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The Lessons of History and the Most Tumultuous Decades Ever

The monetary history of the last four hundred years has been replete with financial crises. The pattern was that investor optimism increased as economies expanded, the rate of growth of credit increased and economic growth accelerated, and an increasing number of individuals began to invest for short-term capital gains rather than for the returns associated with the productivity of the assets they were acquiring. The increase in the supply of credit and more buoyant economic outlook often led to economic booms as investment spending increased in response to the more optimistic outlook and the greater availability of credit, and as household spending increased as personal wealth surged. One of the earliest bubbles reviewed in this volume was the Dutch ‘tulipmania’ of the 1630s in which the buyers received credit from the sellers. Rational exuberance in the Netherlands morphed into irrational exuberance, the economy briefly boomed—and then the growth rate slowed as bulb prices tumbled. The South Sea Bubble in London and the Mississippi Bubble in Paris both occurred in 1720; each was associated with a new financial institution that arranged for sharp increases in the supplies of credit.

Some crises were triggered by the concern that particular borrowers had become over-extended. Occasionally several crises occurred within a relatively few years but the pattern was that these crises were infrequent, often no more than one a generation.

The U.S. stock price bubble in the last several years of the 1920s was a domestic event that responded to the remarkable developments in the U.S. economy, as automobile production surged and as much of the country became electrified; optimism about economic futures was pervasive. The increase in interest rates on U.S. dollar securities in 1928 in response to the increase in stock prices led to a reduction in U.S.

purchases of foreign bonds and complicated the ability of other countries to maintain their parities because access to dollar funds was more costly. The implosion of the stock prices in the last quarter of 1929 triggered a slowdown in global economic growth and a large number of countries suspended the convertibility of their currencies into gold in response to a decline in their export revenues and speculative pressure against their currencies. The hallmark of the 1930s was a sequence of currency crises, first the Austrian schilling, then the German mark, then the British pound, and then the U.S. dollar; finally the speculative pressure was deflected to the gold bloc currencies—the French franc, the Swiss franc, and the Dutch guilder. By the end of the 1930s, the alignment of currency values was similar to the alignment at the end of the 1920s, although the price of gold in terms of the U.S. dollar and most other currencies was 75 percent higher.

Some of these crises involved the failure of a large number of banks, some involved the lack of confidence in the ability of a country to maintain the parity for its currency and a few involved the implosion of a bubble in stock markets and in real estate markets. Virtually all of these bubbles were independent events; the coincidence of the bubbles in London and Paris in 1720 appeared largely to reflect the fact that financial innovation in Paris mimicked that in London.

The number of crises that were solely domestic events appears to have declined with the development of domestic lenders of last resort whose role was to provide cash to cope with a sharp decline in investor demand for speculative assets. The pattern in the sequence of currency crises in the 1930s was that investors would become concerned that a country would not be able to maintain the parity for its currency in terms of gold; the central bank would raise interest rates in the effort to convince the market about the strength of its commitment to its parity. The increase in interest rates would deflate the domestic economy; business bankruptcies and bank failures would increase. Then the central bank would abandon the effort to maintain its parity because the domestic costs were too high. Immediately the concern would shift to one or several other currencies that still retained their parities.

This sequence of devaluations led to the question as to whether an international lender of last resort would have enabled countries to maintain their parities and avoid the cycle of deflate-and-devalue. A domestic lender of last resort provides abundant credit to reduce the likelihood that a currency crisis will cascade into a liquidity crisis; the question in the international context is whether greater availability of credit from

an international lender of last resort would have reduced the likelihood that countries would have needed to devalue because of a shortage of liquidity. Once one country had stopped pegging its currency to gold, the devaluations of the currencies of its major trading partners and competitors seemed inevitable. The similarity in the alignment of currency values at the end of the 1930s with the alignment ten years earlier suggests that the competitive advantage that each country gained from its devaluation was temporary, although the consequence of the effective increase in the prices of gold in terms of the U.S. dollar and other currencies was that the supply of international reserve assets surged.

The counter-factual question is whether a comparable increase in the supply of international reserve assets in the early 1920s, when the potential shortage of gold was first recognized, rather than toward the end of the 1930s, would have obviated some or many of the changes in the currency values in the interwar period. A larger volume of international reserve assets by itself would not have obviated the need for an international lender of last resort to provide credit to countries whose currencies were subject to a speculative attack. But a larger volume might have reduced the frequency of speculative attacks on currencies.

