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Financial Crisis: A Hardy Perennial

The years since the early 1970s are unprecedented in terms of the volatility in the prices of commodities, currencies, real estate and stocks, and the frequency and severity of financial crises. In the second half of the 1980s, Japan experienced a massive bubble in its real estate and in its stock markets. During the same period the prices of real estate and of stocks in Finland, Norway, and Sweden increased even more rapidly than in Japan. In the early 1990s, there was a surge in real estate prices and stock prices in Thailand, Malaysia, Indonesia, and most of the nearby Asian countries; in 1993, stock prices increased by about 100 percent in each of these countries. In the second half of the 1990s, the United States experienced a bubble in the stock market; there was a mania in the prices of the stocks of firms in the new industries like information technology and the dot.coms.

Bubbles always implode; by definition a bubble involves a non-sustainable pattern of price changes or cash flows. The implosion of the asset price bubble in Japan led to the massive failure of a large number of banks and other types of financial firms and more than a decade of sluggish economic growth. The implosion of the asset price bubble in Thailand triggered the contagion effect and led to sharp declines in stock prices throughout the region. The exception to this pattern is that the implosion of the bubble in U.S. stock prices in 2000 led to declines in stock prices for the next several years but the ensuing recession in 2001 was brief and shallow.

The changes in the foreign exchange values of national currencies during this period were often extremely large. At the beginning of the 1970s, the dominant market view was that the foreign exchange value of the U.S. dollar might decline by 10 to 12 percent to compensate for the

higher inflation rate in the United States than in Germany and in Japan in the previous few years. In 1971 the United States abandoned the U.S. gold parity of $35 an ounce that had been established in 1934; in the next several years there were two modest increases in the U.S. gold parity although the U.S. Treasury would no longer buy and sell gold. The effort to retain a modified version of the Bretton Woods system of pegged exchange rates that was formalized in the Smithsonian Agreement of 1972 failed and there was a move to floating exchange rates early in 1973; in the 1970s the U.S. dollar lost more than half of its value relative to the German mark and the Japanese yen. The U.S. dollar appreciated significantly in the first half of the 1980s, although not to the levels of the early 1970s. A massive foreign exchange crisis involved the Mexican peso, the Brazilian cruzeiro, the Argentinean peso, and the currencies of many of the other developing countries in the early 1980s. The Finnish markka, the Swedish krona, the British pound, the Italian lira, and the Spanish peseta were devalued in the last six months of 1992; most of these currencies depreciated by 30 percent relative to the German mark. The Mexican peso lost more than half of its value in terms of the U.S. dollar during the presidential transition in Mexico at the end of 1994 and the beginning of 1995. Most of the Asian currencies—the Thai baht, the Malaysian ringgit, the Indonesian rupiah, and the South Korean won—depreciated sharply in the foreign exchange market during the Asian Financial Crisis in the summer and autumn of 1997.

The changes in the market exchange rates for these individual currencies were almost always much larger than those that would have been inferred from the differences between national inflation rates in particular countries. The scope of 'overshooting' and 'undershooting' of national currencies was both more extensive and much larger than in any previous period.

Some of the changes in commodity prices in the period were spectacular. The U.S. dollar price of gold increased from $40 an ounce at the beginning of the 1970s to nearly $1,000 an ounce at the end of that decade; at the end of the 1980s the price was $450, and at the end of the 1990s it was $283. The price of oil was $2.50 a barrel at the beginning of the 1970s and $40 a barrel at the end of that decade; in the mid-1980s the oil price was $12 a barrel and then at the end of the 1980s the price was back at $40 after the Iraqi invasion of Kuwait.

