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Chapter Author: Paul Krugman, C. Fred Bergsten, Rudiger Dornbusch, Jacob A. Frenkel, Charles P. Kindleberger

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2 International Aspects of Financial Crises

1. *Paul Krugman*

Financial Crises in the International Economy

The international economy since 1982 has presented a somewhat paradoxical picture. From the point of view of financial analysts, these have been the most turbulent times since the 1930s. Financial market prices have experienced both large day-to-day volatility and very large swings. To take just three examples: the price of the dollar in Japanese yen went from 250 in early 1985 to half that two years later, then rebounded to 150 in April of 1989; the Standard and Poor's index lost 22 percent of its value within a week in 1987, then regained all of that ground over the following 20 months; the average secondary market price of Third World debt dropped from about 70 percent of par in late 1985 to 30 percent in late 1987. To someone who looked only at financial data, it would seem obvious that we are living in very unstable times.

Yet away from the financial markets the economic picture has remained remarkably placid, at least in the advanced countries. The economic recovery that began in late 1982 has continued for nearly seven years without either turning into a runaway boom or stalling into a recession; at the time of this writing, widespread predictions of an imminent U.S. recession had faded away in the face of some favorable economic news. Inflation came down in all of the advanced nations in the early 1980s, and since about 1986 it has been generally stable at moderate rates (with a few exceptions, such as in Britain). In many ways economic performance remains unsatisfactory—productivity growth in the United Stated remains sluggish, unemployment in Europe remains stubbornly high—but instability has not been a major problem.

The seeming inconsistency between wildly volatile financial markets and a calm real economy admits of two interpretations. One is that it is the stability

that is the essential feature of our times and that the hyperactive financial markets are of little real importance. Indeed, it can be argued that financial prices can fluctuate as much as they do precisely because they have so little real effect, an argument to which I will return late in this paper. The alternative hypothesis is, of course, more disturbing: it is that the apparent stability of the real economy is unreliable, and that there is a lurking risk of crisis arising from the financial side.

Even 60 years later, the specter of the Great Crash still looms over us. Like the 1980s, the 1920s were a time of impressive economic performance in many ways, marred by unstable financial markets. And in spite of the many unresolved debates over what really caused the Great Depression, it still seems clear that in the end financial instability undermined the real economy. Certainly anyone today who dismisses financial events with the assertion that the economy is "fundamentally sound" is aware of the slightly hollow echo of that remark, no matter how reasonable it may be.

Of particular concern in the present environment is the possibility that the destabilizing effects of financial crisis may catch us by surprise because they take place through international channels. It is often asserted that today's international markets are integrated to an unprecedented degree, thanks to modern communications and information processing. There is room for doubt on this score: both international goods and international financial markets were already highly integrated by the late nineteenth century, and it is not clear how much *economic* difference being able to carry out a transaction in a second via computer, as opposed to an hour via the telegraph, really makes. What is clear, however, is that thanks to the effects of trade liberalization, elimination of capital controls, and financial deregulation, international markets are more integrated now than at any time since the early 1930s—an observation that can be seen as ominous.

Influential commentators on the Great Depression, Charles Kindleberger most prominent among them, have long argued that the roots of the Depression lay largely in a collapse of the international financial system. They also argue that this collapse was due in large part to the absence of leadership, in particular to the failure of any one player to act as lender of last resort. In turn, the absence of leadership may be attributed to the transitional state of the international system: Britain, in relative decline, was no longer prepared to act as guarantor of the system, while the United States was still too immature to take on its appropriate role. The parallels with our own time are there if one wants to see them, in the relative decline of the United States and the problematic role of Japan.

But economic analysis cannot be made solely by loose historical analogy. The purpose of this paper is to offer a framework for thinking about the possibility that the highly integrated world markets that have emerged over the past decade present a risk of financial crisis.

The paper begins by laying out a simple typology of internationally gener-

ated crises, illustrating this typology with some "classical" historical examples. It turns next to the analysis of the major types, briefly reviewing the (generally skimpy) theoretical literature and illustrating the points with historical case. The paper then turns to present concerns: why didn't the huge swings in equity and foreign exchange markets since 1985 destabilize the real economy? Are the risks of instability still there? What can policy do to prevent crisis?

2.1 Types of International Crisis

The study of economic crises in general is relatively undeveloped, mostly because crises are difficult to model formally. There are a few scattered models, largely in the analysis of balance of payments and banking problems; I will describe these models briefly below. Most writing on crises, however, is informal and literary, drawing more on historical example than on rigorous reasoning.

In spite of this informality, the most influential writers on crisis, notably Minsky and Kindleberger, are insistent that there is a general model of crisis—that it is a mistake to try to subdivide the crisis problem into particular subcases. Kindleberger in particular is sharply critical of the idea that "the genus 'crises' should be divided into species labeled commercial, industrial, monetary, banking, fiscal, financial . . . and so on" (Kindleberger 1978, 22). They argue that there is a standard crisis story in which naive investors get pulled into an asset market by the belief that they can benefit from rising prices, thereby reinforcing that very rise; then they stampede together for the door when the price finally stabilizes or begins to decline, precipitating a price crash. This price crash then, through a variety of channels, destabilizes the macroeconomy.

I am strongly sympathetic to the desire to have a single crisis story, and I find the particular story offered by Kindleberger a very appealing one: it makes psychological sense even if it is hard to fit into standard economic models, and it fits enough historical episodes to be a useful organizing device for our thinking. Nonetheless, for the current paper it seems necessary to have at least a rudimentary typology that distinguishes one kind of crisis from another. This typology is necessary for at least two reasons. First, the way a crisis plays out depends on the actors in the market; and these actors are very different when the focus is on foreign exchange markets and the balance of payments than when the focus is on stock markets. Second, the real effects of a financial crisis depend on its type: to take the two most discussed possibilities, a crisis that begins with a run on the U.S. dollar will not look the same as one that begins with a run on the Japanese stock market.

At the risk of complicating up the subject, then, I offer here a minimalist typology of international financial crises.

2.1.1 Types of Crisis

At minimum, it seems necessary to distinguish between two kinds of international financial crisis. One kind involves a loss of confidence by speculators in a country's currency, provoking capital flight. Since currency crises often lead to imposition of capital controls that interfere with servicing of foreign-currency debt, a loss of confidence in a country's currency will often be accompanied by a collapse of foreign-currency-denominated lending as well. This is the kind of crisis that struck Latin America in 1982: investors feared capital losses on their holdings of Latin currencies, and also feared (correctly) that servicing of Latin foreign-currency debt would be interrupted by exchange controls. The result was the simultaneous emergence of capital flight and the cutoff of hard-currency bank finance.

The important point about this kind of crisis, which I will call for short a *currency* crisis, is that although it originates in international financial markets it need not be international in scope. Or to put it another way, a few countries may be plunged into currency crises at the same time that the rest of the world continues to have both financial and macroeconomic stability.

The other kind of crisis involves not loss of confidence in a currency, but a loss of confidence in real assets (or the equity that those assets back). Suppose that the Japanese real estate market decides that a few square blocks of Tokyo are not really worth more than California, and that the price of Japanese land falls accordingly, with ramifications that reach around the world. This would be a very different kind of crisis, one in which the international aspect arises in the way that developments in one country's financial markets affect other markets in other countries. The global stock market shock of October 1987 is the most dramatic recent example, but of course the worldwide financial and then macroeconomic crisis of 1929–31 is the grand example. This paper will pass lightly over the domestic origins of such crises, leaving that topic for the companion paper by Lawrence Summers, but the process by which national asset shocks become global needs a name; I will call them *contagion* crises. More or less by definition, contagion crises do not affect only one or a few countries.

There are important differences between the study of currency and contagion crises. Currency crises inevitably involve the central bank of the crisis country; contagion crises usually involve acts of commission or at least omission on the part of central banks, but the role is not as essential. Currency crises have been the subject of a reasonably large, if limited, theoretical literature, whereas contagion crises have not. This difference is at least partly because it is possible to imagine currency crises in which individual investors are rational, with the central bank playing the role of naive actor, thereby preserving the standard economic assumption of individual rationality. By contrast, it is essentially impossible to make sense of the asset price crashes

that are the starting point of contagion crises without appealing to some kind of investor irrationality.

Finally, the macroeconomics of currency crises and contagion crises are quite different—while both can lead to recession, currency crises are usually associated with inflation in the victims, while contagion crises are associated with worldwide deflation.

2.1.2 Two Classic Examples

Most of macroeconomics draws its stock of experience and analogy from the well-documented business cycles of the post-1947 period rather than from the more extreme but poorer quality data of the interwar period. The literature on crises is an exception, however. Until the emergence of the Latin American debt crisis in 1982, the postwar period had not offered any grand crises to study (leading some economists and all too many bankers to conclude that such things could never happen again); thus the interwar experiences and earlier are all that we have. Also, the relatively low formal level of the study of crises means that the literary tradition, which draws on older historical cases, has remained alive in this field.

The upshot is that when discussing international financial crises we are still influenced strongly, whether we realize it or not, by images generated by a few classic cases from the interwar period. In particular, our image of a currency crisis is largely drawn from the case of the French franc in 1924–26; our image of a contagion crisis from the worldwide spread of the U.S. stock market crash of 1929.

The Franc in the 1920s

France, like all of the major European nations, was forced to allow its currency to float after World War I. Immediately after the end of wartime pegging (backed by U.S. loans), the franc fell to about half its previous value in terms of gold, a fall similar to that experienced by Britain. Unlike Britain, however, France had a persistent fiscal problem, with its domestic revenues inadequate to service the war debt. For several years after the war French leaders continued to insist that German reparations would pay for French expenditures; but as Germany plunged into hyperinflation this became an obvious fantasy. The clear alternative for France was inflation: since the debt was fixed in nominal terms, and the revenues of the French government (largely indirect taxes) were essentially indexed to the price level, it was clear from the beginning that France could solve its fiscal problems by inflating them away and allowing the franc to depreciate on foreign exchange markets.

Evidently this situation invited speculative fluctuations for perfectly rational reasons: any news indicating that the French government was more likely to choose inflation as the answer to its problems would drive the franc down, any news indicating a possible willingness to cut expenditure or raise

taxes would cause it to rise. Thus introduction of new taxes and the successful flotation of some new loans led to a rise in the franc from 6.25 U.S. cents to 9.23 cents over the period from April 1920 to April 1922; bad diplomatic news and accelerating chaos in Germany (cutting into prospects for reparations) then precipitated a rapid decline to 6.86 cents by November 1922.

What struck observers at the time, however, was that, at a certain point, these fluctuations seemed to develop a life of their own, driven not by identifiable outside events but rather by seemingly self-fulfilling crises. In January 1924 lack of confidence led to the failure to place a large government debt issue; the news of this failure prompted a fall in the franc that drove it to 3.49 cents by March. Yet when the government responded with a program of tax increases, the franc promptly rebounded to 6.71 cents, inflicting heavy losses on speculators and allowing the French authorities actually to increase their foreign exchange reserves. This rise in the franc also turned out to be an overreaction, and two months later the franc was down to 5 cents.

The final act in the story came in the period from October 1925 to July 1926. As in the 1924 crisis, the immediate precipitating event was the inability of the government to place new debt issues—an event that was itself caused by lack of confidence. The franc fell from 4.7 cents in September to 2.05 in July. The appointment of the fiscally tough-minded Raymond Poincaré as premier and finance minister, however, brought the crisis to an end with only modest further fiscal adjustment; by the end of the year the franc had risen to 3.95 cents, and the French government was actually intervening heavily to hold the franc down, acquiring large reserves of gold and foreign exchange in the process. Subsequently the franc was widely regarded as undervalued, bringing France persistent surpluses in its balance of payments until Britain went off the gold standard in 1931.

The fluctuations of the franc had substantial macroeconomic effects. The depreciation of the franc led to substantial inflation; the subsequent stabilization was followed by a sharp although brief recession.

To observers at the time, the story of the French franc seemed an object lesson in the dangers of destabilizing speculation. They noted that the exchange rate repeatedly and massively overshot the levels at which it eventually paused. They also noted that the fiscal problems of the government were, in the immediate run, as much the result as the cause of speculative attack. Ragnar Nurkse (1942) prepared a classic report for the League of Nations that is widely regarded as a key intellectual underpinning for the Bretton Woods system; in this report the history of the franc plays a central role in the case for pegged as opposed to flexible exchange rates.

Modern revisionist assessments of the franc have downplayed the element of irrationality. They point out that the fiscal problem of the French government, and the incentive to inflate its way out, were real. Thus an exchange rate that made wide swings on the basis of news about the government's fiscal prospects was reasonable. The important point for now is that the case of the

franc, with its picture of exchange markets responding to a troubled currency with wide swings and, in particular, large overshooting, still influences the images that economists have about currency crises; in particular, the famous "hard landing" scenario of Marris (1985) is strongly influenced by the history of the franc, as filtered through the writings of Nurkse, Kindleberger, and others.

1929

No economic event has had as much written about it as the crash of 1929 and its aftermath. This paper will not try to add to the literature regarding the causes of the crash, and why it was followed by so large a real contraction of the U.S. economy. All that I will do here is point out some aspects of the international transmission of the crisis.

