation of wages (and indeed of most prices and other nominal magnitudes) the furthest in the 1970s and early 1980s. As the inflation rate accelerated, the Brazilians began to adjust wages automatically for inflation with greater frequency. Also note that in some developing countries, the process whereby urban workers fight for increases in nominal wages to make up for the loss of purchasing power caused by higher prices for the tradable goods that they consume involves strikes and other forms of social conflict. This is costly to the entire country in terms of lost output, not to mention the noneconomic costs.

Thus there are many possible routes through which a devaluation might have contractionary effects on output. For any given country, however, only some of the effects will be important. Furthermore, some effects could lead to increased output. Most important, remember the original and primary reason for believing that a devaluation will have an expansionary effect: It stimulates exports and discourages imports. What is the net effect of all these factors likely to be on output? Sebastian Edwards studied the effect of devaluation on output for twelve developing countries during the period 1965 to 1980. He found that devaluations generate a small contractionary effect in the first

[25]Such "supply shocks" are analyzed in Chapter 26.

[26]Wage indexation in industrialized countries is another topic covered in Chapter 26.

[27]It has been argued that this is one reason why Chilean unemployment rose sharply thereafter. Vittorio Corbo, "Reforms and Macroeconomic Adjustments in Chile During 1974–1984," in *World Development,* 13, no. 8 (1985): 893–916. He uses precisely the model developed in Chapter 20 to argue that an increase in spending (related in part to a swelling of the money supply in 1980) and an overvalued currency moved Chile in 1981 to a point of balance-of-payments deterioration like G in our Figure 20.4. He further argues that the government at first relied on the monetary approach to the balance of payments to restore equilibrium but failed to realize that an immediate fall in the relative price of nontraded goods was necessary to reverse the deterioration in the trade balance.

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year, but the effect is completely reversed in the second year and becomes expansionary. In the long run, there is no effect, presumably because price levels and other nominal magnitudes adjust, so the nominal devaluation ceases to be a real devaluation.[28]

24.7 Capital Controls

One policy option for coping with a crisis—an alternative to monetary contraction or devaluation, but one that the IMF has not sanctioned—is imposing capital controls. This alternative is often suggested by those who observe that modern financial markets do not seem to work as smoothly as the theory predicts.

Review of Arguments on Efficiency of Financial Markets

As already noted, financial integration between an emerging-market country and the rest of the world has many advantages. First, for a successfully developing country, the rate of return to domestic capital is high and investment can be financed more cheaply by borrowing from abroad than out of domestic saving alone. At the same time, investors in richer countries can earn a higher rate of return on their saving by investing in the emerging market than they could domestically. Second, everyone benefits from the opportunity to diversify away risks and smooth disturbances. Third, letting foreign financial institutions into the country improves the efficiency of domestic financial markets. Overregulated and potentially inefficient domestic institutions are subject to the harsh discipline of competition and the demonstration effect of having examples to emulate. At the same time, the governments face the discipline of the international capital markets in the event they make policy mistakes (e.g., in their domestic regulatory duties).

Recent crises, however, suggest that financial markets do not always work quite as perfectly as the happy view of the economic theorist suggests. It is difficult to argue that investors have punished countries when and only when the governments are following bad policies. First, large inflows often give way suddenly to large outflows, with little news appearing in between that might explain the change in sentiment. Second, contagion sometimes spreads to countries where fundamentals appear strong. Third, the recessions that have hit emerging market countries have been of such magnitude that it is difficult to argue that the system is working well. More generally, capital flows appear to be procyclical, whereas theory says they should be *counter*cyclical.

Modern financial markets do not work perfectly. But we are better off with them than without them. As countries industrialize, open markets should be the goal—eventually, if not right away. The interesting question in the meantime is whether or not there exists some possible tinkering with the freedom of capital movement that might potentially reduce the frequency or severity of the crises that occur.

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[28]Sebastian Edwards, "Are Devaluations Contractionary?" *Review of Economics and Statistics,* 68, no. 3 (1986): 501–508.