The number of bank failures during the 1980s and the 1990s was much, much larger than in any earlier decades. Several of these failures were isolated national events: Franklin National Bank in New York City

and Herstatt AG in Cologne, Germany, made large bets on the changes in currency values in the early 1970s and both banks lost the bets and were forced to close because of the large losses. Crédit Lyonnais, once the largest bank in France and a government-owned firm, made an exceptionally large number of loans associated with the effort to rapidly increase its size and its bad loans eventually cost the French taxpayers more than $30 billion. Three thousand U.S. savings and loan associations and other thrift institutions failed in the 1980s, with losses to the American taxpayers of more than $100 billion. The collapse of the U.S. junk bond market in the early 1990s led to losses of more than $100 billion.

Most of the bank failures in the 1980s and the 1990s were systemic and involved all or most of the banks and financial institutions in a country. When the bubbles in Japanese real estate and stocks imploded, the losses incurred by the Japanese banks were many times their capital and virtually all the Japanese banks became wards of their governments. Similarly when the Mexican currency and the currencies of the other developing countries depreciated sharply in the early 1980s, most of the banks in this group of countries failed because of the combination of their large loan losses and the currency revaluation losses of their domestic borrowers. Virtually all of the banks in Finland, Norway, and Sweden went bankrupt when the bubbles in their real estate and stock markets imploded at the beginning of the 1990s. (Many of the government-owned banks in these various countries incurred comparably large loan losses and would have failed if they were not already in the public sector.) Virtually all of the Mexican banks failed at the end of 1994 when the peso depreciated sharply. Most of the banks in Thailand and Malaysia and South Korea and several of the other Asian countries went bankrupt after the mid-1997 Asian Financial Crisis (the banks in Hong Kong and Singapore were an exception).

These financial crises and bank failures resulted from the implosion of the asset price bubbles or from the sharp depreciations of national currencies in the foreign exchange market; in some cases the foreign exchange crises triggered bank crises and in others the bank crises led to foreign exchange crises. The cost of these bank crises was extremely high in terms of several metrics—the losses incurred by the banks in each country as a ratio of the country's GDP or as a share of government spending, and the slowdowns in the rates of economic growth. The losses incurred by the banks headquartered in Tokyo and Osaka—eventually a burden on the country's taxpayers—were more than 25 percent of Japan's GDP. The losses incurred by the Argentinean banks were

50 percent of its GDP—a lot of money in yen and pesos and U.S. dollars, and a much larger share of GDP than the losses incurred by U.S. banks in the Great Depression of the 1930s.

These bank failures occurred in three different waves: the first at the beginning of the 1980s, the second at the beginning of the 1990s and the third in the second half of the 1990s. The bank failures, the large changes in exchange rates and the asset price bubbles were systematically related and resulted from rapid changes in the economic environment. The 1970s was a decade of accelerating inflation, the largest sustained increase in the U.S. consumer price level in peacetime. The market price of gold surged initially because some investors relied on the cliché that 'gold is a good inflation hedge' as the basis for their price forecasts; however the increase in the gold price was many times larger than the contemporary increase in the U.S. price level. Toward the end of the 1970s investors were buying gold because the price of gold was increasing—and the price was increasing because investors were buying gold. The Hunt brothers from Texas tried to corner the silver market and the price of this precious metal in the 1970s increased even more rapidly than the price of gold.

The prevailing view in the late 1970s was that U.S. and world inflation rates would accelerate. Some analysts predicted that the gold price would increase to $2,500 an ounce; the forecasters in the oil industry and in the banks that were large lenders to firms in the oil industry predicted that the oil price would reach $80 to $90 a barrel by 1990. One of the clichés at the time was that the price of an ounce of gold was more or less the same as the price of twenty barrels of oil.

The range of movement in bond prices and stock prices in the 1970s was much greater than in the several previous decades. In the 1970s the real rates of return on both U.S. dollar bonds and U.S. stocks were negative. In contrast in the 1990s the real rates of return on bonds and on stocks averaged more than 15 percent a year.

The foreign indebtedness of Mexico, Brazil, Argentina, and other developing countries as a group increased from $125 billion in 1972 to $800 billion in 1982. The major international banks headquartered in New York and Chicago and Los Angeles and London and Tokyo increased their loans to governments and government-owned firms in these countries at an average annual rate of 30 percent a year for ten years. The cliché at the time was that governments didn't go bankrupt. During this period the borrowers had a stellar record for paying the interest on their loans on a timely basis—but then they obtained all the cash needed to pay the interest on these loans from the lenders in the form of new loans.