The popular image of 1929 is of a single, dramatic moment: the U.S. stock market crashes from the heights to near zero in a matter of hours, dragging down all of the rest of the world's financial markets with it, and immediately precipitating the Depression. It is now a familiar argument that the U.S. crisis was not so simple; that the sharp business cycle contraction of 1929–30 would have been only on the order of the slumps of 1920, 1974, or 1982 had the crisis not spread to general banking collapse in 1930–31. It needs to be noted here that the international spread of the crisis was also not quite so neat.

For one thing, the transmission of the immediate financial shock, while by no means absent, was not complete. The first column of table 2.1 shows some comparative changes in stock price indices from September to December of 1929. Stock markets fell around the world; but with the exception of Canada, they fell much less than the U.S. market (so that the 1929 crash was much less global than the 1987 crash, as we will see). Most of the eventual fall in the U.S. stock market took place over the next two years rather than in the initial crash; the second column of the table shows that this decline was generally milder outside the U.S., especially in the United Kingdom.

The spreading slump in real activity presents a similar picture, shown in table 2.2. The U.S. slump was transmitted to the rest of the world, but in general the slump was milder elsewhere—the exceptions are Canada and,

Table 2.1 **Stock Market Declines, 1929–32**

	September–December 1929	December 1929–December 1932
United States	31.9	69.4
Canada	33.5	72.4
France	10.8	47.3
Germany	14.4	44.9
United Kingdom	16.0	24.8

Source: C. P. Kindleberger. 1973. *The World in Depression.* London: Penguin.

Table 2.2 **Real Output Declines after 1929 (trough as % of 1929)**

	Industrial Production (%)	GNP
United States	55	68
Canada	68	76
France	74	83
Germany	58	80
United Kingdom	86	93
Japan	92	no decline

Source: L. B. Yeager. 1976. *International Monetary Relations: Theory, History, and Policy.*

more interesting, Germany. The United Kingdom experienced a notably milder slump than the other major nations, and Japan experienced only a more or less normal cyclical downturn.

In spite of the unevenness of the spread of both financial crisis and real slump in 1929–32, the events of those years still serve as a model for international transmission of a financial crisis.

2.2 Currency Crises

Currency crises occur when investors lose confidence in the currency of a particular country, and seek to escape both assets denominated in that currency and other assets whose income might be affected by exchange controls. There have been a few currency crises among advanced countries in the postwar period—arguably the attack on the dollar that shattered the Smithsonian system in 1973 qualifies, as does the attack on sterling in 1975, and the attack on the franc in 1982. Among developing countries, currency crises have been common, and since 1982 most of Latin America and a number of other countries have suffered from what may be described as a coordinated currency crisis.

Currency crises have been the subject of considerable theoretical and some empirical analysis, because the interplay between central banks and private investors provides an easier game to model than the kind of amorphous irrationality that underlies common descriptions of other kinds of financial crises. So it is useful to review the concepts of this literature briefly.

2.2.1 Origins of Crisis: Rational Models

The first question we need to ask is, Why should currency problems turn into a currency *crisis?* That is, why should large-scale capital flight or a sudden drop in the exchange rate materialize suddenly, instead of building gradually over time? Most popular discussions of financial crisis emphasize the irrational aspect, the herd instinct that leads to a stampede (Kindleberger uses

the German word *Torschlusspanik*—"gate-shut-panic"). In currency crises, however, a number of authors have pointed out that given certain plausible kinds of central bank behavior, sudden crises may represent fully rational behavior on the part of investors.

Rational Speculative Attacks

The most studied case is that of speculative attacks on a central bank that is trying to maintain an ultimately unsustainable fixed rate. The speculative attack concept was first introduced by Salant and Henderson (1978) in a model of the gold market; it was first applied to currency crises by Krugman (1979) and has been the subject of a large literature, including in particular papers by Flood and Garber (1984) and Obstfeld (1986).

The basic idea of the speculative attack may be conveyed by a simple example. Imagine a country that has a persistent budget deficit that it finances by borrowing from the central bank; in the long run the central bank will have to cover these loans by printing money, so that eventually the country will have to experience persistent inflation and a continuously depreciating currency. For the time being, however, the central bank is pegging the exchange rate—say to the U.S. dollar—using a dwindling stock of foreign exchange. This allows the country to keep its inflation rate temporarily at the U.S. rate of inflation rather than the (much) higher rate that the country will have once its reserves are exhausted and it must allow its currency to float.

When the country runs out of reserves, it will be forced to abandon its policy of pegging the exchange rate. As a result the rate of inflation will sharply accelerate, and the real demand for money will suddenly drop.

How will this reduction in money demand be accommodated? If speculators did not anticipate the collapse of the fixed exchange rate, that rate would survive until reserves had been exhausted; then the sudden drop in money demand would have as its counterpart a sudden step depreciation of the currency. Informed speculators will try to anticipate such an event, however, since it yields large capital losses. They will therefore try to get out of the currency before the collapse. Efforts to get out would, however, themselves accelerate the loss of reserves, provoking an earlier collapse; speculators would therefore try to get out still earlier; and so on. The upshot is that if speculators are fully informed, there will be no step drop in the exchange rate at all. Instead, when reserves fall to some critical level there will be a sudden attack on the currency that exhausts all of these reserves at a single blow, shrinking the money supply and simultaneously forcing a transition to floating rates that produces a validating reduction in money demand.

The appeal of this story of speculative attack is that it shows that abrupt surges of capital flight need not represent irrational behavior; it thereby allows economists to use their preferred tools, which assume rational behavior, to approach the subject. However, the rational speculative attack model as usually stated applies only to a fixed exchange rate or at best to a crawling peg.

Only recently have models been suggested that allow for "rational" crises when the exchange rate is in a managed float.

Target Zones and Credibility

Even when the exchange rate is not formally pegged, governments are rarely indifferent to its value; explicit or implicit targets for the exchange rate are the rule rather than the exception. Recent theoretical literature has shed some light on how the presence of exchange-rate targets should influence the exchange rate's behavior even when no active intervention is in progress; papers include Krugman (1991), Flood and Garber (1988), Miller and Weller (1988), and Froot and Obstfeld (1991a, 1991b). One point that becomes clear in these models is that "news" that influences the exchange rate need not arise from large exogenous events. Instead, relatively small fluctuations in exchange rates can, by the response they elicit (or fail to elicit) from monetary authorities, convey information that leads to large subsequent exchange rate changes.

Suppose, for example, that it is widely believed that the Japanese government will act to keep the dollar from rising above 150 yen—but that nobody is really sure whether they will or not. Then the strong possibility that there is a ceiling on the dollar will tend to hold the dollar down, but not as much as an unambiguous ceiling would. Now suppose that outside events lead the dollar to rise in spite of the possible ceiling, until it reaches 150 yen. Then, whatever the Japanese government does will represent news, because 150 is regarded by the market as a line in the sand that Japan has told it not to cross. If Japan does in fact act strongly to defend the yen at this point, its credibility is enhanced, and the dollar will suddenly drop back—say to 142. If Japan does not act, its credibility will be lost, and the effects of anticipated action in holding the dollar down will disappear; so the dollar will surge, say to 158.

There are two important points here. One is that the market need not have been irrational in failing to anticipate a sudden jump in the dollar, because the dollar could jump *either way.* So there is not a one-way option that creates a certain profit opportunity. The other point is that when the exchange rate jumps, there will have been no identifiable large piece of news arising outside the exchange market; the news is generated endogenously by the fact the market itself tested the authorities' resolve.

The new target zone literature has helped show that sudden crises under floating rates need not represent investor irrationality—a useful caution against Kindleberger-style stories that place complete emphasis on manias and panics. One would not want to deny, however, that irrational crises are also possible.

2.2.2 Origins of Crisis: Irrational Markets

There are an infinite number of ways for markets to be irrational and no way to choose among them on the basis of rigorous economics. There are

several popular stories, however, that can serve as useful metaphors for how crises might occur.

Destabilizing Speculation

The traditional explanation for volatility in foreign exchange markets, which goes back to Aftalion's (1927) "psychological" theory of foreign exchange, relies on bandwagon effects. When a currency is rising, investors conclude after a while that it will continue to rise; they buy on that basis, and in so doing they generate an accelerated rise. When for whatever reason the rise slows or stops, the process runs in reverse. Thus the exchange rate engages in fluctuations that at best exaggerate the swings in underlying fundamentals and at worst generate completely pointless variability.

The most recent alleged example of this phenomenon at work would be the ups and downs of the dollar. What is particularly notable in recent experience is the tendency of experts to produce arguments to rationalize whatever trend the dollar is currently following, *after* the trend has become visible. Most notably, the rising dollar in the spring of 1989 was followed, not led, by changes of opinion about sustainable dollar levels by such respected currency experts as David Morrison at Goldman, Sachs (London). This kind of ex post rationalization is part of the process by which cycles get exaggerated and perhaps created.

The Minsky theory of financial crisis is clearly related to the destabilizing speculation view, although it contains elements of our second story, trigger points.

Trigger Points

This is a neologism. I use it to refer to situations in which some group of investors has either explicitly or implicitly precommited itself to buy or sell a currency when the price reaches a particular level. Examples would include situations in which futures contracts will automatically be liquidated when the investor's margin is eliminated and situations in which speculators follow stop-loss strategies designed to limit their risk. Portfolio insurance schemes in stock markets are of the same kind and will be returned to later.

Suppose that a large number of investors have, de facto, precommited themselves to sell a currency when the price falls below some level. Then if other events push the currency down to that level, it will trigger a selling wave that quickly pushes the currency considerably lower.

Reputedly, something like this happened to the yen in April 1989. It is reported by financial sources that many Japanese investors in the United States had covered their positions by buying yen futures. When the dollar rose above 140 or so yen, these contracts were automatically liquidated, quickly pushing the dollar to 150.

There are two useful points to make about trigger point crisis stories. First, it is not necessary that all of the relevant investors have exactly the same trig-

ger point; a sudden crisis can result even if they are somewhat dispersed, provided that there are enough of them and they are bunched closely enough. To see this, imagine that there was one group of Japanese investors whose futures would be sold at 140, another at 141, and so on. Now suppose that when the yen rose above 140 it triggered only enough selling to drive the rate to 141.5. This rise in the dollar would, however, trigger selling by the second group; this could in turn trigger selling by the third group; and the cascading effect could lead to a very fast rise from 140 to 150.

On the other hand, existence of even a very large group of investors with trigger points need not create a crisis if other investors know they are there. Had the rest of the market known that many Japanese investors would, in effect, sell yen if the dollar rose above 140, this knowledge would have supported the dollar earlier; then, when the selling was triggered, yen would have been bought by other investors, who would know that the risk of future sudden declines in the yen would be reduced by the cleaning out of these trigger-strategy investors. (For a formal discussion, see Krugman 1987). The possibility of sudden financial crises therefore comes from the fact that the market does not know how much selling will actually be triggered when the price reaches some critical level. (Sanford Grossman made this point with regard to portfolio insurance, somewhat in advance of the October crash.)

Sustainability

A particular source of potential crisis that has attracted widespread attention in discussions of the dollar is the problem of "sustainability." Briefly, this position argues that sometimes currencies rise to levels that are clearly unjustified, in the following sense: they can only be rationalized by expectations about the future path of the currency that would involve an explosive accumulation of foreign debt. Presumably the currency rises this high because of an absence of sufficiently far-sighted investors. The sustainability argument says that at some point, perhaps when the accumulation of debt has risen sufficiently to draw attention to itself, the market notices that the exchange rate is unsustainable, and there is a crash. In 1985, when the dollar was near its peak, Marris (1985) and, more formally, Krugman (1985) argued that the dollar was unsustainable in this sense and got some probably unjustified credit when in fact it came down.

2.2.3 Macroeconomic Effects of Currency Crises

The macroeconomics of currency crises are fairly straightforward in practice, but rather messy in theory. That is, in practice currency crises typically lead to recessions in the affected countries. In standard theoretical models, however, it is easy to get the reverse result, an *expansionary* effect from a speculative attack on a currency. So a key question regarding currency crises is, Why do they usually turn out to be contractionary in practice?

Standard Theoretical Arguments

In thinking about the macroeconomic effects of a currency crisis, it is useful to represent the crisis in some simplified way. At the risk of missing some key elements, I will think of the effect of the financial crisis as being to lead investors to require a risk premium to hold the affected country's assets. Thus, for example, if before the onset of the crisis investors were willing to hold a country's interest-bearing liabilities at an interest rate of 10 percent, when the crisis hits they now demand 20.

The impact of such a risk premium should, in terms of standard models, depend crucially on whether the country has a fixed or a flexible exchange rate. If the rate is fixed, the effect is normally contractionary; if the rate is flexible, it could easily be expansionary.

Consider first what happens with a fixed rate. In standard models the imposition of a risk premium will lead to capital flight that reduces the country's money supply; this induced monetary tightening will lead to higher interest rates, and thus to a fall in demand and a contraction in output.[1]

With a flexible rate, however, the risk premium will be reflected not in capital flight but in a depreciation of the country's currency. Instead of a monetary squeeze, this depreciation will produce an improvement in competitiveness that will increase net exports and thus have an *expansionary* effect on the domestic economy.[2]

This contrast creates a puzzle. Why are the normal results of currency crisis contractionary when the model is ambiguous? And why is it that countries in crisis do not simply float their currencies as a way to avoid recession?