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Four Possible Aims of Controls

It is important to distinguish among different kinds of capital controls. In particular, it is important to ask: What would be the precise aim of capital controls? We consider four possible aims.[29]

- to discourage **capital outflows** in the event of a balance-of-payments crisis.
- to discourage **capital inflows in the aggregate,** before a crisis.
- to modify the ***composition* of capital inflows,** in particular to discourage short-term banking inflows, relative to other inflows.
- to decouple **domestic interest rates** from foreign, with the aim of restoring some monetary independence.

We consider each of these categories in turn.

(1) ***Discouraging capital outflows.*** Controls on capital outflows have been very common among developing countries. If a speculative attack occurs, they can help slow down or minimize the loss of reserves or the required increase in interest rates. Controls are generally leaky, however. Even if successfully enforced, controls on outflows can weaken the discipline that international financial markets place on the quality of macroeconomic policy. Governments have all too often used controls to shield themselves temporarily from the implications of bad policies.

(2) ***Discouraging capital inflows.*** The usual motivation for controls on inflows is to prevent overvaluation and overindebtedness, and thereby prevent a crisis from occurring in the first place. It is probably easier to keep capital out than to keep it in. Some countries appear to have had some success discouraging inflow, so as to limit real appreciation and aggregate debt. Controls may have a role to play as a temporary measure when a country faces a large upsurge of inflows. They might help a government "play for time" until it can determine whether the funds are going to useful investments, which will generate the foreign exchange earnings needed in the future to service the debt, or whether they are instead going, for example, to consumption. After several years, policy makers may have a better idea whether their country is the next tiger, justifying the inflows, or merely the subject of a speculative bubble.

(3) ***Modifying the* composition *of capital inflows.*** We have noted that the composition of inflow is statistically a leading indicator of the probability of severe currency crashes occurring. The higher the reliance on foreign-currency borrowing that is short-term or intermediated through banks, the higher the probability of crisis. Although statistical correlation need not imply causality, this conclusion is consistent with claims that short-term flows are prone to moral hazard and asset mismatch, proposals for controls that would seek to change the composition of capital inflows, as opposed to the total magnitude. Taxes or restrictions on short-term inflows may shift the composition toward longer maturities.

Chile imposed a famous tax on inflows in 1991. It took the form of a requirement that a percentage of any foreign borrowing be left in a non-interest-bearing deposit

[29]The Tobin tax has a fifth aim: to reduce the volatility of floating exchange rates. It is discussed in Chapter 27.

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maintained at the central bank for up to one year. In addition, there was a long-standing requirement that all FDI stay in the country for at least one year. These controls apparently succeeded in changing the composition of the capital inflow to Chile in the 1990s, in the direction of longer-term maturities, while having little effect on the total magnitude.[30]

Some countries aim their restrictions specifically at banks. High reserve requirements on banks' foreign borrowing fall well within the kind of enhanced prudential banking regulation that is widely recommended for emerging markets.

(4) ***Decoupling interest rates.*** The fourth possible motivation applies to controls on all capital account transactions: to decouple domestic interest rates from foreign interest rates, and thereby retain some independence for monetary policy, while simultaneously pursuing an exchange rate objective. Recall the Impossible Trinity: monetary independence, fixed exchange rates, and open capital markets. By relinquishing the third objective, a country can attain the other two.

The Highway Analogy

A popular analogy is used to illustrate the proper role of government intervention and the moral hazard problem in the context of efficient capital markets, and it can be extended to illustrate the proper sequencing of financial liberalization as well. The analogy is that today's financial markets are like superhighways. They get you where you want to go fast. By this is meant that they are useful: They help countries finance investment and therefore growth. But accidents occur, and they tend to be bigger than they used to be when people were not able to drive so fast. The lesson is not that superhighways are bad. But drivers need to drive carefully, society needs speed limits, and cars need airbags.