The inference from the changes in asset prices, the changes in currency values, and the number and severity of banking crises since the mid-1960s is that the lessons of history have been forgotten or slighted. These decades have been the most tumultuous in international monetary history in terms of the number, scope, and severity of financial crises. More national banking systems collapsed than at any previous comparable period; the loan losses of the banks in Japan, in Sweden and Norway and Finland, in Thailand and Malaysia and Indonesia, and in Mexico (twice) and in Brazil and Argentina ranged from 20 to 50 percent of their assets. In some countries the costs to the taxpayers of providing the money to fulfill the implicit and explicit deposit guarantees amounted to 15 to 20 percent of their GDPs. The loan losses in most of these countries were much greater than those in the United States in the Great Depression of the 1930s.

Occasionally the failure of a bank was a specific national event; Franklin National Bank of New York City and Herstatt AG of Cologne made large bets on the direction of changes in the prices of various currencies in the foreign exchange market that proved very costly to their capital and led to their demise. *Crédit Lyonnais*, the largest French bank, incurred loan losses that eventually reached more than 30 percent of its total assets and 3 percent of the country's GDP. But these bank failures

were the exceptions; most of the bank failures in the 1980s and 1990s were systemic events that involved a large number of banks in a country, and in many episodes virtually all of a country's banks. Banks in many other countries also incurred large loan losses and would have failed if they had not been owned by their governments.

A few countries, including Japan and Norway, had banking crises without foreign exchange crises. Several, including South Africa and Brazil, had foreign exchange crises without banking crises; however the dominant pattern, demonstrated by Mexico, Argentina, Thailand, Malaysia, Russia, and many other countries, was one of banking and foreign exchange crises occurring at about the same time.

In the early 1980s many banks in Texas, Oklahoma, and Louisiana failed when the oil price declined sharply; during the same period many small banks in Iowa, Kansas, and other states in the agricultural Midwest became bankrupt because of the sharp decline in the value of real estate held as loan collateral. Several thousand U.S. thrift institutions lost more than their capital when short-term interest rates surged in the early 1980s. In the late 1990s, soon after the financial debacle in Russia, Long-Term Capital Management, then one of the largest U.S. hedge funds, collapsed and would have gone bankrupt without the injections of equity capital from its largest creditors mandated by the Federal Reserve.

Many developing countries, including Mexico, Brazil, and Argentina, defaulted on their external debts in the early 1980s. In the late 1980s both Argentina and Brazil experienced hyperinflation and their governments defaulted on their domestic debts; Argentina again defaulted in 2001.

There have been more foreign exchange crises than in any previous period of comparable length, beginning with the breakdown of the Bretton Woods system of adjustable parities for national currencies in the late 1960s and early 1970s. In August 1971 the United States abandoned efforts to maintain the parity for the U.S. dollar of \$35 an ounce of gold that served as the centerpiece of the Bretton Woods. The new set of currency parities that were established in the Smithsonian Agreement of January 1972 was maintained for about a year and then in February 1973 the German mark and the Japanese yen and the currencies of most other industrial countries began to float.

The range of movement in the foreign exchange values of many national currencies relative to the currencies of their major trading partners was much larger than in any previous period. Initially these large movements in exchange rates were attributed to the market participants' lack

of familiarity with freely floating exchange rates. The foreign exchange values of the Mexican peso, the Brazilian cruzeiro, the Argentinean peso, and the currencies of many other developing countries plummeted in the early 1980s. The Finnish markka, Swedish krona, British pound, Italian lira, and other European currencies lost 30 percent of their values relative to the German mark in the autumn of 1992 when the European Exchange Rate Mechanism broke up.

Moreover the scope of 'overshooting' and 'undershooting' of currency values relative to the values inferred from the differences in national inflation rates was much larger than in any previous period. The sharp depreciation of the U.S. dollar in the late 1970s was much greater than the decline that would have been forecast on the excess of the U.S. inflation rate over the inflation rates in Germany and in Japan. Then in the early 1980s the U.S. dollar appreciated by 60 percent even though U.S. inflation remained higher than the inflation rate in Germany. In the late 1990s the U.S. and European inflation rates were similar but the newly-established euro—the successor currency to the German mark, French franc, Italian lira, and the currencies of the other countries that joined the European Monetary Union—depreciated by 30 percent following its establishment at the beginning of 1999, and then appreciated by a large amount between 2002 and 2004. The scope of overshooting and undershooting of the currencies of the developing/emerging market countries was larger than for the industrial countries. The Mexican peso lost nearly half of its foreign exchange value during that country's presidential transition at the end of 1994 and the beginning of 1995. The foreign exchange values of the Thai baht, the Malaysian ringgit, the Indonesian rupiah, and the South Korean won declined by 50 to 70 percent in the last six months of 1997. The Russian ruble depreciated sharply in August 1998, and the Brazilian real was devalued extensively in January 1999. The Argentinean peso lost more than two-thirds of its value in January 2001.