In the autumn of 1979 the Federal Reserve adopted a sharply contractive monetary policy; interest rates on U.S. dollar securities surged. The price of gold peaked in January 1980 as inflationary anticipations were reversed. A severe world recession followed.

In 1982 the Mexican peso, the Brazilian cruzeiro, the Argentinean peso, and the currencies of the other developing countries depreciated sharply, share prices in these countries tumbled, and most of the banks in these countries failed as a result of the large loan losses.

The sharp increase in real estate prices and stock prices in Japan in the 1980s was associated with a boom in the economy; *Japan as Number One: Lessons for America*[1] was a bestseller in the country. The banks headquartered in Tokyo and Osaka increased their deposits and their loans and their capital much more rapidly than banks headquartered in the United States and in Germany and in the other European countries; usually seven or eight of the ten largest banks in the world were Japanese. Then at the beginning of the 1990s real estate prices and stock prices in Japan imploded. Within a few years many of the leading Japanese banks and financial institutions were broke, kaput, bankrupt, and insolvent, and remained in business only because of an implicit understanding that the Japanese government would protect the depositors from financial losses if the banks were closed. A striking story of a mania and a crash—but a crash without a panic, apparently because of the belief that government would socialize the loan losses.

Three of the Nordic countries—Norway, Sweden, and Finland—replicated the Japanese asset price bubble at the same time. A boom in real estate prices and stock prices in the second half of the 1980s associated with financial liberalization was followed by a collapse in real estate prices and stock prices and the failure of the banks.

Mexico had been one of the great economic success stories of the early 1990s as it prepared to enter the North American Free Trade Agreement. The Bank of Mexico had adopted a tough contractive monetary policy that reduced the inflation rate from 140 percent to less than 10 percent in a four-year period; during the same period several hundred government-owned firms were privatized and business regulations were liberalized. Foreign capital flowed to Mexico because the real rates of return on government securities were high and because the prospective profit rates on industrial investments were also high. The universal expectation was that Mexico would become the low-wage, low-cost base for producing automobiles and washing machines and many other manufactured goods for the U.S. and Canadian markets. Because the large inflow of foreign savings led to a real appreciation of the peso, Mexico developed

a trade deficit that reached 7 percent of its GDP. Mexico's external debt was 60 percent of its GDP and the country obtained the money to pay the interest on its increasing foreign indebtedness from the inflow of new investments. Then several political incidents, partly associated with the presidential election and transition in 1994, led to a sharp decline in the inflow of foreign funds, the Mexican government was unable to continue to support the peso in the foreign exchange market, and the currency lost more than half of its value in several months. Once again the depreciation of the peso resulted in large loan losses, and the Mexican banks—which had been privatized in the previous several years—failed.

In the mid-1990s real estate prices and stock prices surged in Bangkok, Kuala Lumpur, and Indonesia; these were the 'dragon economies' that seemed likely to emulate the economic successes of the 'Asian tigers' of the previous generation—Taiwan, South Korea, Hong Kong, and Singapore. Japanese firms and European and U.S. firms began to invest in these countries as low-wage, low-cost sources of supply, much as U.S. firms had invested in Mexico as a source of supply for the North American market. European and Japanese banks rapidly increased their loans in these countries. The domestic lenders in Thailand then experienced large loan losses on their domestic credits in the autumn and winter of 1996 because they had not been sufficiently discriminating in their evaluations of the willingness of Thai borrowers to pay the interest on their indebtedness. Foreign lenders sharply reduced their purchases of Thai securities, and then the Bank of Thailand, much like the Bank of Mexico thirty months earlier, did not have the foreign exchange reserves to support its currency in the foreign exchange market. The sharp decline in the foreign exchange value of the Thai baht in early July 1997 led to capital outflows from the other Asian countries and the foreign exchange values of their currencies (except for the Hong Kong dollar and the Chinese yuen, which remained rigidly pegged to the U.S. dollar) declined by 30 percent or more. The Indonesian rupiah lost 80 percent of its value in the foreign exchange market. Most of the banks in the area—except for those in Hong Kong and Singapore—would have been bankrupt in any reasonable 'mark-to-market' test. The crises spread from Asia to Russia, there was a debacle in the ruble, and the country's banking system collapsed in the summer of 1998. Investors then became more cautious and they sold risky securities and bought safer U.S. government securities, with the result that the changes in the relationship between the interest rates on these two groups of securities caused the collapse of Long-Term Capital Management, then the largest U.S. hedge fund.