When international investors suddenly lose their enthusiasm for lending to a country, requiring the rapid elimination of the previous current account deficit, it is called a "sudden stop."[31] Contagion that hits many countries at once is analogous to multicar pileups.

Some say country policies cannot be to blame if emerging markets are observed to get into trouble all at the same time. But even when a particular dangerous stretch of roadway is observed to produce more than its share of accidents, the quality of the cars and drivers still helps determine who will be the victims and who will escape. This includes not just precautions taken ahead of time, but also how the driver reacts in the short period of time between the point when the hazard is identified (sudden stop)

[30]Sebastian Edwards, "Capital Flows, Real Exchange Rates, and Capital Controls: Some Latin American Experiences," in S. Edwards, ed., *Capital Flows and the Emerging Economies* (Chicago: University of Chicago Press, 2000).

[31]For example, Guillermo Calvo and Carmen Reinhart, "When Capital Inflows Come to a Sudden Stop: Consequences and Policy Options," in Peter Kenen and Alexander Swoboda, eds., *Key Issues in Reform of the International Monetary System* (Washington, DC: International Monetary Fund, 2001).

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and the time of potential impact (crash). If the authorities use this interval to postpone adjustment, by running down reserves and shifting their balance sheets toward short-term dollar-denominated debt, then the magnitude of the economic impact is likely to be larger when it comes.

The moral hazard problem is that IMF/G-7 bailout programs to reduce the impact of a crisis reduce the incentive of borrowers and lenders to be more careful in the future. The bailout programs are represented in the analogy by the seat belts and airbags, which cushion the driver in the event of an accident. It is a standard principle of economics that actions in one area can generate partly offsetting reactions in another. That is not in itself a reason not to take action. In our highway example, drivers may react to airbags by driving faster and less safely than they used to. But that is not a reason to dispense with airbags.

The capital controls are represented by speed bumps or posted speed limits, which are necessary when coming into a town, even if not on an open highway. Drivers sometimes have the illusion that in the event of a sudden obstacle, they can respond quickly enough to avoid a crash. In part because crashes involve others, the public has an interest in keeping speeds safe.

A country with a primitive domestic financial system should not necessarily be opened up to the full force of international capital flows before the appropriate domestic market reforms and prudential financial regulations have been put into place. If the planned route for a superhighway draws near to a primitive village, it is not a good idea to design an off-ramp that dumps high-speed traffic into the center of town before its streets are paved, intersections are regulated, and pedestrians learn the dangers of walking in the street. But neither is it practical or desirable to try to insulate the village from the modern world indefinitely. The lesson is that emerging-market countries should not let financial opening get out ahead of domestic reforms. That may mean slowing down the former or accelerating the latter.

24.8 Reform of International Financial Architecture

The international community has looked for ways to modify the international financial system so as to reduce the frequency and severity of crises. Who is the "international community"? All shareholders of the International Monetary Fund (i.e., all 184 member governments) are represented by the executive directors, in proportion to country quotas, which in turn are roughly proportionate to economic size. But important decisions have often been made in the G-7 and G-10, in which only the largest industrialized countries are allowed.

After the East Asia crisis of 1997, the major emerging-market governments gained a bit more of a voice. In 1999 three new bodies were established. A Group of 20 was created to foster dialogue among key countries. The International Monetary and Financial Committee (formerly the Interim Committee) of the IMF considers major issues on the agenda of the IMF's semiannual meetings. And a Financial Stability Forum was inaugurated to coordinate among financial supervisory authorities. The latter, for example, produced a "blacklist" of twenty-five offshore financial centers that

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had been havens for money laundering or had generally abided insufficiently by international standards of supervision and information sharing, and it put pressure on them to be more cooperative.

What reforms to minimize the danger of future crises did all these meetings produce? Reforms have been classified into three categories: transparency, strengthening financial institutions, and private sector involvement.