Reasons for Contraction

The reasons for contraction as a result of currency crisis probably lie principally in the policy response, which is typically a combination of very tight money and fiscal austerity. It is this policy response, rather than the direct impact of the financial crisis, that generates the recession.

Why do countries engage in contractionary policies when their currencies are under attack? The main reason is fear of inflation. Without contractionary policies, a financial attack would lead to a sudden currency depreciation that would directly raise import prices and, possibly, indirectly feed into other prices through explicit or implicit wage indexation.

1. Strictly speaking, even this contractionary effect is not necessary. If the risk premium wholly reflects expected inflation, then the rise in nominal interest rates will reflect no change in real interest rates and hence might not reduce demand. In practice, we can probably discount this; the risk premium will not be pure inflation expectations, and even a purely nominal interest rise will typically reduce demand when some agents are liquidity constrained.

2. One might wonder whether higher interest rates might not offset the expansionary effect of higher net exports. The answer is no: the economy must expand, so that increased money demand raises the interest rate to offset the required risk premium. The result is similar to the standard result of perverse transmission of monetary shocks under floating rates, described below.

Contractionary domestic policies help counter this inflationary impact of currency crisis in at least three, and perhaps four, ways. First, tight money and high domestic interest rates directly help discourage capital flight and limit the depreciation of the currency. Second, reduced domestic demand reduces demand for imports as well, which also helps reduce the required currency depreciation. Third, a domestic recession helps dampen the inflationary impacts of a declining currency.

The fourth possible channel for helpful results from austerity is that such austerity may help restore investor confidence. To the extent that the crisis represented a more or less rational assessment of the fiscal and monetary stability of the country, a change in policy may be helpful as much for its effect on expectations as for its direct economic impact.

The point that contractionary policies are forced by fears of inflation may perhaps best be illustrated by counterexample. In 1985, Brazil attempted a reversal of the contractionary policies it had imposed in response to the debt crisis.[3] The initial results seemed to show that the contractionary effects of the financial crisis were not inevitable: growth accelerated. The Brazilian trade surplus began to shrink rapidly, however, and eventually an accelerated rate of currency depreciation spilled over into a rapid acceleration of domestic inflation; the experiment in expansionary policies was then reined in.

2.2.4 Latin America

The debt crisis in Latin America provides an extreme example of currency crisis in action—so extreme as to pose some serious puzzles. While the origins of the crisis are understandable at least in hindsight, the severity and persistence of the effects of the crisis remain something of a mystery.

Financial Origins of the Latin Crisis

The deep roots of the debt crisis are outside the scope of this paper. The only point to be made here is that the Latin crisis began as a more or less conventional currency crisis, and only then developed into a "debt" crisis.

Initially, what happened was that a deterioration in the world economic environment led to growing expectations that Latin currencies would be devalued; expecting this devaluation, investors began a flight from Latin currencies. At first, however, hard-currency borrowing continued unaffected, and even accelerated, because lenders thought that the risk was purely currency-related. Only after a considerable length of time—and a substantial increase in hard-currency debt—did lenders apparently realize that the difficulties of the countries could affect their servicing of debt as well as their exchange rates, precipitating a cutoff of lending.

3. The Brazilian policy change included a currency reform, a moratorium on debt service, and wage-price controls; obviously these were very important, but the failure of the Brazilian expansion in spite of these additional policies only reinforces the point.

Table 2.3 **Capital Inflow and Capital Flight in Mexico (billion $U.S.)**

Year	Hard Currency Loans Plus Direct Investment	Capital Flight
1978	3.74	.07
1979	6.34	.23
1980	12.69	−.68
1981	30.62	9.73
1982	10.58	8.23
1983	2.27	2.42
1984	1.94	2.33
1985	−.18	1.92

Source: E. Zedillo. 1987. "Mexico." In *Capital Flight and Third World Debt,* ed. D. Lessard and J. Williamson. Washington, D.C.: Institute for International Economics.

Table 2.3 illustrates the point for Mexico. The left column shows "non-peso" capital inflows—hard-currency lending plus direct investment—while the right column shows capital flight. At first these rose together: 1981 was the peak year for both capital inflow and capital flight. Only after the spring of 1982 did lending dry up.

The flight of private capital from Mexico fits rather nicely into the rational speculative attack framework described above. On the other hand, this story poses some questions about the rationality of the hard-currency lenders, principally commercial banks. Was the news about Mexico in 1981 sufficiently clear that it simultaneously made sense for individuals to pull their money out at unprecedented rates while banks poured money in at equally unprecedented rates? One doubts this; so there is at least a strong presumption that the most dramatic of all currency crises involved a considerable element of market irrationality.

It is worth noting that as late as early 1982 most economists and bankers denied that Latin America's debt burden was excessive and regarded a debt crisis as unlikely. This is a useful caution against overconfidence now: even if we find little reason to fear an international financial crisis for the advanced countries, we should remember that the crisis of the developing countries was almost entirely unforseen.

Macroeconomics

The sad tale of the macroeconomic consequences of the Latin crisis is familiar; table 2.4 offers a few representative numbers. The *qualitative* combination of accelerated inflation and reduced growth is what our theoretical discussion led us to expect. However, the sheer size of the consequences is surprising, even given the large shock.

The shock was substantial. As a consequence of the cutoff of lending coupled with capital flight, Latin America shifted from receiving a net inward resource transfer of about 1 percent per year in 1981 to a net outward transfer

Table 2.4 **Macroeconomic Performance in Latin America (growth rates)**

Year	GNP Per Capita	Consumer Prices
1971–80	3.1	39.8
1981	−2.6	60.8
1982	−3.1	66.8
1983	−4.8	108.6
1984	1.4	133.0
1985	1.4	144.9
1986	1.9	87.8
1987	.4	130.0
1988	−1.3	277.6

Source: International Monetary Fund. 1989. *World Economic Outlook* (April). Washington, D.C.: IMF.

of about 4 percent in 1984; this outward transfer then diminished somewhat, to about 2.5 percent of GNP in recent years. There was also a deterioration in the terms of trade of some Latin American debtors, notably the oil exporters.

One might have expected this large shock to generate a temporary severe recession, followed by recovery; perhaps a pessimistic forecaster might have surmised that output would remain on a permanently lower track, never making up the ground lost in the initial slump. What one would probably not have forecast is that the several years of severe output decline would be followed by more or less permanent stagnation of real output per capita. If the growth rate from 1971–80 is taken as a norm, the apparent shortfall in output relative to trend is about 30 percent. This huge multiplier is hard to justify in any existing macroeconomic models.

2.3 Contagion Crises

A contagion crisis happens when a financial crash in one country—typically a stock crash—precipitates financial crashes in other countries as well, generating a worldwide recession. Prior to World War II such contagion crises were common. Since then there have been no clear-cut examples. The two large recessions of 1974–75 and 1979–82, although internationally synchronized, originated in oil price shocks (themselves due to political turmoil) and the simultaneous efforts of industrial nations to curb inflation through tight monetary policies rather than in financial panics. The stock market crash of 1987 was very coordinated internationally but did not lead to any economic contraction. So the study of contagion crises necessarily focuses on fairly distant economic history, primarily on the events of 1929–32.

2.3.1 Origins of Crisis

There is not much to be said here about the reasons for initial asset market crashes in any given country. Unlike the case of currency crises, there is no

easy way to rationalize sudden events in the stock market by appealing to the interaction of market participants with a central bank. Thus analysis of stock market crashes almost inevitably assumes irrational behavior, or at best some serious market failure.

Two of the stories (one hesitates to call them models) about irrational crises described in the currency crisis section are also widely used to analyze stock market crashes. First, bandwagon behavior can clearly lead to exaggerated fluctuations in stock prices; in particular, if investors are drawn into a rising market but flee from a falling one, sudden declines without any major news can obviously occur.

The alternative trigger point story can also apply. In its more primitive form, we can imagine that large numbers of investors choose to follow stop-loss strategies, planning to sell if stock prices drop below some predetermined level, so as to cap their possible losses. As in the currency case, this means that a small random event that pushes the price below some critical level can set in motion a cascade of selling. Also as in the currency case, the step drop in the price depends on investors not following this stop-loss strategy being imperfectly informed about how many investors will bail out if the price drops.

In the 1987 crash there was, of course, a high technology wrinkle in this story: the widespread use of computerized portfolio insurance, which essentially implemented a completely automatic stop-loss strategy. It is now apparent that the number of portfolio insurers was underestimated by the market, so that everyone was taken by surprise by the volume of automatic selling provoked by the initial stock decline. Even in 1987, however, it seems likely that old-fashioned manual stop-loss selling was more important than the computers, and the historical record shows that crashes can occur perfectly well without computers.

In the widely cited Minsky (1972) crisis model, there are elements of both destabilizing speculation and trigger points: the fall in prices is started by a bandwagon effect, but perpetuated in part by forced sales by illiquid investors.

2.3.2 The Transmission of Crisis

Suppose that, for whatever reason, the stock market in a major country crashes. How does this crash get transmitted to the asset markets and eventually the real economies of other advanced nations? This is an issue that is on somewhat firmer theoretical ground than the analysis of stock crashes themselves. There are three main channels through which the crisis might be transmitted. First, to the extent that equity markets are linked, there could simply be a direct comovement of stock prices; this could then generate a coordinated recession through whatever mechanism equity crashes cause recessions (if they do). Second, by generating a recession in one country, an equity market crash could generate global recession through a conventional multiplier process. Third, if asset crash leads to monetary crisis, this monetary crisis could then propagate worldwide.

Equity Market Linkages

It is not completely obvious that a crash in one national equity market need lead to price declines in other markets. Suppose that next week the world suddenly decides that Japanese stocks are grossly overpriced. One possibility would be that the investors would try to shift their funds into other stock markets, so that the Japanese crash would be matched by price *rises* elsewhere.

To rationalize the simultaneity of price falls seen in 1929, and even more so in 1987, it is necessary to invoke one of two explanations. One is purely psychological: fears about one country's stock market generalize to fears about others, leading to a general rout. The other explanation draws on a hypothetical distinction between insider and outsider investors. The outsiders have been drawn into one country's market by bandwagon effects, and at a certain point the outsiders have come to regard the stocks as overvalued and have withdrawn. When the market crashes, the outsiders leave and the insiders come back—pulling out of other markets, which then fall.

One might also want to note the possibility that investors understand that a stock market crash in one country will generate a worldwide recession through other channels, and drive down stock prices around the world in anticipation.

Foreign Trade Multiplier Effects

Suppose that a stock market crash in one country leads to a conventional recession—say by reducing wealth and precipitating a decline in consumption. This recession will then reduce imports by the contracting economy. The fall in imports will induce a contraction in other countries. The recessions in these countries, in turn, will start a second round of contraction in the initiating country; we will thus have the foreign trade multiplier process that has been familiar since the work of Romney Robinson (1954).

While this story is clear and well-understood analytically, it is questionable how important it can be in practice. Most empirical estimates of international multiplier effects are fairly small—so small, in fact, that they have been an embarrassment in attempts to justify macroeconomic policy coordination. It will be argued shortly that the conventional multiplier story has very little explanatory power for the 1929–32 contraction.

Monetary Repercussions

It is now widely accepted that the Great Depression happened in part because a sharp but conventional business cycle downturn, aggravated by the stock market crash, precipitated a banking crisis beginning in late 1930. The macroeconomic effects of this bank crisis may then have operated through several channels. The conventional channel emphasized by Friedman and Schwartz (1963) was the contraction in the money supply: as individuals in-

creased their cash holdings and vulnerable banks increased their reserve ratios, the money multiplier fell; given a roughly constant stock of high powered money in the US economy, broader measures of the money supply fell considerably.

Bernanke (1983) has argued that the effects were broader than this; that the closure of many banks and the shaken state of those that remained led to much more severe credit rationing than before, so that the shadow price of funds to many firms rose relative to the interest rate.

If we accept that a stock market crash can lead indirectly to a monetary contraction, plain or fancy, the next question is how such a contraction is transmitted internationally. Here, as in the case of currency crises, the standard theoretical literature is surprisingly ambiguous. Under fixed rates, the standard Mundell-Fleming model predicts a worldwide contraction resulting from monetary contraction in any one country; indeed, with perfect capital mobility the Mundell-Fleming model essentially denies that there is such a thing as a purely national monetary shock. Under flexible rates, however, the simple Mundell-Fleming model actually predicts that monetary shocks will be transmitted *perversely:* a monetary contraction in one country will produce expansion elsewhere.

The reason for this result is that in the simple Mundell-Fleming model, interest rates must be equalized. A monetary contraction in one country, which raises interest rates in that country, must be matched by an equal rise in rates elsewhere. The only way this can happen is through a depreciation of other currencies against the contracting country that stimulates exports abroad (at the contracting country's expense), which then generates, through a multiplier process, an expansion in output that raises money demand. (For an exposition, see Dornbusch 1980). The resemblance between this result and the perverse effect of a currency crisis under floating rates is apparent.[4]

The perverse transmission of monetary shocks is a result that may be softened or even reversed in more complex models. For example, regressive expectations on the exchange rate, by dampening the appreciation of the contracting country's currency, can allow positive transmission. This is especially true if one adds a realistic lag in the response of trade to the exchange rate. Frankel (1988), in a survey of a number of empirical macroeconomic models, has found that by and large they predicted mildly positive transmission.