The immense scope of the financial crashes in the last thirty years reflects in part that there are many more countries in the international financial economy and in part that data collection is more comprehensive. Despite the lack of perfect comparability across different time periods, the conclusion is unmistakable that financial failure has been more extensive and pervasive in the last thirty years than in any previous period.

The 1990s bubble in NASDAQ stocks

Stocks in the United States are traded on either the over-the-counter market or on one of the organized stock exchanges, principally the New York Stock Exchange or the American Stock Exchange or one of the regional exchanges in Boston, Chicago, and Los Angeles/San Francisco. The typical pattern was that shares of young firms would initially be traded on the over-the-counter market and then most of these firms would incur the costs associated with obtaining a listing on the New York Stock Exchange because they believed that such a listing would broaden the market for their stocks and lead to higher prices. Some very successful new firms associated with the information technology revolution of the 1990s—Microsoft, Cisco, Dell, Intel—were exceptions to this pattern; they chose not to obtain a listing on the New York Stock Exchange because they believed that trading stocks electronically in the over-the-counter market was superior to trading stocks by the open-outcry method used on the New York Stock Exchange.

In 1990 the market value of stocks traded on the NASDAQ was 11 percent of that of the New York Stock Exchange; the comparable figures for 1995 and 2000 were 19 percent and 42 percent. The annual average percentage rate of increase in the market value of NASDAQ stocks was 30 percent during the first half of the decade and 46 percent during the next four years. A few of the newer firms traded on the NASDAQ would eventually become as successful and as profitable as Microsoft and Intel and so high prices for their stocks might be warranted. The likelihood that all of the firms whose stocks were traded on the NASDAQ would be as successful as Microsoft was extremely small, since it implied that the profit share of U.S. GDP would be two to three times higher than it ever had been previously.

The bubble in U.S. stock prices in the second half of the 1990s was associated with a remarkable U.S. economic boom; the unemployment rate declined sharply, the inflation rate declined, and the rates of economic growth and productivity both accelerated. The U.S. government developed its largest-ever fiscal surplus in 2000 after having had its largest-ever fiscal deficit in 1990. The remarkable performance of the real economy contributed to the surge in U.S. stock prices that in turn led to

the increase in investment spending and consumption spending and an increase in the rate of U.S. economic growth and the spurt in fiscal revenues.

U.S. stock prices began to decline in the spring of 2000; in the next three years U.S. stocks as a group lost about 40 percent of their value while the prices of NASDAQ stocks declined by 80 percent.

One of the themes of this book is that the bubbles in real estate and stocks in Japan in the second half of the 1980s, the similar bubbles in Bangkok and the financial centers in the nearby Asian countries in the mid-1990s, and the bubble in U.S. stock prices in the second half of the 1990s were systematically related. The implosion of the bubble in Japan led to an increase in the flow of money from Japan; some of this money went to Thailand and Malaysia and Indonesia and some went to the United States. The increase in the inflow of money led to the appreciation of their currencies in the foreign exchange market and to increases in the prices of real estate and of securities available in these countries. When the bubbles in the countries in Southeast Asia imploded, there was another surge in the flow of money to the United States as these countries repaid some of their foreign indebtedness; the U.S. dollar appreciated in the foreign exchange market and the annual U.S. trade deficit increased by $150 billion and reached $500 billion.