Transparency means making information publicly available, to allow accountability for decisions. At the level of domestic borrowers, for example, firms are told to upgrade their corporate accounting, to enable investors to judge their profitability and creditworthiness. At the national level, governments are now encouraged through the IMF's Special Data Dissemination Standard (SDDS) to put their macroeconomic statistics online, including the sort of figures on foreign exchange reserves that have in the past been incomplete during the critical run-ups to some major crises. At the international level, the IMF has admitted that even that institution itself needs to become more transparent. To the extent its shareholders agree, it now publishes country reports, and even Letters of Intent, that previously would have been confidential. The affected member countries do not always agree to this. One danger is that if the IMF announces it sees serious problems in a country, it may instigate a loss of confidence and crisis that would otherwise not occur. A second danger is that the national officials may become reluctant to discuss their problems freely with the IMF staff in the first place if they fear public disclosure.

Strengthening financial institutions includes a variety of ideas for trying to make banks and other financial institutions less vulnerable. Improved banking supervision within each borrowing country is at the top of the list. On the investing side, the Basel Accord, which sets minimum guidelines for capital to be maintained by banks, is undergoing a reform with respect to the weights placed on various kinds of loans in the formula. Hedge funds and other highly leveraged institutions have also come in for careful scrutiny, especially in light of the collapse of Long Term Capital Management, an American hedge fund, after the Russian crisis of August 1998.

Private sector involvement in rescue packages refers to the widely agreed need to make sure that any funds coming from the IMF or other public agencies are used, not to "bail out" private investors, but to "bail them in." Bailing out refers to allowing banks or securities investors to take their money out of the crisis country without accepting their fair share of the losses. Bailing in means requiring investors to roll over loans or to agree to a "standstill," as their share of the burden of filling the financing gap. In the international debt crisis of 1982, the creditor banks were told that they must get together and share in "involuntary lending," or else the G-7 and IMF would let the debtors default. Similarly, in the Korean rescue package of December 1997, banks were asked to stretch out maturities, relative to the terms originally agreed, as the price of a successful program.[32] Without private sector involvement, the moral hazard problem is exacerbated. If investors can earn the high rates of return that emerging markets pay

[32]Renegotiating lending terms in the event of a crisis can be more difficult when there are thousands of bondholders. One recent reform is the use of Collective Action Clauses in bond contracts, so that a minority of bondholders cannot obstruct a proposed restructuring that a large majority agrees to be beneficial.

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during booms, and avoid the losses when things go badly, then they truly have an incentive to lend recklessly.

The G-7 and IMF came in for much harsh criticism for their handling of the crises that took place between 1994 and 2002.[33] The critics are far from united in specifying what they want done differently. One of the most common recommendations is that the IMF and the World Bank should go back to their "core competencies," each specializing in the separate jobs they were originally assigned. This means the IMF should concentrate on short-term problems of balance-of-payments financing and leave long-term development loans and poverty reduction for the World Bank. Concretely, it has been suggested that the Fund should transfer its Poverty Reduction and Growth Facility (which was previously called the Structural Adjustment Facility) to the Bank. Another proposal that has commanded sufficiently widespread support to become a political reality is forgiveness of government loans to a number of highly indebted poor countries. These are countries that (1) have not developed sufficiently to be able to attract private capital, (2) have such high public debts relative to their economic prospects that they are unlikely to be able ever to repay them, and (3) have agreed to reforms, particularly to use the funds freed up by forgiveness for socially useful programs like education and health.

24.9 Summary

Emerging markets received heavy capital inflows in the early 1990s, in part because of internal reforms that made them attractive places to invest, and in part related to external developments. The receiving countries responded to the inflows with some combination of sterilization, money growth, and currency appreciation. In the latter part of the 1990s, however, boom turned to bust, in a pattern reminiscent of the 1982 debt crisis. Many countries failed to adjust to their new balance of payments deficits. They ran their reserves low and became vulnerable to speculative attack. Speculative attacks have variously been attributed to bad macroeconomic policies, to multiple equilibria in international financial markets, and to structural flaws in the financial system that give rise to moral hazard. When a crisis hits one country, contagion can spill over to bystander countries, including to those that may have had stronger fundamentals than the original offender.