Realistically, however, the best argument for positive international transmission of monetary shocks, like that for contractionary effects of currency crises, lies in endogenous policy response. Because a passive monetary policy would involve a large depreciation of the affected country's currency, fears of inflation will tend to induce monetary authorities to match monetary contraction abroad.

4. Notice also that this argument implies that the trade balance of the contracting country worsens rather than improving.

We should also note that while the standard result that with a floating rate monetary contraction in one country is expansionary abroad may not be robust, a weaker proposition can still be maintained. This is that a country can insulate itself from much if not all of foreign monetary shocks by allowing its currency to float.

2.3.3 The Spread of the Great Depression

Now that we have some basic concepts, we can turn briefly to the events of the Great Depression. In tables 2.1 and 2.2 we have already seen some key statistics about the financial and real spread of the crisis. There was a clear linkage of equity markets, although the fall outside North America was considerably smaller than inside. Since most accounts give even the U.S. stock market crash only an auxiliary role in bringing on the Depression, this must a fortiori have been true elsewhere.

Many discussions of the Great Depression have placed strong emphasis on the trade multiplier, often associated with assertions that protectionism played a key role. Kindleberger's famous "spiderweb" diagram, showing the contraction of U.S. trade from 1929 to 1932, has become a staple of crisis literature. Even a rough look at the numbers, however, makes it clear that *trade linkages cannot have been a major factor in the Depression.*

Table 2.5 presents some basic numbers; it shows U.S. national product, exports, and imports in constant dollars for 1929 and 1932, and compares percentage changes. The use of constant dollars is not crucial but helps maintain perspective; much of the contraction of trade pointed to by Kindleberger represents deflation rather than a decline in trade volumes (though the decline in volumes was certainly impressive enough in percentage terms).[5]

There are three key points to be gained from examination of table 2.5. First, the United States was a relatively closed economy in 1929, with imports and exports about 6 percent of GNP.[6] Since the United States probably accounted for no more than 40 percent of the gross product of market economies at that point, exports to the United States were less than 4 percent of the rest of the world's GNP. Second, the fall in U.S. imports in real terms was less than 40 percent, implying a negative demand shock to the rest of the world of less than 1.5 percent of output—too little, even with a generous multiplier, to account for more than a fraction of the observed decline in output. Third, a little noted fact is that during 1929–32 U.S. net exports actually fell—some-

5. Worldwide, the decline in trade volumes was about the same as the decline in industrial production. Both were larger than the fall in gross product; but this is not surprising. Typical modern estimates suggest that both trade volumes and industrial production have cyclical income elasticities of about 2. The point is that in spite of Smoot-Hawley, the decline in trade was only about what one might expect given the Depression.

6. For readers worried about deflators, this statement is true when 1929 dollars are used as well as 1982 dollars.

Table 2.5 **U.S. Output and Trade, 1929–32 (billions of 1982 $U.S.)**

	1929	1932	Percent Change
GNP	709.6	509.2	−28.2
Exports	42.1	23.2	−44.9
Imports	37.4	23.7	−36.6
Net exports	4.7	−.5	

Source: Department of Commerce. Various years. *The National Income and Product Accounts of the United States, 1929–82.*

thing that is very difficult to reconcile with the view that the United States exported its Depression through a decline in imports.

This suggests that emphasis should be placed on the third channel, monetary linkages. Unfortunately it is difficult to unravel the chain of events here, partly because the contagion crisis was intermingled with local currency crises. In particular, first Austria, then Germany suffered from speculative attacks and bank runs, driven partly by concern over financial stability, partly by concerns over political events.

What is fairly clear from the record is that the standard argument that floating provides insulation from monetary shocks is borne out quite well. The two countries that allowed their currencies to float—Britain and Japan—did relatively well compared with the countries that doggedly defended their parities, France and Germany. And of the two relatively successful economies, Japan did better, and also allowed its currency to depreciate more.

2.4 Two Crises That Did Not Happen

In contrast to what did happen to the world as a whole in 1929–32 and what happened to Latin America after 1982, what has *not* happened is the key observation with regard to crisis in the industrial world since 1985. Many observers have warned, in recent years, of the potential for international financial crisis, in particular, of the risks of a free-falling dollar. And there have been major financial shocks: a fairly rapid decline of the dollar from early 1985 to late 1986 and the spectacular stock market crash of 1987. Yet the predicted "hard landing" for the U.S. economy has not so far occurred, and the stock market crash was followed by a year of strong economic growth throughout the OECD. So the question is, Why have these financial events not had more real consequences?

2.4.1 The Dollar and the Hard Landing

In a highly influential work, Stephen Marris (1985) crystallized the fears of many observers about the strong dollar. Marris argued, correctly in retrospect, that the very strong dollar of late 1984 and early 1985 could not be sustained.

He also argued, so far quite incorrectly, that a falling dollar would produce a severe macroeconomic crisis in the United States.

Why did the "hard landing" not materialize? It was not because the exchange rate adjustment turned out to be gradual. The dollar fell essentially all the way back to its 1980s level in less than two years, losing roughly half its value against the German mark and the Japanese yen from February 1985 to December 1986. What failed to materialize were the real consequences of that decline.

In the Marris scenario the declining dollar was expected to have a strong and immediate inflationary impact on the U.S. economy. In order to contain this impact, the Federal Reserve would be obliged to impose very tight money, leading to a deep recession; Marris assumed that while the monetary tightening would reduce imports and thereby ease the necessary depreciation of the dollar, it would not succeed in attracting capital once a full-scale speculative flight from the dollar was underway. Instead, foreign investors would insist on pushing the dollar down sufficiently to quickly eliminate the U.S. current account deficit. Indeed, in his hard landing scenario, Marris assumed that the U.S. would be forced by capital flight to run a current account *surplus* of 1.5 percent of GNP.

In practice, this scenario has broken down at two points. First, dollar decline has not produced the dramatic inflationary impact Marris expected. Second, foreign investors have not so far demanded the kind of radical trade adjustment he described.

The reasons for the limited inflationary impact of dollar decline have been the subject of considerable study. Part of the explanation lies in energy and commodity prices, which declined worldwide during much of the period of dollar decline. Another part of the explanation lies in the "pricing to market" strategies followed by many foreign firms, especially in Japan: these firms did not raise their dollar export prices nearly as much as the rise in their dollar production costs. This strategy was possible partly because of inflated profit margins during the previous period of dollar strength, but the magnitude of the absorption of exchange rate changes has still been startling.

It is also true that the actual adjustment forced on the United States has still been quite modest: the current account deficit, which peaked at 3.6 percent of GNP in 1987, is expected to be about 2.5 percent of GNP this year. Had the markets insisted on an adjustment of the magnitude Marris envisaged, the required fall in the dollar would have been a great deal larger, and the inflationary impact would have been correspondingly larger as well. This could presumably still happen, although the story recently has been one of a surging rather than a crashing dollar (which was of course true in early 1985 as well).

Finally, it should be noted that the case made by Marris for the necessity of a severe recession is not too clear. The presumed reason is the need to contain inflation. However, a close reading of Marris reveals that the size of the required recession is never derived; indeed, the explicit model used to construct

the scenarios has an exogenous base rate of inflation so that in the model's own terms no recession is necessary. Marris simply assumes that a recession roughly the same size as the 1974–75 and 1979–82 slumps would be needed, on the basis that the dollar shock would be analogous to an oil shock.

2.4.2 The Stock Market Crash

Table 2.6 presents some summary data on the October 1987 stock market crash and its aftermath. In its opening phase the crash was comparable in size to the 1929 shock and considerably more globalized. There, however, the parallel ends. Instead of continuing to decline, stock prices generally recovered. As for real effects, the year following the crash was marked by generally stronger growth than the year previous.

Why did one of the great financial panics of history not have any second act? The most important reason was probably monetary policy: the Federal Reserve and its counterparts abroad promptly loosened money when the markets fell, giving prevention of a spreading crisis temporary priority over inflation control (and in the case of the United States over defense of the dollar).

This fits in with the general sense that the 1929–32 crash should have been rather easy to prevent. It has always seemed to macroeconomists that an expansionary monetary policy by the Federal Reserve plus a willingness by governments to abandon fixed rates if necessary could easily have prevented the market crash from producing a major slump. The events of 1987 were hardly a controlled experiment, but they provided a clear demonstration of the power of sensible policy.

2.5 Risks of Future Crisis

Given this survey of the problem of international financial crises, what can we say about the risks of future crises and the policies to prevent them?

The answer depends on whether contagion or currency crises are at issue. After the experience of 1987–88, it is difficult to get too worried about contagion crises. Stock market crashes may occur again; however, 1988 showed that such crashes need not turn into global contractions, as long as sensible

Table 2.6 **The 1987 Crash (percentage changes)**

	Stock prices, October 13–20	Stock prices, 20 October 1989 through 5 January 1989	Industrial production, Year Following
United States	−26.6	+16.5	+5.0
Germany	−13.8	+.9	+3.2
Japan	−17.0	+37.6	+9.4
United Kingdom	−22.1	+23.9	+2.2

Source: The Economist.

monetary policies are followed. In 1929–32 monetary policy was persistently, almost mysteriously, wrongheaded—both in the United States and in other countries, particularly Germany. Without that wrongheadedness it is hard to see how an equity market shock could produce catastrophic consequences.

Suppose, for example, that Japanese stock prices were to collapse. Then Japan could prevent a severe recession with an offsetting monetary expansion. If Japan failed to do this, the rest of the OECD could still manage to insulate itself from much of the crisis by allowing the dollar and the European currency unit (ECU) to decline against the yen. It is hard to see any reason why these straightforward policy responses should fail to do the job.

The problem of currency crises, on the other hand, is more uncertain. The U.S. success so far in avoiding a hard landing is partly due to the fact that financial markets have not actually forced a large adjustment of the U.S. current account. If they did, the inflationary consequences of the required exchange rate change would be much larger than anything that has happened so far.

The example of Latin America is also worrying. Unlike the example of the Great Depression, the debt crisis is a recent case whose effects are still strongly felt. It is still not clear what should have been done to prevent or mitigate the crisis: What advice would we have given the finance minister of a typical debtor in 1979, knowing that the crisis was coming? And there is something we do not fully understand about the macroeconomic impacts of the currency crisis in Latin America.

So if there is a type of international financial crisis to worry about, it is probably a currency crisis—the United States as a giant Latin-style debtor—rather than a replay of 1929.

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2. *C. Fred Bergsten*

The Hard-Landing Scenario

The Anatomy of the "Hard Landing"

In his background paper for this conference, Paul Krugman refers to the hard landing as the "crisis that did not happen . . . so far." He adds that it "could presumably still happen." I believe that the risk remains acute and is in fact both the most likely source of crisis for the American and world economies and the most likely trigger for ending the current expansion.

My focus is *not* the type of "hard landing" hypothesized by Larry Summers in the crisis scenario that makes his background paper so lively. There the international dimension arises at the end of a sequence of financial disturbances whose roots are domestic. To be sure, the Summers pattern is also conceivable and further underlines the importance of the globalization of markets in this context. But I will emphasize the risk of a crisis whose causality

is opposite to that of Summers, one that is generated initially by the external sector of the economy with rapid and painful transmission to the domestic side.

The hard-landing scenario is simply the typical "stabilization crisis" that has been observed throughout history in a number of countries. Private investors stop (in an ex ante sense) providing the $10 billion of net capital inflow needed by the United States each month and perhaps withdraw some of their $1 trillion of previously accumulated liquid assets. Foreign central banks decline to fill the gap. (I will shortly suggest why such developments could occur.) The dollar plummets, perhaps by 20–30 percent (or even more, as overshooting is to be expected in such a situation).

Expectations are generated that prices will rise in response by 3–5 percentage points, and nominal interest rates begin to rise by a likely amount.[1] The Federal Reserve feels compelled to try to stop the process, and roll back the fear of increases in the price level, by raising real interest rates—thereby pushing nominal rates into the 15 percent range. The twin deficits are a sufficiently important component of the problem that restoration of market confidence requires a credible multiyear program of substantial fiscal tightening, at least on the Gramm-Rudman-Hollings schedule without gimmicks.

The impact on the economy emerges in a straightforward manner. Inflation rises as a direct effect of dollar depreciation, especially if the economy is near full employment and full capacity utilization (as at present). The combination of sharply higher interest rates and fiscal tightening pushes the economy into recession—the more rapidly and sharply, the more vigorously the Fed moves to counter the accelerated inflationary threat.

Since the new policy stance might have to be maintained for a year or so to restore full confidence in the currency and the stability of the economy, the turndown might be unusually prolonged by normal U.S. standards. The subsequent improvement in the current account, generated by both the lower dollar and the domestic turndown, would be substantial but would take a year or so to eventuate and to begin restoring a modicum of growth. (This would be especially true at present because, as already noted, the economy as a whole—and the tradeables sector in particular—are running so close to full capacity.[2])

The Summers analysis becomes exceedingly relevant at this point. The sharp rise in interest rates could trigger substantial financial turmoil in light of the high leveraging of American corporations and the uncertain loan portfo-

1. Stephen Marris, *Deficits and the Dollar Revisited* (Washington, D.C.: Institute for International Economics, August 1987), 44. A fall of 10 percent in the trade-weighted dollar typically produces a rise of about 1.5 percentage points in the CPI, though the ratio could presumably be higher if the economy were already at full employment and full capacity utilization.