The increase in the flow of money to a country from abroad almost always led to increases in the prices of securities traded in that country as the domestic sellers of the securities to the foreigners used a very high proportion of their receipts from these sales to buy other securities from other domestic residents. These domestic residents in turn similarly used a large part of their receipts to buy other domestic securities from other domestic residents. These transactions in securities occurred at ever-increasing prices. It's as if the cash from the sale of securities to foreigners was the proverbial 'hot potato' that was rapidly passed from one group of investors to others, at ever-increasing prices.

Manias and credit

The production of books on financial crises is counter-cyclical. A spate of books on the topic appeared in the 1930s following the U.S. stock market bubble in the late 1920s and the subsequent crash and the Great Depression. Relatively few books on the subject appeared during the several decades immediately after World War II, presumably because the recessions from the 1940s to the 1960s were mild.

The first edition of this book was published in 1978, after U.S. stock prices had declined by 50 percent in 1973 and 1974 following a fifteen-year bull market in stocks; the stock market debacle and the U.S. recession led to the bankruptcies of the Penn-Central railroad, several of the large steel companies, and a large number of Wall Street brokerage firms. New York City was on the verge of default on its outstanding bonds and was saved from insolvency by the State of New York. Not quite a crash, unless you were a senior official or a stockholder in one of the firms that failed or the Mayor of New York City.

This edition appears after thirty tumultuous years in global financial markets, a period without a good historical precedent. There was a mania in real estate and stocks in Japan in the 1980s and a crash in the 1990s; during the same period there was a mania in real estate and stocks in Finland and Norway and Sweden and then a crash. There was a mania in U.S. stocks in the second half of the 1990s—the subsequent 40 percent decline in stock prices probably felt like a crash for those who owned large amounts of Enron, MCIWorldCom, and dot.com stocks. Comparisons can be made between the stock market bubbles in the United States in the 1920s and the 1990s, and between these U.S. bubbles and the one in Japan in the 1980s.

The big ten financial bubbles

1. The Dutch Tulip Bulb Bubble 1636
2. The South Sea Bubble 1720
3. The Mississippi Bubble 1720
4. The late 1920s stock price bubble 1927–1929
5. The surge in bank loans to Mexico and other developing countries in the 1970s
6. The bubble in real estate and stocks in Japan 1985–1989
7. The 1985–1989 bubble in real estate and stocks in Finland, Norway and Sweden
8. The bubble in real estate and stocks in Thailand, Malaysia, Indonesia and several other Asian countries 1992–1997
9. The surge in foreign investment in Mexico 1990–1993
10. The bubble in over-the-counter stocks in the United States 1995–2000

The earliest bubble noted in the box involved tulip bulbs in the Netherlands in the seventeenth century, and especially the rare varieties of bulbs. Two of the bubbles—one in Great Britain and one in France—occurred at more or less the same time, at the end of the Napoleonic

Wars. There were manias and financial crises in the nineteenth century that were mostly associated with the failures of banks, often after an extended investment in infrastructure such as canals and railroads. Foreign exchange crises and banking crises were frequent between 1920 and 1940. The percentage increases in stock prices in the last thirty years have been larger than in earlier periods. Bubbles in real estate and in stocks have often occurred together; some countries have experienced a bubble in real estate but not in stocks, while the United States had a stock price bubble in the second half of the 1990s but not one in real estate.

Manias are dramatic but they have been infrequent; only two have occurred in U.S. stocks in two hundred years. Manias generally have been associated with the expansion phase of the business cycle, in part because the euphoria associated with the mania leads to increases in spending. During the mania the increases in the prices of real estate or stocks or in one or several commodities contribute to increases in consumption and investment spending that in turn lead to accelerations in the rates of economic growth. The seers in the economy forecast perpetual economic growth and some venturesome ones proclaim no more recessions—the traditional business cycles of the market economies have become obsolete. The increase in the rate of economic growth induces investors and lenders to become more optimistic about the future and asset prices increase more rapidly—at least for a while.