Countries hit by currency and financial crises often seek help from the International Monetary Fund. An IMF program consists of two parts: (1) funds to fill the financing gap in the country's balance of payments, of which an IMF loan is often a relatively small part, and (2) policy conditions, such as devaluation, macroeconomic austerity, or structural reforms, that the country must carry out to receive the money. An alternative strategy, not approved by the IMF, is a policy of prohibiting capital outflows.

[33]The most important of the critiques was the "Report of the International Financial Institution Advisory Commission," chaired by Allan Meltzer, submitted to the U.S. Congress and U.S. Department of the Treasury, in March 2000. It recommended replacing ex-post conditionality with ex-ante preconditions for IMF loans. The result would be less resources flowing to emerging market countries, but the authors may consider that desirable on moral hazard grounds.

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The programs have often been accompanied by sharp recessions, in part because devaluation can be contractionary, through a variety of effects that were left out of the models in earlier chapters. Some of the factors concern demand: If a devaluation makes people poorer, they will spend less. Some concern supply: If a devaluation raises the prices of inputs, firms will cut back production.

After the East Asia crisis of 1997–1998, many critics argued there must be a better way. It is unlikely that any sweeping reform could be made that would eliminate the danger of crises in emerging markets. But there have been calls for increased transparency, stronger banking regulation, reduced moral hazard, and clearer differentiation of responsibility between the IMF and World Bank, among other proposals. Meanwhile, the years 2001 to 2005 saw a new wave of capital inflows to emerging markets.

CHAPTER PROBLEMS

Extra Credit (Calculus Required)

Some critics of the IMF response to the East Asia crises of 1997–1998 charge that national governments were forced to adopt excessively high interest rates, resulting in needless recessions. We now use the framework of internal and external balance to examine this question. We will work in terms of the exchange rate E and interest rate i because these are the policy instruments under direct control of the central bank.

The trade balance is given by $TB = xE - mY$. The capital account of the balance of payments is given by $KA = \overline{KA}$. (The reason that a higher interest rate does not attract a capital inflow may be that the higher probability of default counteracts higher i, so that global investors don't perceive a higher expected return overall. This is the view of Joe Stiglitz.)

1. Assume income is given by $Y = A(i) + TB$ where absorption, A, is a function of the interest rate, and $\frac{dA}{di} < 0$.

- **a.** Solve for Y as a function of i and E.
- **b.** Solve for TB as a function of i and E.
- **c.** Draw the relationship between i and E that gives internal balance (output equal to potential), putting i on the horizontal axis. What is the slope, $\left.\frac{dE}{di}\right|_{Y=\overline{Y}}$? What is the intuition?
- **d.** Draw the relationship between i and E that gives external balance (balance of payments equal to zero). What is the slope, $\left.\frac{dE}{di}\right|_{BP=0}$? What is the intuition?
- **e.** Assume an exogenous adverse balance of payments shock, a downward shift in $\overline{KA}$ (a "sudden stop"). Illustrate graphically. Can we be confident in what direction i and E should be moved, so as to preserve external balance without causing a recession?
- **f.** What do you think the IMF critics have in mind when they say that interest rates were raised too high in the 1997–1998 crises?

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2. Now assume that devaluation has a contractionary effect on domestic demand because of a balance sheet effect from dollar debts:

$$Y = A(i, E) + TB \quad \frac{\partial A}{\partial i} < 0, \frac{\partial A}{\partial E} < 0 .$$

a. Now what is the slope, $\left.\frac{dE}{di}\right|_{Y=\overline{Y}}$? Draw the relationship between i and E that gives internal balance (output equal to potential). Assume that the stimulus to net exports is small in the short run because the elasticities are small. What is the intuition?

b. Again, if there is an exogenous adverse balance of payments shock, can we be confident in what direction i and E should be moved, so as to preserve external balance without causing a recession? Explain.

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