2. It should be noted that the portion of the trade improvement generated by the economic downturn would only be temporary. Imports rise sharply during normal U.S. recovery periods of rapid "catch-up growth" and return to the baseline level. Hence only the further dollar decline, to the extent it persists, would produce lasting trade gains.

lios (including Third World loans) of some financial institutions. Hence the Fed would face the Summers dilemma: the higher interest rates needed to stop the currency crisis would further intensify the risk of financial disruption, while any substantial injection of additional liquidity as lender of last resort could increase the inflationary spiral and precipitate more dollar depreciation. In such a situation, there would almost certainly have to be even greater fiscal tightening even though it would exacerbate the turndown. Fiscal as well as monetary policy would face a true dilemma, from which there is no pleasant escape. Thus the "hard landing" would arrive.

Why Hasn't It Happened?

The crucial economic relationship that creates the "hard landing" is the juxtaposition of dollar depreciation and higher interest rates. From early 1985 through late 1987, the real effective exchange rate of the dollar declined by about 40 percent. But long-term real interest rates, despite some major bumps in 1987 (to which I return below), fell by about 2.5 percentage points during this period. Hence there was no hard landing for the economy.

Krugman (in this volume) suggests two reasons for this outcome, both related to the failure of the dollar's decline to produce a substantial run-up in inflation: the contemporary fall in energy and other commodity prices, and the unexpectedly low pass-through of dollar depreciation to export prices by Japanese and perhaps other foreign firms. The first was sheer luck. The second may or may not prove to be sustainable.

Other authors, including Krugman elsewhere, have suggested a third reason: that foreigners are increasingly providing the financing needed by the United States through investment in real dollar assets, notably direct investment in plants and real estate, that are viewed as largely indexed against inflation and dollar depreciation and thus would not lose much of their value even in a hard landing. The United States clearly *is* getting into asset settlement of its external deficit to a substantial degree. However, well over half the inflow of private foreign capital in 1988 ($143 billion) still moved into liquid assets—an amount that about equalled the total increase in our net liabilities to foreigners.

I believe there are three other reasons why the hard landing has not yet occurred. First, the dollar decline occurred while the US economy "enjoyed" a substantial margin of unused capacity. Unemployment fell from 7.4 percent at the start of 1985 to 5.8 percent at the end of 1987, and capacity utilization of industry rose from 81.1 percent to 82.4 percent. But the availability of resources throughout the period, especially in the tradeable goods sector that had remained depressed throughout the general recovery of 1983–84 because of dollar overvaluation, meant that the lower dollar could translate readily into trade improvement rather than higher prices.

Second, as the hard landing began to threaten in early 1987, the U.S. gov-

ernment and the central banks of the G-7 reversed course and began opposing rather than fostering dollar depreciation. They did not achieve full market credibility, and hence halt the dollar's slide, until the bear squeeze in the first week of 1988. But they apparently supported the dollar to the tune of about $120 billion during 1987 and made clear their determination to continue doing so in 1988 because of the futility of expecting U.S. fiscal action during the Presidential election year.

Third, the U.S. current account deficit began to decline in real terms from the middle of 1986 and in nominal terms from the middle of 1987. The budget deficit dropped sharply in fiscal year 1987. Both have continued to fall as a share of GNP. We know from studies of unemployment that the voting public tends to react more to trends than to levels of that key economic variable. I would conjecture that markets frequently follow the same pattern. Hence the steady reduction in the twin deficits, though both have remained quite high by U.S. historical standards, may have promoted stability (and subsequent strength) in the dollar.

Despite these mitigating factors, I believe that we came fairly close to a hard landing in 1987. Treasury once again began to talk down the dollar in early January. Inflows of private capital dried up and there were repatriations by some large Japanese investors. The exchange rate fell sharply. Interest rates jumped. The crucial juxtaposition that characterizes a hard landing was at hand.

Two factors intervened to avoid substantial repercussions on the real economy. The clearcut element is that the central banks stepped into the breach with massive intervention and the Louvre Accord. The more conjectural is the reputed indirect intervention of the Japanese Ministry of Finance via some of the largest Japanese financial institutions, despite the huge losses which they took as a result.[3] Absent these developments, the hard landing could well have occurred despite the anti-inflationary impact of lower oil prices, the continued existence of considerable spare capacity in the economy, the beginning of some reduction in the twin deficits, and the lower-than-expected price pass-through. And we still experienced Black Monday in the fall as well as the sharp drop in the bond market in the spring.

It should also be noted that the United Kingdom may now be in the early phase of a hard landing. The pound is falling sharply despite steady increases (to very high levels) in British interest rates, after having risen for some time when "uncapped" by the authorities. To be sure, the British current account deficit is considerably larger than our own as a share of GNP and inflation is much higher. Sterling is not the dollar. But Britain almost certainly will experience a sharp recession along with rapid inflation for a while, reminding us that hard landings do occur.

3. Richard Koo, "Japanese Investment in Dollar Securities after the Plaza Accord," in U.S. Foreign Debt, Hearing before the Joint Economic Committee, U.S. Congress (13 September 1988).

Could It Happen Now?

I believe that the risk of a hard landing for the United States will be greater over the next year or two than at any time to date. A series of foreseeable events suggests that private capital inflow may again dry up, as in 1987, and that the foreign central banks may not come to the rescue.

First, the trade and current account deficits are likely to turn up again in 1990. The IMF expects an increase in the current account deficit to about $140 billion from about $125 billion this year.[4] My colleague William Cline projects a steady increase, on current policies and exchange rates, to over $200 billion by 1992.[5] Nor can one, on current readings, be very optimistic about the outlook for the budget deficit.

Such a trend reversal would signal a growing and perhaps indefinite external borrowing requirement for the United States. The needed capital inflow would rise from the present level of $10 billion per month to $15–$20 billion per month. Our net international investment position, already at minus $533 billion at the end of 1988, would rise past $1 trillion in the early 1990s and move onto an explosive path.[6] Since markets may be affected by trends more than levels, as noted, such a shift could at a minimum remove a key underpinning from the dollar stability/strength of the last two years—and even trigger its reversal.

Second, interest rate differentials will almost certainly continue to move against the dollar. Slower growth and modest inflation (and perhaps election-year politics) will probably push interest rates lower here. Continued rapid growth and rising inflation concerns abroad will clearly drive up interest rates there. The real dollar-DM differential has already shifted in favor of the DM in absolute terms, and the real dollar-yen differential now favors the dollar by less than one percentage point.

Political instability or other unpredictable factors could of course offset such developments and keep the dollar high or even rising. But a reduction of the "safe haven" effect is just as likely as the opposite, especially if East-West tensions continue to thaw and the LDP clearly retains power in Japan.

There is thus a significant risk that private foreign investors will stop, or sharply curtail, their dollar investments at some point in the foreseeable future. I would not argue that they will forever forgo new investments in the United States, but only that—like any investors—they may decide that they can make those investments at a considerably better price if they withdraw for a while and come back later. We know that there are plenty of alternative

4. International Monetary Fund, *World Economic Outlook* (April 1989).

5. William R. Cline, *United States External Adjustment and the World Economy* (Washington, D.C.: Institute for International Economics, March 1989); "Impact of the Strong Dollar on US Trade," June 1989.

6. As developed in Paul Krugman, *Exchange-Rate Stability* (Cambridge, Mass.: MIT Press, 1989) 106–7.

investment vehicles for fairly sustained periods of time and that the view the "the money has no place else to go" is absurd over any short-term or ever medium-run period.

Nor would I argue that the markets are behaving "irrationally." Most market participants maintain an extremely short-run focus, and many have made money by buying dollars over the past two years. The trend *has* been their friend. But "market rationality" and "sustainability" are very different concepts, and my focus of course is on the latter.

The crucial actors then become the central banks, and there are several reasons to believe that they may not be willing to bail out the dollar again. First, most of their economies are now experiencing domestic-led growth, and they no longer need undervalued currencies to support expansion. Second, as already noted, most of them are increasingly concerned about inflation and may prove unwilling to undermine the credibility (and perhaps effectiveness) of their monetary policies by buying huge amounts of dollars. Their current efforts to avoid further depreciation of their currencies support this view, and they well remember that the two periods of double-digit inflation in the 1970s were associated with such intervention.

Third, in an environment of renewed increases in America's external (and perhaps internal) deficit, foreign central banks may simply prove unwilling to underwrite a seemingly unending process of excess domestic expenditure by the United States—which all of them believe is due almost entirely to the policies of the United States itself. In 1987, they could see progress on both deficits and were waiting for more to eventuate from their own Plaza initiative. In 1988, they knew that further U.S. fiscal action was unlikely and memories of Black Monday were still fresh.

But the outlook for the international imbalances, and the domestic economic circumstances of the key countries abroad, suggest that their attitudes may be very different in 1990 and beyond. This would be particularly likely if, as in 1977–78, they had to finance substantial outflows of private capital from the United States as well as gargantuan current account deficits.[7]

To be sure, foreign central banks have no interest in contributing to financial panic or a global crisis. They are unlikely to want to see the dollar enter a totally free fall. But neither can we count on their pouring in the level of resources needed to offset an investment strike by private foreigners, or even the amounts they provided in 1987. Indeed, depending on the magnitude of private dollar selling, the monetary authorities might not be *able* to defend the dollar by intervention alone even if they wanted to—especially in light of the recent loss of their credibility in failing to preserve the upper bands of their reference ranges.

7. In 1977–78, dollar purchases by foreign central banks were about twice as large as America's current account deficits (of $15 billion annually). A similar ratio today would require purchases of $250-$300 billion.

The final link in the chain is the most crucial: the impact of a sharp fall in the dollar on the U.S. economy. Here too the situation is very different than in 1985–87. We are near full employment and full capacity utilization, especially in several of the leading export industries, so the impact on inflation and interest rates would be much more severe.[8] There is no prospect of another sharp fall in energy or commodity prices; the contrary may be more likely, and would intensify both the inflation and current account risks. To maintain its credibility in fighting inflation, including with respect to its response to administration preferences in an election year, the Fed would have no choice but to respond aggressively.

I am afraid that conditions are thus in place that raise again the risk of a hard landing.[9] At a minimum, we would be foolish to dismiss the possibility in light of the enormous costs it could levy on the country (and on the world economy). I will turn finally to how best to prevent it.

How to Prevent It

The underlying cause of America's external imbalance remains its low rate of domestic saving.[10] Unfortunately, there are no policy tools that we can rely on with much confidence to raise private saving. Thus the policy focus must remain on reducing, and hopefully eliminating, the deficit in the federal budget on the timetable currently set by Gramm-Rudman-Hollings.

The only other defense mechanism against the risk of a hard landing is a willingness to raise interest rates as needed to defend the dollar. This could, of course, lead to excessively tight money from the standpoint of domestic growth. Over time, moreover, it would lead to even higher budget deficits and—unless private saving responded exogenously in a positive direction—to even larger external deficits and thus an unstable spiral.

Induced dollar depreciation would help if domestic demand growth slowed to a pace which no longer fully utilized all domestic resources. A "second Plaza agreement," which would focus solely on further exchange rate changes, would therefore be desirable, even in the absence of further fiscal or

8. From the second quarter of 1987 to the second quarter of 1989, capacity utilization for industry as a whole rose from 79.9 percent to 83.8 percent; for manufacturing, the increase was from 80.5 percent to 84.1 percent.

9. Marris (n. 1 above), xlvii, foresaw the current situation very nicely: "If nothing is done about the budget deficit, growing confidence that central banks had put a floor under the dollar could push the dollar up again. . . . But the political realities are such that nothing much may be done about the budget deficit until the electorate really feels the pinch. Thus . . . the world's central banks may actually facilitate inaction on the budget. . . . Equally, if the dollar remained too strong and the U.S. trade position began to deteriorate again, the markets would eventually lose confidence in the authorities' ability to defend the dollar and the stage would be set for an even harder landing."

10. C. Fred Bergsten, "The Domestic and International Consequences of America's Low Saving Rate," paper presented to the conference, "Saving: The Challenge for the U.S. Economy," sponsored by the American Council on Capital Formation (Washington, D.C., 12 October 1989).

monetary steps, if the growth of domestic demand were to slow exogenously. (Of course, monetary policy changes might be needed to effectively implement such an agreement.)

An alternative suggested by some is the issuance of foreign currency bonds by the U.S. Treasury. Foreign demand for such bonds might indeed be heavy for a while and buy more time for U.S. adjustment to occur. But the history of this idea, from the Roosa bonds of the early 1960s through the Carter bonds of the late 1970s, shows that they work only in the context of an effective adjustment program (as in 1978–79) and subject the United States to substantial costs otherwise (as with the Swiss franc bonds of the early 1960s, which were not redeemed until the mid-1970s). They are no substitute, except in the short run, for dealing with the problem at its source.