There were more asset price bubbles between 1980 and 2000 than in any earlier period. Japan experienced the 'mother of all asset price bubbles' in the second half of the 1980s. Real estate prices increased by a factor of nine, stock prices increased by a factor of six, and Japanese financial wealth surged. The Japanese economy boomed. Finland, Norway, and Sweden also experienced bubbles in their real estate markets and their stock markets at this same time. There were bubbles in the real estate and stock markets in Thailand, Malaysia, Indonesia, and several nearby countries in Southeast Asia in the first half of the 1990s. U.S.

stock market wealth doubled in the late 1990s and the values of the firms in the dot.com and information technology industries increased by a factor of four.

The failures of banks, the overshooting and the undershooting of exchange rates around their long-run equilibrium values, and the bubbles in real estate and stock markets were systematically related and resulted from various shocks that led to large changes in the scope and direction of cross-border money flows. The failure of the banks—which primarily occurred in three waves—resulted from the sharp depreciations of their national currencies or from the sharp declines in the values of real estate and of stocks during the crash phase of the financial cycle. These crashes were preceded by manias that led to large cross-border flows of money to individual countries whose economies were then performing well; the foreign exchange value of their currencies increased and the prices of real estate and of stocks increased significantly.

Several of these shocks were true surprises but several were ‘predictable’; a ‘predictable shock’ seems like an oxymoron since by definition a shock is not predictable. However the increasing reliance on cash from new foreign investments to pay the interest on the outstanding foreign indebtedness that developed in the mania phase of the expansions in Mexico in the 1970s and again in the 1990s and in Thailand, Malaysia, and Indonesia in the 1990s could not be sustained for an indefinite period. At some stage it was inevitable that the lenders would reduce the rate of growth of their loans to these increasingly indebted borrowers, although the details and the timing of these moves could not have been predicted. The likelihood that these countries could adjust to the decline in the inflow of foreign funds without a sharp depreciation of their currencies was low. Similarly at some stage it was inevitable that Japanese real estate prices would stop increasing; when that happened, many of the investors that recently had purchased real estate with large amounts of borrowed money would be likely to be in a cash bind because the interest payments on their loans would be larger than their rental income.

The causes of the financial tumult

The financial tumult since the early 1970s resulted from the impacts of monetary shocks and credit market shocks on the direction and scope of the flows of funds across national borders. Several of the shocks were monetary and involved unanticipated changes in the rates of money supply growth and the accompanying changes in anticipated inflation

rates and in interest rates. Some of these shocks involved the relaxation or elimination of financial regulations that facilitated changes in the allocation of bank loans and the amount of credit available to specific groups of borrowers; borrowers that formerly had been penalized by regulations suddenly became attractive to the lenders. In several cases a credit shock and a monetary shock occurred at about the same time and had complementary impacts on the flow of funds across national borders.

An increase in the flow of funds to a country induces increases in the prices of both its currency in the foreign exchange market and the securities and other assets available in the domestic market; the increases in these prices during the mania phase of the expansions caused market prices to increase above their long-run equilibrium values. Some of the shocks triggered a pattern of money flows from lenders to borrowers that could not be sustained indefinitely. A decline in the flow of money from abroad almost always led to a depreciation of the country's currency in the foreign exchange market; in some cases this decline triggered crashes in asset prices of 50 or 60 percent or more.

The first major shock in this extended period was the increase in the annual U.S. inflation rate to the range of 5 and 6 percent in the second half of the 1960s; in the previous twenty years the annual U.S. inflation rate was almost always below 3 percent and usually below the inflation rates in Germany and its neighboring countries in Western Europe. The annual U.S. payments deficit surged because a decline in the foreign exchange value of the U.S. dollar seemed increasingly likely; either the U.S. dollar would be devalued or the German mark and the Japanese yen and other currencies would be revalued. Investors and firms moved funds from the United States to avoid losses from these anticipated changes in parities or to profit from them. Because the United States was reluctant to devalue the U.S. dollar and Germany and France and Japan were reluctant to revalue their currencies, the payments imbalance increased, with the result that the foreign exchange reserves of Germany and Japan and of other countries with payments surpluses increased at a more rapid rate. Then in 1971, when the U.S. economy slowed and the inflation rate declined the Federal Reserve adopted a more expansive monetary policy, and the decline in interest rates on U.S. dollar securities led to an even larger flow of short-term funds from New York to foreign financial centers.

The global inflation in the early 1970s was an unprecedented peacetime event that followed from the combination of the growth of the

U.S. money supply, which followed from the easing of monetary policy, and the growth in the money supplies in Germany and other countries in Western Europe and in Japan in response to their increasingly large payments surpluses.