It is thus essential, if tedious, to reiterate the standard remedy for eliminating the current account deficit to stop the buildup of America's foreign debt and thus avoid the risk of a hard landing:[11]

- budget correction on the Gramm-Rudman-Hollings timetable;
- continued rapid growth of domestic demand in the major surplus countries (Japan and the EC);
- effective resolution of the Third World debt problem inter alia to permit renewed import growth there;
- further dollar depreciation against the currencies of the surplus countries, *in the context of a freeing of U.S. resources through budget correction or exogenous slowdown of domestic demand,* to about 100 yen and 1.50 DM (assuming no intra-EMS realignment);
- adoption of target zones, or similar improvements in international monetary arrangements, to *keep* exchange rates at their new equilibrium levels so that American exporting and import-competing firms will exploit their renewed price competitiveness by expanding capacity in the United States; and
- a successful Uruguay Round of trade negotiations to help head off more protectionism and assure the United States of market access for the trade improvement that it must achieve.

3. *Rudiger Dornbusch*

International Financial Crises

I would like to join those speakers who have expressed wariness; I do not think we have learned where financial crises come from, and our increased ability to apply emergency treatment does not comfort me. It is true that,

11. The details are in C. Fred Bergsten, *America in the World Economy: A Strategy for the 1990s* (Washington, D.C.: Institute for International Economics, November 1988).

unlike the case in the 1930s, the Federal Reserve and the central banks of all industrialized countries have done an exceptional job already twice in the past two years, but that gives me only so much comfort.

Walter Bagehot's view was that crises result when authors, rectors, and grandmothers become greedy. "At intervals, from causes which are not to the present purpose, the money from these people—the blind capital, as we call it, of the country—is particularly craving; it seeks for some one to devour it, and there is 'plethora'; it finds some one, and there is 'speculation'; it is devoured, and there is 'panic' " (as quoted in Burton [1902] 1971, 311).

Other interpretations have placed professionals rather than amateurs at the center. Neither view helps put the finger on the necessary conditions and the decisive trigger.

What Happens in a Crisis?

There are three essential ingredients for a crisis: vulnerability, awareness, and fear. None of these terms is a standard economic expression and that is conscious; they are meant to describe a state of mind.

Vulnerability can arise from an overexpansion of credit relative to debt-service ability. The trigger event would be a decline in debt-service ability—higher interest rates or a decline in earnings from a recession or a commodity price decline. Figure 2.1 shows the expansion in nonfinancial sector debt relative to GNP in the United States. There is no obvious criterion of what is too much. In fact, preceding a crisis the rationalization of why too much is not really too much is an essential part of the game. But there is also little doubt that were a crisis to occur, excessive accumulation of debt would be blamed.

Shiller (1988) has pointed to "awareness" as a decisive element in the stock market crash. Market participants felt that a crash could happen. Awareness is the state of mind where market participants are trigger happy; they are will-

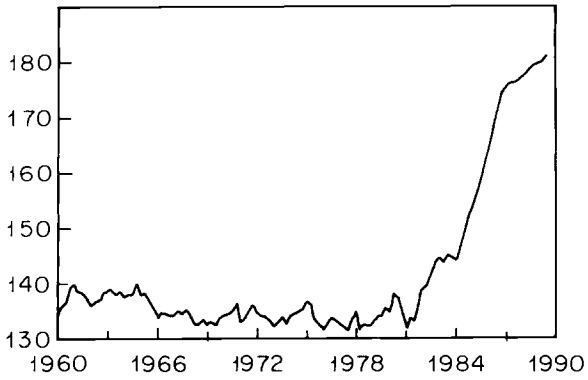

Fig. 2.1 The debt-GNP ratio in the United States

ing to interpret events in terms of a scenario of decline and even of major adjustment. Perhaps one can go a step further to say that the average market participant is waiting for a good time to get out and only few are waiting to get in. Rational expectations do not allow such a situation, but they seem to occur. For example, in fall 1989, on a Friday afternoon, the dollar declined against the Deutsche Mark by 7 pfennigs in 15 minutes—the general comment was that the dollar had reached a peak where everybody wanted to unload. Awareness thus represents a peculiar imbalance of opinion where prices are out of line with assessments, but where the attempt to unload has been postponed.

The third essential ingredient in producing a crisis is fear that unless a position is liquidated *now* major losses will result. The fear thus reflects the fact that investors are willing to reassess dramatically their market evaluation and that they are willing to take major losses on the face value to reach safe ground. The fear is undoubtedly promoted by two facts, rapidly falling asset prices and the sharp widening of bid-ask spreads or the actual disappearance of markets. During the sterling crisis of 1976, for example, bid-ask spreads increased vastly on several occasions, as figure 2.2 shows. There is useful research to be done on the linkages between spreads, the rate of movement of asset prices, and asset holders' eagerness to liquidate.

A rereading of crisis literature (or, more properly, "panic" literature) suggests that more emphasis should be given to the psychological element—How do asset market participants perceive or "frame" the events around them and how do they react when "reality" rapidly changes? The *sauve qui peut* mentality is not fruitfully explored with traditional rational expectation models.

The Lender of Last Resort

The part about crisis that is well understood has to do with the credit system and contamination effects. Market participants understand that *anyone* is vul-

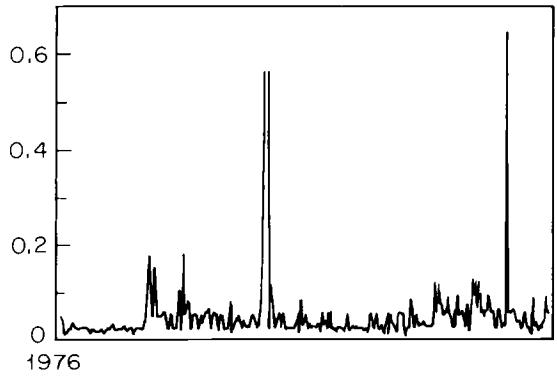

Fig. 2.2 The bid-ask spread for spot exchange (% of average rate)

nerable in a crisis because they may have lent to someone who has in turn lent to someone, and so on. There is no time to find out and the safest strategy is to hold on to cash, postpone payments, and, above all, call in loans as fast as possible. The only remedy of the authorities is to follow the Bagehot principle—during crisis discount freely. But Bagehot recommended lending at high interest rates; the novelty of the 1980s is to push rates down. At high rates the vulnerability from debt burdens would amplify the crisis.

The accepted wisdom is that the central bank is the lender of last resort. Here I must register my doubt. What is at stake today is no longer liquidity in the sense of high-powered money or gold. In the crisis of 1847, for example, bank notes were the issue: "The chancellor of the exchequer states that the tenor of the remarks by those who applied to him was 'Let us have notes . . .' 'We don't mean indeed to take the notes, because we shall not want them; only tell us that we can get them, and this will at once restore confidence' " (Palgrave 1894, 461).

Today, guarantees by the Treasury would do just the same as guarantees by the Fed. The issue is really whether, unlike in the nineteenth century, proper crisis management requires an expansion in the monetary base.

International Aspects

Now let me go to the international aspect of the assignment for this panel. The first question is: Is there something in the world economy that produces crises, or country problems, that may or not spread? Krugman's excellent paper has introduced the useful distinction between country problems and world problems. All crises start off as country problems, not system problems, and then they may or not spread out. This is what the bank literature calls contamination (see Saunders 1988). When they do spread, one would like to think it has to be a large country problem to get a really good world crisis going, but that is not true. Poor little Austria produced the Great Depression if we can believe Charlie Kindleberger, and Argentina produced a crisis in Great Britain in the 1890s. Thus the contagion mechanisms do deserve attention.

But the other way around is certainly true: when a big problem happens in a big country then the little countries have problems. When the U.S. stock market crashes, stock markets decline worldwide, and investors in small countries like Mexico seek security in U.S. Treasury bills, not in their own. In the end, the small, poor countries suffer disproportionately because in the flight to safe assets they may be the poorest provider.

We understand, in fact, very little about the systemwide propagation of crises. The way we could go most wrong is to take one of our macroeconometric models, ask what it tells us about linkages, conclude that those linkages are really very small, and therefore be persuaded that international crises are not a big deal. However, the Great Depression did happen. Macroeconometric models say that a 1 percent decline in U.S. demand has an impact

on Europe that is within a rounding error of zero, and that suggests we ought not worry about spillover effects, but that implication is wrong.

Why should we not become comfortable? We must not become comfortable because the international transmission takes place not only and in the first place through demand (if that were all, then we would probably be talking about hiccups, not crises) but rather through asset markets and through expectations. In asset markets transmission might occur through credit rationing, and that is, then, primarily a country problem, or through the comovements of stock markets, and from stock markets' affecting investment. Credit rationing was one mechanism by which Latin America was pulled into the Great Depression—falling commodity prices were the other. Neither of these play any role in our macro models. And we have also a linkage from stock markets and confidence to investment and consumer spending. Long before the transmission takes place through trade we can have a highly synchronized decline in world demand.

A highly synchronized decline in world demand is not studied with macro models because we only feed them small and sympathetic shocks; we do not feed them crisis scenarios in which everybody says, "Oh no, the world is going down, bad idea to invest today."

My second point concerns the speed with which a world decline in demand can take place. Before policy coordination could be discussed, if there were a fast decline in world demand there were two ways countries could go: they could meet and resolve what to do about it, or they could immediately pursue some policies that try to isolate the problem. Krugman argued in his background paper that flexible exchange rates work to isolate countries, but then of course we have to ask whether they aggravate the problems wherever they started by isolating that country to eat its own disturbances. You have to ask whether countries actually pursue flexible rate policies to isolate them or whether they rather opt for trade restrictions.

In the 1930s the understanding was that flexible exchange rates might help a bit, but a quota could do the work much better. Quotas were invented precisely to provide a very safe way of sheltering countries from external shocks. And, with quotas, came the invention of trading blocks—imperial preferences, things like that, to isolate entire blocks from external shocks. If countries by themselves, or as groups, try to shelter themselves, then one easily gets into a depression spiral from which it is difficult to escape.

I am skeptical about the possibility of avoiding crises because we are not very good at coordination. Research by Jeffrey Frankel suggests that it is not even clear what countries should be doing. If one's trading partner has a different model in mind, and if there is not strong agreement on what should be done, decentralized decision making takes over. Things could easily get out of hand. Certainly today, at the world level there is no coordination of views on what should be done in the case of a decline in world demand. I do not see Europe hastily going to fiscal expansion; I do not see Europe hastily going to money creation.

Policymakers are good at short-run coordination, that is, what to do on a Monday morning if the stock market goes down. Particularly, they are good at what to announce—perhaps even what not to do. There is much less agreement on what to do in the next three-, four-, or five-month period if we were to have the onset of a major decline in world demand.

Latin America: After the Crisis

Next I want to focus on currency or country crises, specifically on Latin American experiences (see table 2.7). The issue that concerns me is that entire countries, much like the stock market, can go on sale, and the puzzle is, why? Imagine that, for some reason, a country goes on sale, and the real wage is 30% less than it was a year ago. This is in fact what happened in Britain in 1976, as figure 2.3 shows, and in Mexico in the 1980s.

In a case such as Mexico's, one has to ask if there is any sense in which a mispricing occurs and, if it is a mispricing, what to do about it and who should take action. There is, in fact, a coordination problem in getting the country back into the credit market, and the coordination problem has to do with irreversible investments and the option value of waiting. In the aftermath of stabilization there is a lack of confidence and, as a result, no stabilizing capital

Table 2.7 **Estimates of Capital Flight (cumulative, billion $U.S.)**

	Argentina	Brazil	Mexico	Peru	Venezuela
1979–82	22.4	5.8	25.3	n.a.	20.7
1983–87	6.8	24.8	35.3	3.3	18.9

Source: Cumby and Levich (1987); updated by the author.

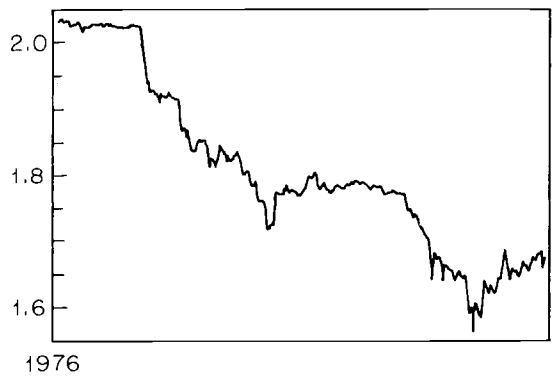

Fig. 2.3 The dollar-sterling exchange rate

reflow.[1] Foreign direct investment is slow to come, and Latin America's own assets are even slower.

Investors have an option to postpone the return of flight capital, and they will wait until the *front loading* of investment returns is sufficient to compensate for the risk of relinquishing the liquidity option of a wait-and-see position. How can governments reassure investors? The common answer is to bring about a "credible" stabilization. Credibility is the buzz word, used to explain vacuously why programs fail or succeed. In practice, credibility comes down to high interest rates and an exchange rate so competitive that expected further depreciation is unlikely. But high interest rates are counterproductive from a point of view of growth because they lead to holding of paper assets rather than real investment. A low real exchange rate cuts the standard of living and thus reduces domestic demand and profitability for all investments except in the traded-goods sector.

If real depreciation is not sufficient to bring about investment the government faces a very awkward position: income has been shifted from labor to capital, but because the real depreciation is not sufficient, the increased profits are taken out as capital flight. Labor will obviously insist that the policy be reversed. This uncertainty is an important feature in understanding the real exchange rate–capital flight relationships and the poststabilization difficulties.

Stabilization by itself is not enough to trigger a virtuous circle. There is a need for a coordination mechanism that overcomes the competitive market tendency to wait. What markets consider a sufficient policy action may be beyond the political scope of democratic governments. In fact, if governments went far enough to create the incentives that would motivate a return of capital and the resumption of investment on an exclusive economic calculation, the implied size of real wage cuts might be so extreme that now, on political grounds, asset holders consider the country too perilous a location.

In the aftermath of major macroeconomic shock there may simply be no equilibrium that is politically safe and economically rewarding on a scale that induces the return of growth as the response of competitive markets. Without the leverage afforded by external capital—1920s style or in the form of the Marshall Plan—there may be little prospect of reconstruction.

New Weak Linkages

I want to conclude with a remark of where the next crises are being generated. My impression is that financial deregulation in developing countries may be doing just that. There is great enthusiasm underway to take Korea and give it a modern, healthy financial system, where the Korean savings can be taken to London to put into junk bonds.

1. In Dornbusch (1989) this topic is modeled in detail.

This is a really very potent source of financial instability. Why? Because at the pace at which liberalization is taking place and capital markets are opened, regulation in no way is allowed to catch up with the reality of actual liberalization. And the same may well be happening in Europe in 1992 in the fringe countries—perhaps in Greece, perhaps in Spain.

Financial regulation should be way ahead of the unlocking of very, very repressed financial markets because the disequilibrium that evolves is the tendency to do in most countries the kind of business investors are not allowed to do anywhere else. The weakest link in the chain will give, and financial deregulation is a predictable way of creating more weak linkages in the world system.

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4. *Jacob A. Frenkel*

Intervention, Coordination, and Crises

In contrast with earlier speakers on this panel, I shall not venture to evaluate the likelihood of a soft or hard landing in the wake of recent events. Instead, I shall try to respond to Martin Feldstein's request to discuss some more general aspects of policymaking that bear on the issues raised by Paul Krugman.

To set the stage, I would like to tell you about some of the surprises I encountered when I moved from the University of Chicago to Washington. One surprise came from having spent many years looking at exchange rate equa-

tions where the most prominent independent variables were the money supply or expected money supply of the domestic and foreign economies. I found that these variables—monetary aggregates—play a much less prominent role in policy discussions, at least among the industrial countries, than in the theoretical and econometric models. A second surprise also arose from my thinking that exchange rate policies are most closely linked to monetary policy: it was to find representatives only from the ministries of finance rather than from the central banks at the meetings of the G-7 deputies. A third surprise was that, in this context, an economist seems to be expected to be primarily a good forecaster. Fourth, I thought that academic research had raised significant doubts on the effectiveness of intervention as the main instrument of exchange rate policy (especially if the intervention is not concerted), but I found much greater willingness to rely on intervention. Fifth, I found a much greater focus on nominal exchange rates than on real exchange rates, and sixth, I found greater focus on flows (like budget deficits) than on stocks (like government debt).

With all this in mind I would like to discuss briefly the issues that Paul Krugman raised in his paper. I like very much the distinction between a so-called currency crisis and a contagion crisis. Krugman concludes that a contagion crisis is probably a historical anachronism because simple policymaking can now deal with it. But I believe that this is the kind of crisis we should all still be afraid of. I shall say more on this as I proceed, but at this point I want to emphasize a point about the international transmission of crises. I think it is important that we include protectionism as one of the known dangers because extended protectionism has implications beyond just trade flows. It makes the difference between an inward and outward orientation and between open and closed capital markets.

Let me now turn to the questions that Martin Feldstein has raised in this context. First, what are the sources of crisis? Second, and more important, can institutional arrangements be altered in order to prevent a crisis? I have a long list of points to make; they are not in any particular order of priority.

Exchange Rates, Intervention and Sustainability

First, we all know that what matters for economic behavior is real exchange rates. We also know that what makes the headlines are nominal exchange rates. This is a distinction that we should keep in mind all the time, because when we speak about the need for an exchange rate change of 5 or 10 percent in real terms, it is a much bigger change in nominal terms.

Second, why is there so much focus on intervention? There are basically two possible explanations. One possibility is that there is a serious belief that intervention is an effective instrument. In fact, at a meeting organized by Gerald Corrigan at the Federal Reserve Bank of New York in early October 1989, there was a general appeal from the audience to the central bankers around the

table to reexamine the findings of the Jurgenson report, that is to reexamine whether sterilized intervention has any effectiveness. The second possibility, which is more likely to be correct in my view, is that policymakers view sterilized intervention not as the *essence* of policy, but rather as one *element* of policy. And as always when some elements of policy are more difficult to implement than others, one ends up with the elements that are easiest to implement.

A third subject that I wish to mention is the notion of sustainability. The concept of sustainability is elusive because it depends on the expected future evolution of many variables. Thus we all see current account imbalances, but we have different views about their future evolution and financing, and hence about their sustainability. One often sits around a table and confronts the question "Why are you crying wolf?" after predicting "seven of the past five" crises arising from supposed unsustainability. As one of the governors of the International Monetary Fund has said, it took many years to accumulate these deficits, and it is likely that it will take many years to run them down. By definition, something that is not sustainable will resolve itself, but the real issue is, at what cost? That is what makes sustainability a policy issue.

Coordination and Cooperation

A fourth issue is the role of policy coordination. When I first became involved in the discussions of policy coordination a few years ago, I was not very sensitive to such distinctions as that between "coordination" and "cooperation." I saw a good intellectual case for coordination (which I did not distinguish from cooperation) because we are, after all, an interdependent world. If one country performs an action that affects the rest of the world, there are externalities, and cooperation or coordination seems a good way of internalizing those externalities. As one becomes more sensitive to the distinction between cooperation and coordination, however, one recognizes that there are different priorities among countries, different constraints, different institutions, different assessments of reality, different readings of the record of the past, different philosophies, and different jurisdictions of who can do what. Some people argue that the Bonn Summit of 1978 was the most successful summit of all, while some view it, in retrospect, as regrettable. There are different readings even of the Louvre Accord as well as of many other agreements. In view of all this, I think that what one should advocate is nearer to the cooperation end of the coordination-cooperation spectrum.

Let me highlight some of the stumbling blocks that tend to appear in discussions around the table. These are not secret: they are all in the public record. First, the G-7 representatives may disagree about where we are. For instance, is it true that external adjustment has stalled, or is it not true? Before any action can be taken, the group must resolve such basic disagreements.

Second, suppose everyone agrees on "where we are"—say, that adjustment

has stalled. There remains the question of what, if anything, should be done about it; and that again gives much scope for dispute. For example, Mr. Lawson, as chancellor of the exchequer of the United Kingdom, argued that since the increase in his country's external deficit in recent years is a result of private-sector behavior, it does not in itself constitute a problem. But we heard similar remarks—that one should not interfere with the actions of two consenting adults—in the early days of the debt crisis, and they make me a little nervous. I think we should be careful to identify the externalities that may be involved. Still, it is of course a valid question to ask whether anything should be done in such a situation.

Third, assuming agreement that there is a problem, there may be another source of difficulty in determining which international group should be concerned about and considered responsible for the situation. Is it a global, systemic problem, or a regional problem? Is it a G-7 problem, or is it an EMS problem, a European issue? Thus some would argue that the German external surplus is primarily an intra-European matter, rather than an issue for the system at large—as if macroeconomic corrections of surpluses and deficits are regional in their nature.

Fourth, what sort of action should be taken by the coordinating group? Should the arrangement be such that the actions of some countries offset those of others—what I call the "tango principle?" Thus the United States might contract domestic demand, while other countries would expand, one-for-one: when one leg moves back, the other leg moves forward. That was the aim two years ago, but now the situation has changed. It is now recognized that the global situation matters a lot. If, for example, the world economy is near full capacity then it makes less sense for the surplus countries to stimulate demand than would be the case if there was large excess capacity. In sum, the kind of coordinated actions that are needed will obviously depend on the circumstances.

When we think of how problems such as these are tackled, I think it is important to remember that the G-7 is not the only forum. There is in fact a number of organizations, including the OECD, the Bank of International Settlements, the European Community, and the International Monetary Fund itself, where countries' macroeconomic policies are discussed regularly in the context of the broader world economy. In many cases, it is the same individuals who meet in the different forums, and I think that element of personal contact may help a consensus to jell. By the same token, though, the existence of the various forums provides potential for conflict. Thus, suppose there is a meeting on Monday of the finance ministers of the European Community, and on Friday a meeting of the G-7, where a subset of the European Community participates together with Japan, the United States, and Canada. How can we calibrate the various agreements that have been made in one forum with the agreements, commitments, and understandings that have been made in another, and ensure their consistency? I think it is in the nature of the beast that

we shall always have parallel forums that cover different areas with partially overlapping sets of participants. One issue is to determine how these groups are going to coexist.

Finally in this context, let me note that there are several issues that seem very clear in theory but are much less clear in the policy arena. For example, one frequently hears in policy discussions that either the budget deficit in the United States must fall or there will have to be some movement in the exchange rate, as if those possibilities are substitutes rather than (as theory tells us) complements. Similarly, when we talk about fiscal policies, what is the relevant measure of the fiscal balance? In Japan there is a strong belief that the relevant measure is that of the "central government" rather than the "general government" since social security should be excluded, but in the United States the usual measure is the general government balance, which includes social security. This kind of difference obviously gives rise to problems in the assessment of relative fiscal stance.

Conclusion

Let me conclude with a few final remarks. First, Martin Feldstein asked me whether the G-7 representatives focus at all on the long run. Recently, in fact, there has been increased interest in and discussion of savings, demography, and other long-term issues. Nevertheless, I think it is fair to say that what claims most attention in these forums are problems of a current nature, how to solve them, and how to prevent them from occurring in the future.

Second, I want to emphasize the importance of the issue of "overinsurance" that has already been raised. We can all predict the outcome of an insurance system that does not charge an appropriate premium or where the premium is not closely related to the insurance that one gets. Indeed, when the public sector provides such insurance, or when it is expected to provide it, it is likely that the private sector will undertake excessively risky actions and thereby raise the likelihood of crises.

Third, it might have been useful to ask around this table, What is the value of the fundamental equilibrium exchange rate between any pair of the major currencies? I am sure that the variance of the response would be huge. I think this tells us two things. First, any international monetary system must accommodate the fact that we are not sure what the equilibrium exchange rate is. Second, if you are thinking about the possibility of target zones for exchange rates, be sure not to make exchange rates the only focus for policymaking. After all, exchange rates are not the fundamentals, and there is a danger of diverting attention from the true fundamentals unless one sees target zones in a broader context that includes those fundamentals. In addition, I have difficulties with any proposed system that relies heavily on active and frequent use of fiscal policy, because I do not believe that fiscal policy is a sufficiently flexible instrument. In a way I consider this to be fortunate, because otherwise

there would have been a temptation to overuse fiscal policy in attempts at finetuning.

Finally, let me make one remark about overburdening monetary policy. Paul Krugman concluded his paper by saying that contagion crises can be avoided as long as sensible policy is undertaken. By "sensible policy" he means "sensible monetary policy," and correctly so. However, this adds another task to monetary policy, the overburdening of which has been the story of the 1980s. Before the mild financial crash of Friday, the 13th of October 1989, we said that monetary policy was already overburdened because it was expected to deal with exchange rates, interest rates, inflation, growth, and so on. But since that Friday, we have added another task: we now expect policymakers to withdraw the excess liquidity, which they provided to the system, in a very skillful way to avoid the inflation that might otherwise come "the morning after." There is indeed a great danger that we come to expect too much from monetary policy. Even the most skillful conducting of monetary policy cannot remove the dangers of crises. Monetary policy must be supported by appropriate regulatory and supervisory systems as well as by budget policy that is viewed as being sustainable.

5. *Charles P. Kindleberger*

International (and Interregional) Aspects of Financial Crises

My usual role in a conference of this sort is the opening paper entitled "Blank-Blank-Blank Financial Crises, the Rise of Financial Centers, Capital Flight—whatever—A Historical Perspective." It is pleasant to be relegated to the role of clean-up, although I recognize that the last paper of a conference in the afternoon tends to find the audience diminished as some conferees head for the airport to get home for dinner.

Instead of history, I choose to start with some theory. Connections between national (and regional) economies run through many channels. Most theorists think of their specialty as the most important of these connections and sometimes as the only significant one. The list includes money (initially gold and silver, later short-term capital); other capital movements, including those through securities (bonds, shares, and, most recently, securitized mortgages), direct investment and real estate; trade mostly in goods rather than services and associated largely with income changes of the Keynesian variety; foreign-exchange rates; prices; and psychology. A Milton Friedman looks mainly at money flows, especially of high-powered money in 1921 and 1929 gold, as-

serting that the case for the United States initiating the depressions starting in those years was that the gold flows were to this country. In his 1989 Robbins lectures, Peter Temin pointed to income changes brought about by the deflationary policies of Hoover, Baldwin, Laval, and Bruning, who were clinging to the gold standard; in his earlier volume, *Did Monetary Forces Cause the Great Depression?* (New York: Norton, 1976), he points to shifts in consumer spending on automobiles and housing, somehow brought about. Those who blame the Hawley-Smoot tariff for the depression of the 1930s focus on trade and the blow to it of tariff increases and retaliation. Few join me in thinking that the start of a recession can come from cutting off a flow of capital that then forces the recipients to cut investment and imports. One current fear, however, is that West Germany, Japan, and, to a lesser extent Taiwan and Switzerland, may stop supporting the U.S. bond, stock, and real estate markets, putting pressure on investment here.