The more rapid increase in the U.S. inflation rate than in those of Germany, the Netherlands, and Switzerland at the end of the 1960s meant that a realignment of adjustable parities for national currencies was inevitable. Because the U.S. inflation rate exceeded the inflation rate in Germany by more than 2 percent a year, the system of adjustable parities was not viable and hence the abandonment of parities for the German mark and other European currencies was inevitable.

The rapid increases in money supply growth in the United States and other industrial countries in the early 1970s contributed to a global economic boom, surges in demand for primary products, and sharp increases in the prices of oil and other commodities. The rates of growth of GDP in the countries that produced these commodities increased. The Saudi Arabian embargo of oil shipments to the United States and the Netherlands following the Yom Kippur War of October 1973 triggered a surge in the demand for petroleum and the oil price increased sharply; the decline in oil supplies following the Iraqi invasion of Iran in 1980 had a much larger impact on global inflation.

Investors responded to the increases in the anticipated global inflation rate by increasing their purchases of gold and other precious metals, collectibles, real estate, and other 'hard assets.'

As the world inflation rate increased in the early 1970s, there was a credit market shock that led to a surge in bank loans to Mexico, Brazil, Argentina, and other developing countries; these loans increased at the rate of 30 percent a year during the decade. Banks headquartered in many European countries and in Japan used U.S. dollars obtained in the offshore deposit markets in London, Zurich, and Luxembourg to make loans to governments and government-owned firms in Latin America and 'poach' on what had been the traditional turf of U.S. banks. The U.S. banks responded by competing aggressively to avoid an erosion of their share of this loan market. They also wanted to circumvent the regulations that limited the growth of their domestic loans and assets. The external indebtedness of this group of borrowers increased at the rate of 20 percent a year.

The next major shock was the change in the operating procedures of the Federal Reserve in October 1979 (the so-called 'Volcker shock') that almost immediately shattered the anticipations of accelerating inflation;

the market price of gold peaked ten weeks after this policy had been adopted. Previously the Federal Reserve had stabilized interest rates and market forces had determined the rate of growth of credit; under the new policy the Fed sought to limit the rate of growth of credit.

The sharp decline in the rate of growth of bank loans led to a surge in interest rates on U.S. dollar securities. Investment spending fell, a world recession followed, and the prices of petroleum and other commodities dropped sharply.

Mexico and other developing countries were squeezed by the scissors-like increase in the interest rates on their foreign loans and the decline in both the volumes and the prices for their exports. The surge in interest rates on U.S. dollar securities and the subsequent decline in the price of petroleum led to massive failures of U.S. banks in Texas and the other oil-producing areas. Similarly many banks in the grain-producing Midwestern states failed as the prices of farmland fell. Interest rates paid by U.S. thrift institutions on their short-term deposits increased rapidly and in many cases began to exceed the interest rates that the thrifts were earning on their long-term mortgage loans, thus depleting their capital.

The combination of the much higher interest rates on U.S. dollar securities and the sharp reduction in the anticipated U.S. inflation rate led to an increase in investor demand for U.S. dollar securities and the U.S. dollar began to appreciate at a rapid rate.

The liberalization of regulations applied to banks in Japan in the first half of the 1980s was a major credit market shock. Previously Japanese banks were subject to extensive regulations that limited both the interest rates they could pay on their deposit liabilities and the rates they could charge on their loans; moreover administrative guidance required that these banks extend loans to industrial firms in those industries that the government bureaucrats believed were strategically important. One motive for financial deregulation was that the industrial demand for bank loans had declined so that allocation of credit among borrowers on a preferential basis was no longer necessary, and another was that the U.S. authorities demanded that U.S. banks and other U.S. financial firms have access to the banking and capital markets in Tokyo on terms comparable to those available to Japanese banks in the United States.

Financial deregulation enabled the banks headquartered in Tokyo and in Osaka both to increase their real estate loans in Japan and to increase the numbers of their foreign branches and subsidiaries. The flow of savings from Japan to the United States and various European countries surged; the cliché in both New York and Tokyo was 'Where will the U.S.

Treasury get the money to finance its fiscal deficit if the Japanese stop buying U.S. government securities?’ These newly-established foreign branches of Japanese banks rapidly increased their loans in their host countries, using the funds obtained in the offshore deposit market; these newly-established branches wanted to increase their market share and so they charged lower interest rates than their home country competitors. Moreover Japanese investors began to purchase real estate—office buildings, apartment buildings, golf courses, and ski resorts—in the major U.S. cities and in the major financial centers in other industrial countries; most of these purchases were funded with money borrowed from the foreign branches of Japanese banks.

The depreciation of the U.S. dollar in the foreign exchange market that began in the spring of 1985 induced the central banks in Japan and various countries in Western Europe to buy U.S. dollars in the foreign exchange market to limit the appreciation of their currencies and the result was that the rates of money supply growth in these countries quickened.

The decision of the newly-appointed Chair of the Board of the Bank of Japan at the beginning of 1990 to restrict the rate of growth of bank loans for real estate imploded the asset price bubble in Japan; real estate prices and stock prices declined by 30 percent in 1990 and by 25 percent in 1991. The rate of growth of the Japanese economy slowed dramatically. The Japanese yen appreciated significantly in the foreign exchange market as the country’s exports surged relative to its imports. Japanese firms responded to the adverse impact of the increase in the foreign exchange value of the yen on their profitability by increasing their investments in productive facilities in China and Thailand and the other countries in Southeast Asia that would be used primarily as sources of supply for markets in Japan, the United States, and other industrial countries; many of these investments involved assembly-type activities of high value-added components that were imported from Japan. Japanese banks followed Japanese firms and rapidly increased their loans in these countries.

The development of the Brady Bonds in 1989 and 1990 enabled Mexico and other developing countries to convert bank loans that had been in default into long-term bonds that were partially guaranteed by the U.S. government; this innovation effectively ended the period of financial isolation (‘the lost decade’) for these borrowers.

Mexico then began to prepare for its membership of the North American Free Trade Agreement; a contractive monetary policy was adopted to reduce the inflation rate, hundreds of government-owned firms were

privatized, and government regulations on international trade and business practices were liberalized. Foreign direct investment in Mexico surged as U.S., European, and Japanese firms rapidly increased their manufacturing facilities in Mexico. United States money market funds were attracted to the high interest rates on peso securities; U.S. pension funds and mutual funds increased their purchases of stocks of a new asset class—‘emerging market securities.’

Then at the beginning of 1994 there were several political incidents that led to a decline in the flow of funds to Mexico. There was an Indian uprising in its southernmost province and two months later the leading presidential candidate of the dominant political party was assassinated. The decline in the flow of foreign funds to Mexico meant that the country was no longer able to finance its current account deficit which had increased to 6 percent of its GDP.

The flow of foreign funds to Thailand slowed significantly in late 1996 because the nonbank finance companies that were owned by the Thai banks were incurring large losses on their consumer loans; these finance companies had been established to circumvent the regulations on bank loans. In effect the losses that the finance companies incurred were the losses of the banks once-removed. The Bank of Thailand was unable to maintain the foreign exchange value of the Thai baht once its international reserve assets had been nearly depleted at the beginning of July 1997. The depreciation of the baht triggered the contagion effect that rippled through the Asian countries and led to a sudden decline of their imports relative to their exports of \$150 billion.

Several of these shocks were true surprises: the political events in Mexico in the first few months of 1994 could not have been foreseen. Still the rate of increase in stock prices and real estate prices in Japan at the end of the 1980s was too high to be sustained and so were the levels of these prices; once these prices stopped increasing, a crash was inevitable. Similarly the Mexican current account deficit in 1994 was too large to be sustained and some trigger eventually would have led to a decline in these loans if the political shocks had not occurred. Similarly the current account deficits of Thailand and Malaysia in 1996 were too large to be sustained. Something would have triggered a decline in capital inflows and a depreciation of their currencies, although the nature of the catalyst for the decline in inflows could not have been foreseen. The implosion of the bubbles in real estate prices and stock prices in Japan and the subsequent bubbles in Thailand and Malaysia was inevitable; bubbles always implode. Similarly it was inevitable that there would have been a

reversal in the foreign exchange value of the U.S. dollar from its extreme overvaluation in the mid-1980s.

The impacts of the monetary shocks and credit market shocks

The striking feature of the period since the early 1970s is the variability of cross-border flows of money as measured by the changes in the ratio of trade balances of individual countries to their GDPs, which have been much larger than in any previous period. When the Mexican economy was booming and foreign funds were flowing into the country, its trade deficit reached 7 percent of its GDP. When Mexican and foreign funds were withdrawn as the country experienced a financial crisis, its trade surplus reached 4 percent of its GDP. This change was massive and sudden, and had powerful impacts on the foreign exchange value of the peso and on the prices of peso securities and real assets in Mexico as well as on the inflation rate and the solvency of Mexican firms, households, and banks.

These sharp changes in the ratios of the trade balances to GDP in many countries resulted from sharp changes in the volume and direction of cross-border flows of funds. The Minsky story of the cyclical variability in the supply of credit can be extended to the cyclical variability in the pattern of cross-border flows of money. An increase in the flow of funds to a country led to an increase in the foreign exchange value of its currency and to increases in the prices of securities and other assets traded in that country. The increase in the flow of cross-border funds to a country was often associated with increases in the rates of growth of domestic credit and the result was an economic boom.