Another of my pet views about 1929 is that the decline in share prices communicated itself rapidly to commodities, especially raw-material imports, normally then shipped to New York on consignment and bought on arrival by brokers on bank credit. When New York banks seized up because of the troubles in brokers' loans, this credit was cut off, making commodity prices plunge. The decline in New York prices spread worldwide through arbitrage and instantaneous markdowns, without the necessity for slow-moving trade changes, though the volume of U.S. imports fell. The debt-deflation model of Irving Fisher is still relevant, despite the propensity of some theorists to say that it smacks of money illusion, which their analysis does not allow. My answer is that producers facing falling prices know they have lost income, as do their banks, whereas producers are slow recognize their increase in real income and unlikely to found new banks.

One important channel of communicating price changes is through changes in exchange rates. There are some, such as McCloskey and Zecher, who think that the exchange rate is always at the purchasing-power-parity level, and hence neutral. This seems to me to misread the history of 1931 when a downward ratchet operated in a buyer's market, with depreciation leaving domestic prices unchanged and appreciation depressing them. In a seller's market, the ratchet may work the other way, as in the 1970s. In the uneasy balance between buyer's and seller's markets, an exchange-rate change lowers prices part way in the appreciating country and raises them part way in the depreciating one—a matter of considerable assistance to the world economy in the 1980s.

The psychological connection among markets is brilliantly revealed at the end of each quarter in the chart in the contemporary *New York Times*, which traces out the profiles of share prices in a dozen countries for the previous three months. They run along broadly similar lines, despite the fact that only a handful of securities are traded in several markets. Similarly, the implosion of 19 October 1987 was echoed in equity markets worldwide.

Now I would like to make a methodological point that I have been belaboring for a number of years. Most theorists seize one of these connections among international markets—money, goods and the income changes behind them, securities, prices inclusive of exchange-rate changes, and psychology—and run with it, whereas in my judgment, the situation changes from time to time and calls for a change in model. In 1929, the stock market crash spread to commodities and, through them, to the banking system. A flight to quality in 1930 hit hard at institutions with low-grade securities and today hovers over the low-grade bond market. Deflation in stocks may also spread to real estate, in 1987 also hurt by the decline in oil prices, especially in the southwestern United States. The patterns among markets may differ. If deflation spreads from stocks to commodities, the effect is almost instantaneous. The impact on real estate is slower. Homer Hoyt's neglected classic, *One Hundred Years of Land Values in Chicago* (University of Chicago Press), written in 1933 and recapitulating five cycles in Chicago real estate prices, underscores the differences on the upside, speculation in stocks spreads easily and quickly to real estate. On the downside, when stock prices collapse, real estate speculators congratulate themselves that they have claims on tangible assets and term debts, as opposed to day-to-day brokers loans. Over time, this consolation proves limited. Demand for real estate turns down sharply as buyers wait for prices to decline, but interest and tax payments stay up. Supplies of houses and other buildings continue to emerge from the long pipeline. Whereas a crash in securities is over in months, attrition in real estate, according to Hoyt, may take three, four, sometimes as many as eight years. A similar prolonged attrition takes place in sovereign debt where default has been avoided thus far, since the crisis began in 1982, because earlier defaults interrupted capital flows to developing countries for periods as long as 30 years.

The international propagation of booms and crashes occurs readily in markets for money, bonds, stocks, commodities, and direct investment. It has not operated in the past through real estate, although increasing integration of the U.S. real estate market into the world may produce a similar synchronization in the future as securitization of mortgages and foreign investment in hotels, office buildings, apartments, and the like occur. The 1925 Florida land crash and the 1974 Arab-induced bubble in London real estate were both localized, though psychological contagion today may link the extended real estate market in Japan to other national markets, including the one in the United States. Or it may work the other way. I know of one operator who is reacting to the troubles in Boston real estate by assembling a fund in London to pick up bargains.

We know from the days of Henry Thornton and Walter Bagehot that national financial crises may be halted by a lender of last resort who props up markets by making money available to hard-pressed debtors with illiquid assets. (There are other devices, such as the guarantee of liabilities of institutions threatened with failure, but I restrict the analysis to last-resort lending.)

International "lending" at last resort is less well understood but has occurred historically in a variety of forms: exchanges of gold for silver, discounting of foreign bills of exchange, promises not to draw on foreign deposits, forward purchases of oil for cash, bridging loans, and swaps under the Basle Agreement of March 1961. These are invoked when financial crisis in one country threatens to spread abroad. Last-resort lending is short-term therapy. What happens next?

In Bagehot's formulation, last-resort lending should be undertaken only on good collateral. In English financial history, this proviso has been honored in the breach as well as in the observance, and for all kinds of reasons. The Bank of England acquired titles to a copper works, a coal mine, a West Indian plantation, and, in 1836, the assets of three American "W" banks that it was able to liquidate only in 1848. In its various "salvage" operations, the Bank of Italy acquired the problem loans of various Italian banks to prevent them failing in 1907, 1922, 1926, and 1930–33, finally consolidating them into the Istituto Ricostruzione Industriale (IRI) in 1933 to hold more or less in perpetuity. The Reconstruction Finance Corporation in the United States at the end of 1932 saved a number of banks, though it failed to forestall the collapse of the banking system in March 1933. Its assets were safely liquidated in the wartime expansion after 1940. Swaps used to halt foreign-exchange crises that are not undone by a return flow of capital after a stipulated period, such as six months, are funded into long-term obligations of the IMF or between central banks or governments.

The initial lender with bad loans faces an agonizing choice between write-off or workout. In Third World debt, American banks first sought to work out their nonperforming loans, but ended up writing off substantial portions of them. It is seldom recognized that the lender of last resort has the same problem. Unreversed swaps may get funded, but central banks that hold foreign exchange that declines in price keep it on the books at cost until sold, rather than "mark to market," which is the conservative banking rule. This is tolerable since central banks with power to create money cannot fail. If they lose money from buying high and selling low, it reduces the profit they normally pay to government, shifting the loss to the nation at large. The contrast between the successful workout of the RFC and the unsuccessful one of the IRI has been mentioned. The Resolution Trust Corporation set up under the 1989 legislation in the United States to rescue the thrift institutions in trouble is expected to liquidate a substantial portion of the bad debts taken over and to write off other amounts estimated as high as $190 billion. The liquidation process—the working out—is likely to prevent the recovery of the real estate market in this country, or depress it further, except in the event of a vigorous, unexpected continuation of the 1982–89 boom.

As therapy for financial crises, last-resort lending has the difficulties of moral hazard on the one hand and liquidation of the acquired assets on the other. There is a third possibility: that the function will get caught up in poli-

tics and thereby be prevented from effecting the necessary and salubrious work of rescue. In 1931, France refused to come to the aid of Austria, after the first feeble step, on foreign policy grounds. The legislation to assist the thrifts in the United States almost became entangled in political questions that divided the parties after the highly partisan political campaign of 1988: how much to put on the 1990 budget; whether to raise any of the loss repayment by taxation, a step the president refused to consider; and whether the taxpayer should bail out the bank officials guilty of bad judgment and in some cases malfeasance and fraud. The great benefit of central banks as lenders of last resort is that they are mostly not immediately subject to political debate and decision. Crises must be handled with dispatch, which is why a voting body such as the IMF is more successful in cleaning up arrears than in mounting the barricades in moments of crises.

In the series of financial crises since 1979, this country and the world have been fortunate in that the lender-of-last-resort process has escaped being caught up in political disputes. At the domestic level, some of these escapes have been narrow. Internationally, while the U.S. role as leader of the world economy has slipped, there is no challenger that refuses to cooperate in crisis management or offers competing solutions that might stalemate decision. If a new economic world leader is called for in the interest of stability and the United States tries to hold on to its position as number one, the transition may give rise to difficulty as occurred in the 1930s when Britain proved unable to provide stability and the United States was unwilling to.

Summary of Discussion

Krugman began by expressing his agreement with most of the panelists' statements and by reiterating the key point of his paper, that currency, or country, crises are more to be feared than contagion crises because we know what to do about the latter. He went on to discuss alternative views about the future path of the dollar. Because the interest rate differential between the United States and other leading countries is almost zero, the financial markets seem to think that the current level of the dollar is sustainable. In contrast, international trade modelers estimate that, at the current value of the dollar, U.S. external debt is on an explosive path. The consequences of a possible sharp fall in the dollar are unclear—the United States experienced virtually no harmful effects from the 1985–87 dollar decline, but Latin American countries have been hurt badly by the decline in their currencies.

Krugman continued that Dornbusch's story about the effect of capital flight in Latin America is not persuasive quantitatively, as real physical capital has not flown fast enough to cause the 30 percent drop in real wages. The explanation of these countries' poor economic performance is especially puzzling

as the debt crisis has been handled by fast, focused, and sustained international coordination.

Robert J. Gordon disputed the idea that an exchange rate crisis would be accompanied by either massive U.S. inflation or deflation. Bergsten's views are based on an aggregate supply curve, which is flat where the economy has excess capacity and is quite steep to the right of that. There is no evidence of such a nonlinearity in the United States in the last 40 years. Also, the likely response of monetary policy to a currency crisis reduces the probability of a hard landing. Since Alan Greenspan and the Federal Reserve can disentangle inflation in food and energy prices from core inflation, they can also disentangle import price effects. And if they are de facto targeting nominal GNP, then it is movements in the GNP deflator, which excludes imports, that matter, not movements in the Consumer Price Index (CPI). For a dollar crash to cause a recession, there would have to be a big effect on the prices of import substitutes, not just imports, which would take a long time. The successful U.S. experience in 1985–87 is relevant to any future falls in the dollar.

Bergsten responded that his conclusions do not rely on nonlinearity nearly as much as Gordon suggested: a 10 percent decline in the value of the dollar can increase the CPI by up to 2 percentage points, according to Federal Reserve analyses of the 1970s and Jeffrey Sachs's work in the mid-1980s. This is because import price increases do tend to pass through to other prices in the economy and the Federal Reserve will have to respond to that—increasing rather than dampening the prospect for a hard landing of the economy. And it is clear that the Federal Reserve does not in fact ignore movements in the CPI or any of the other major inflation indicators and that a currency crisis could in any event force it to abandon its normal aim of targeting nominal GNP.

Minsky stated that the likelihood of a hard landing was reduced by the potential role of Japan and Germany in Eastern Europe. Debt-financed exports from the United States, Japan, and Europe to Eastern Europe can be a driving force for those economies, even while Japanese and European exports *to* the United States can decrease. This can improve our trade balance quite quickly.

Robert J. Shiller addressed Kindleberger's comments on psychological contagion. The evidence of international contagion in stock markets must lie in positively correlated price forecast errors, not positively correlated prices themselves. There is evidence of this correlation, but there is surprisingly little contagion between real estate markets and stock markets and between real estate markets in different geographic areas. *Krugman* noted that real estate markets do not clear in the short run, so the "declared" prices should not be compared to prices in other asset markets.

Jeffrey Frankel agreed with Frenkel's call for renewed attention to the effects of sterilized foreign exchange intervention. He reported results obtained with Kathryn Dominguez concerning such intervention by the German Bundesbank. They find strong effects of actual intervention, as well as an additional effect through expectations, when the intervention is publicly reported.

This induced a comment by *Michael Mussa* that the best prescription for creating an international crisis was to foster a belief that sterilized intervention can be a potent policy tool.

Ralph C. Bryant began discussion of the international aspects of financial regulation, deposit insurance, and lender-of-last-resort policies. He stressed the problem of "regulatory arbitrage" across national borders and the policy issues it raised. For example, in a world environment in which national financial markets are increasingly integrated, to what degree is it possible for the bank regulation and deposit insurance regimes in the United States to continue to coexist with the significantly different regimes prevailing in other industrial countries? As another illustration, the enhanced integration of financial markets makes it somewhat more difficult to reach lender-of-last-resort decisions in times of crisis, in part because the division of responsibilities among central banks could be unclear. For example, how would the Bank of Japan and the Federal Reserve share responsibility in the event of a crisis in the dollar-clearing payments system in Tokyo managed by the Chase Manhattan Bank?

Feldstein agreed that more stringent U.S. banking regulation will increase U.S. banks' cost of funds and drive customers to foreign banks. The question is whether we want to have foreign imports of banking services or distorted prices through subsidized deposit insurance.

Minsky added that raising the capital asset requirements for banks implies a bigger markup of lending rates over the cost of funds in order to maintain a given rate of profit on equity.

Edward J. Kane believed that the recent "risk-based capital agreement" is a toothless international compromise that continues "competition for regulatory business" across countries.

Richard F. Syron was very concerned about the impact of regulatory arbitrage, but he felt that the international capital agreement was at least a beginning. For example, Japanese banks will have to raise their capital ratios, which they will be able to do fairly easily, but with potential impact on the rate of return on equity. These types of international regulations are difficult to put into place but are very important.

William S. Haraf noted that although recent U.S. concerns about deposit insurance have led to more interest in the "narrow bank" concept, where insured banks must invest in only safe assets, Europe is moving in the opposite direction toward full universal banking. He concluded that this is not such a bad idea if institutions are adequately capitalized and market discipline is ensured, but the contrast with current U.S. thinking will stimulate future conflict.