Some of the credit market and monetary shocks led to increases in the flow of money to a country and increases in the prices of commodities, currencies, stocks, and real estate available in that country. As long as the prices of currencies and stocks were increasing, the rates of return to the owners of these securities and currencies were high and likely to be increasing; optimism about the economic future increased. Then another shock would trigger a reversal in the cross-border flows of funds; and the result was a financial crash that featured sharp declines in the prices of currencies, securities, and other assets.

These manic-type shocks resulted from extensive changes in the preferences of investors for securities and other assets denominated in different currencies. Investors became concerned that the U.S. inflation

rate would increase in the 1970s; they sold U.S. dollar securities to get the funds to buy securities denominated in the German mark, the Swiss franc, and the British pound, and the U.S. dollar depreciated much more quickly than would have been inferred from the excess of the U.S. inflation rate over the inflation rates in the country's major trading partners. During the same period the price of gold increased 'because gold was a good inflation hedge,' although the annual percentage increases in the price of gold in the second half of the 1980s were much greater than the annual percentage increases in the U.S. price level. Early in 1980 investors became convinced that the U.S. inflation rate would decline; they sold securities denominated in the German mark and other foreign currencies to get the funds to buy U.S. dollar securities and the U.S. dollar appreciated at a rapid rate.

One possible explanation for the greater variability of cross-border capital flows in the last thirty years is that shocks, and especially those that involved a change in the stance of monetary policy, have been larger than in earlier periods—periods when currencies were pegged or when there was a commitment to parities for national currencies. One of the major arguments in the case for floating exchange rates is that when currencies are no longer pegged, central banks have greater independence to change their monetary policies to achieve their domestic economic objectives. When a currency was not pegged to gold or to some other currency, central banks could vary their own interest rates and the rates of growth of their money supply. In effect the commitment to a parity for a national currency constrained changes in the central bank's monetary policy and especially the adoption of a more expansive monetary policy; this commitment to a parity for the currency meant that the national inflation rate could not differ significantly from the inflation rates in the country's major trading partners. In the absence of a commitment to a parity, the policies adopted by central banks would lead to changes in the current and anticipated inflation rates which in turn would lead to changes in cross-border flows of funds. Hence the explanation for the much larger swings in the cross-border flow of funds is that changes in monetary policies and anticipated inflation rates have been larger.

The much greater variability in the cross-border flow of funds in part reflected that the monetary shocks were much greater than when currencies had been pegged; these shocks led to changes in investor estimates of the inflation rates in a particular country and hence of the anticipated spot exchange rates at some distant future date. The expansive U.S. monetary policies of the late 1960s and the early 1970s led investors to revise

their estimates of the U.S. inflation rate upward and to revise downward their estimates of the anticipated value for the U.S. dollar in the foreign exchange market; investors sold U.S. dollar securities to get the funds to buy foreign securities, and their purchases of the foreign currencies led to the sharp decline in the foreign exchange value of the U.S. dollar. In effect, the purchases of the German marks, Swiss francs, and other foreign currencies by these investors contributed to the decline in the foreign exchange value of the U.S. dollar that they anticipated.

If as a group these investors were to increase the proportion of non-dollar securities in their portfolios, then the United States would have to have a larger current account surplus, which would require that the U.S. dollar depreciate more rapidly than would be inferred from the difference in national inflation rates. The U.S. dollar would increasingly undershoot the values inferred from the differences in national inflation rates as long as investors sought to increase the rate at which they acquired nondollar securities.

Similarly the adoption of a much more contractive U.S. monetary policy in the autumn of 1979 soon led investors to reduce their estimates of the U.S. inflation rate and hence to revise upward their estimates of the foreign exchange value of the U.S. dollar. Their purchases of U.S. dollars in the foreign exchange market led to the appreciation of the U.S. dollar; if as a group investors were to increase the proportion of U.S. dollar securities in their portfolios, the United States would need to develop a current account deficit and a trade deficit. The increase in the foreign exchange value of the U.S. dollar relative to the value that would be inferred from the difference in national inflation rates was inevitable as long as the investors wanted to acquire U.S. dollar securities at a faster rate.

Overshooting and undershooting were inevitable whenever investors wished to increase or reduce their holdings of securities denominated in a particular currency. The earlier clichés applied to large and rapid deviations between the market exchange rates and the exchange rates that were consistent with the differences in national inflation rates—the ‘vicious and virtuous cycle’ and ‘destabilizing speculation’—reflected the impacts of sudden changes in the pattern of cross-border flows of funds. Changes in anticipated inflation rates—more precisely changes in the differential in national inflation rates—would lead to overshooting and undershooting because of the impact of the changes in these differentials on the anticipated spot exchange rates. In contrast the monetary shock that impacted Japan in the second half of the 1980s as the Bank of Japan intervened in the foreign exchange market to limit the appreciation of

the yen did not appear to have a major impact on its anticipated foreign exchange value and hence on the scope of currency overshooting.

Because the bubble in Japanese stocks and real estate affected both Japanese purchases of foreign securities and foreign purchases of Japanese securities, the changes in the demand for yen securities led to changes in the foreign exchange value of the yen. Similarly credit market shocks had no direct impacts on the anticipated inflation rates and hence no direct impacts on the anticipated foreign exchange values of individual currencies in the long run. The credit market shocks in the last thirty years have had major impacts on the foreign exchange value of the Mexican peso, Thai baht, and the U.S. dollar because they led to changes in the amounts of the securities denominated in these currencies that investors wished to hold.

A second, complementary, explanation for the greater variability in the ratios of trade balances to GDPs is that when currencies are not pegged, a shock of a given magnitude in the form of an increase in demand for securities denominated in a currency has a larger immediate impact on the country's GDP induced by the increase in the prices of securities and real estate traded in the country. When a currency was pegged, the immediate impact on a country of an increase in the inflow of saving was that the central bank's holdings of international reserve assets increased and its monetary liabilities increased correspondingly. The price of securities available in the country also increased in response to the increase in the purchases by the foreign investors. The sellers of securities to these foreign savers would use the funds to buy other securities from other domestic residents, and the prices of securities would increase.

When a currency was not pegged, a comparable increase in the foreign demand for securities denominated in this currency initiated the adjustment process to ensure that the country's trade balance changed by the amount that corresponded to the increase in the flow of savings from abroad. The invisible hand operated to ensure that the immediate impact of the increase in the flow of savings from other countries was that domestic investment spending increased as the cost of capital declined and household consumption spending increased in response to the increase in household wealth. Most of the increase in the aggregate spending would be that of households, since in most countries consumption spending is three or four times larger than investment spending. The flip-side of the increase in consumption spending was that household saving declined. (In contrast, there was no comparable

change in the savings-investment relationship when the currency was pegged, since the counterpart of the increase in the flow of saving from abroad could be a change in the central bank's holdings of international reserve assets.) The inevitable outcome of the adjustment process was that domestic saving declined relative to domestic investment in the country that received an increase in the cross-border flow of saving.

The invisible hand that induced the changes in the relationship between saving and investment in both the countries that experienced an inflow of saving from abroad and the countries that were the source of these savings operated through changes in relative prices and changes in relative incomes. The relative price change reflected the fact that the currency of the country that received an increase in the inflow of foreign saving appreciated in the foreign exchange market (which is the floating exchange rate counterpart of the increase in the central banks' holdings of foreign exchange when the currency was pegged). By itself the appreciation of the country's currency did not have a direct impact on household saving, although to the extent that the increase in the demand for imports led to a decline in spending on domestic goods domestic GDP would decline.

The invisible hand led to an increase in the rate of growth of GDP in the country that experienced an increase in the inflow of saving. This resulted from the increase in consumption spending induced by the increase in household wealth as the prices of securities and other assets rose. As the wealth of some investors increased, they reduced their saving from current income because their 'wealth targets' had been achieved by the increases in the prices of their securities and other assets.

Thus the reason for the increase in the variability in the ratios of the changes in the trade balances to GDP is that the initial increase in the flow of saving to a country triggered changes in the adjustment process that led to increases in the rates of return on securities and other assets available in the country. The increase in wealth contributed to the economic boom. In effect there was a feedback mechanism from the initial increase in the flow of saving to the increase in the rates of return that induced further inflow of foreign funds. The economic boom was prolonged and pervasive; many of the participants may have failed to recognize that the cross-border pattern of flows of cash could not be sustained.

Thus the stylized fact is that an increase in the flow of saving to a country leads to an increase in the price of that country's currency in the foreign exchange market and an increase in the prices of securities

available in that country. Hence the rates of return to owners of these securities may prove to be higher than anticipated and the increases in the prices of these securities operate like a feedback effect and attract more funds from other countries. Moreover the prices of securities in the countries that are experiencing an increase in the flow of saving to other countries will be declining, and some of the owners may foresee further declines and so continue to move funds to avoid further losses.

One of the patterns in the data is that the flow of savings to a country was associated with an economic boom; this was evident in Mexico and other developing countries in the 1970s, in Mexico, Thailand, and other Asian countries in the first half of the 1990s, and in the United States in the second half of the 1990s. The appreciation of the currencies of this group of countries reduced the inflationary pressures associated with a robust economic expansion and the increase in export prices relative to import prices led to an increase in the rate of economic growth. The inflow was also associated with a nonsustainable pattern of cash flows because some of the borrowers in the country were obtaining the cash to pay the interest to their creditors from their creditors. The continuation of the economic boom may explain why the lenders—at least a large number of them—failed to recognize that eventually there would be an adjustment.

The variability in the flows of national savings across countries conforms with the Minsky model that changes in the supply of credit are procyclical. Increases in the inflow of foreign saving to countries were often associated with increases in the rates of growth of domestic credit.

Could an international lender of last resort have made a significant difference?

The financial tumultuousness of the years since the mid-1960s is a result of the large variability of cross-border flows of funds. The increase in the flow of funds to a country led to an increase in the foreign exchange value of its currency and to the increase in prices of securities and other assets in the country. The asset price bubbles in Finland, Norway, and Sweden in the second half of the 1980s resulted from the increase in the inflow of cross-border funds; similarly the asset price bubbles in Thailand, Malaysia, and the other Asian countries in the early 1990s followed from the increase in the flow of savings from Japan and elsewhere.

The foreign exchange crises in a large number of countries resulted from the reversal in the cross-border flow of funds. In many of these cases

the rate of increase in the flow of funds was not sustainable; a slackening of the rate of inflow would have led to the depreciation of the currency of the country that had been experiencing the inflow, and a modest initial depreciation of its currency would have triggered a massive depreciation.

The roles of the lender of last resort in the domestic context have counterparts at the international level. The domestic lender of last resort might on occasion note that there was irrational exuberance in the stock market or the real estate market or some other markets. The counterpart is that an international lender of last resort might note that the increase in the external indebtedness of one or several countries was too rapid to be sustainable and that the adjustment to a sustainable rate could be costly and perhaps messy. Investors and other market participants would be left to draw their own conclusions about the implications of the statement.

Domestic lenders of last resort provide liquidity to reduce the likelihood that increases in investor demand for less risky securities would escalate into a solvency crisis as the prices of the riskier assets declined sharply. Domestic lenders of last resort have been established to enhance the stability of the financial system although not necessarily of individual financial banks. The counterpart rationale for an international lender of last resort is to reduce the sharp depreciation of a national currency after the end of a mania that led unsustainably large flows of funds to a country. During the manic phase, the country's currency would appreciate in response to the increase in the inflow of funds. When the inflows of capital decline, the country's currency is likely to depreciate. Undershooting would be inevitable because exporters could not immediately respond to the change in relative prices and their improvement in their international competitive positions induced by the depreciation of the currency; lags would be inevitable before they could increase their production of exportable goods and identify and connect with the foreign customers. In some countries the temporary severe depreciation of the currency during the period when the currency undershoots would imperil the solvency of domestic firms that had debts denominated in foreign currencies because of the sharp increases in the domestic currency equivalent of their debt servicing payments to their foreign creditors. The bankruptcy of these firms could imperil the solvency of domestic banks and other financial institutions.

The U.S. Treasury took the initiative in acting as a lender of last resort to Mexico at the time of that country's financial crisis at the end of 1994; the credit to Mexico involved funds from the U.S. government as well

as from the International Monetary Fund. The announcement of the availability of these funds limited the further depreciation of the peso. If a comparable initiative had been taken one or several weeks earlier, the undershooting of the peso would have been smaller, and the adverse impacts of the depreciation of the peso on the Mexican economy would have been less severe.

One role of the international lender of last resort would be to suggest that the volume of international capital flows to a country was too large to be sustainable and that the eventual adjustment to the reduction in the capital inflows would lead to a depreciation of the currency. When the depreciation occurred, the international lenders could provide credits to reduce the scope of undershooting. The ready availability of credits would limit the contagion effect.

The International Monetary Fund was established in the 1940s to act as an international lender of last resort. The motive for establishing the IMF was that much of the financial instability in the 1920s and especially in the 1930s could have been avoided or mitigated if there had been an international lender of last resort. The fund staff visits each of the member countries twice a year to discuss the country's economic policies. The fund has rarely sounded the alarm that a member country was embarked on a non-sustainable pattern of international borrowing—that its current account deficit was too large to be sustainable, and that the transition to a sustainable value for its current account would be likely to be costly in terms of its economic stability—and that there was more likely to be a 'hard landing' than a 'soft landing'. Nor has the IMF been able to provide the credits at the time of the crash to avoid extensive and debilitating undershooting.

Whether the shortfall in the performance of the IMF relative to the ambitions that led to its establishment has resulted from the failures of analysis or policy or member country truculence is a topic for another book.