Manias—especially macro manias—are associated with economic euphoria; business firms become increasingly up-beat and investment spending surges because credit is plentiful. In the second half of the 1980s Japanese industrial firms could borrow as much as they wanted from their friendly bankers in Tokyo and in Osaka; money seemed 'free' (money always seems free in manias) and the Japanese went on a consumption spree and an investment spree. The Japanese purchased ten thousand items of French art. A racetrack entrepreneur from Osaka paid $90 million for Van Gogh's *Portrait of Dr Guichet,* at that time the highest price ever paid for a painting. The Mitsui Real Estate Company paid $625 million for the Exxon Building in New York even though the initial asking price had been $310 million; Mitsui wanted to get in the *Guinness Book of World Records* for paying the highest price ever for an office building. In the second half of the 1990s in the United States newly-established firms in the information technology industry and bio-tech had access to virtually unlimited funds from the venture capitalists who

believed they would profit greatly when the shares in these firms were first sold to the public.

During these euphoric periods an increasing number of investors seek short-term capital gains from the increases in the prices of real estate and of stocks rather than from the investment income based on the productive use of these assets. Individuals make down payments on condo apartments in the preconstruction phase of the developments in the anticipation that they will be able to sell these apartments at handsome profits when the buildings have been completed.

Then an event—perhaps a change in government policy, an unexplained failure of a firm previously thought to have been successful—occurs that leads to a pause in the increase in asset prices. Soon, some of the investors who had financed most of their purchases with borrowed money become distress sellers of the real estate or the stocks because the interest payments on the money borrowed to finance their purchases are larger than the investment income on the assets. The prices of these assets decline below their purchase price and now the buyers are 'under water'—the amount owed on the money borrowed to finance the purchase of these assets is larger than their current market value. Their distress sales lead to sharp declines in the prices of the assets and a crash and panic may follow.

The economic situation in a country after several years of bubble-like behavior resembles that of a young person on a bicycle; the rider needs to maintain the forward momentum or the bike becomes unstable. During the mania, asset prices will decline immediately after they stop increasing—there is no plateau, no 'middle ground.' The decline in the prices of some assets leads to the concern that asset prices will decline further and that the financial system will experience 'distress.' The rush to sell these assets before prices decline further becomes self-fulfilling and so precipitous that it resembles a panic. The prices of commodities—houses, buildings, land, stocks, bonds—crash to levels that are 30 to 40 percent of their prices at the peak. Bankruptcies surge, economic activity slows, and unemployment increases.

The features of these manias are never identical and yet there is a similar pattern. The increase in prices of commodities or real estate or stocks is associated with euphoria; household wealth increases and so does spending. There is a sense of 'We never had it so good.' Then the asset prices peak, and then begin to decline. The implosion of a bubble has been associated with declines in the prices of commodities, stocks

and real estate, and often these declines have been associated with a crash or a financial crisis. Some financial crises were preceded by a rapid increase in the indebtedness of one or several groups of borrowers rather than by a rapid increase in the price of an asset or a security.

The thesis of this book is that the cycle of manias and panics results from the pro-cyclical changes in the supply of credit; the credit supply increases relatively rapidly in good times, and then when economic growth slackens, the rate of growth of credit has often declined sharply. A mania involves increases in the prices of real estate or stocks or a currency or a commodity in the present and near-future that are not consistent with the prices of the same real estate or stocks in the distant future. The forecasts that the price of oil would increase to $80 a barrel after the earlier increase from $2.50 a barrel at the beginning of the 1970s to $36 at the end of that decade was manic. During the economic expansions investors become increasingly optimistic and more eager to pursue profit opportunities that will pay off in the distant future while the lenders become less risk-averse. Rational exuberance morphs into irrational exuberance, economic euphoria develops and investment spending and consumption spending increase. There is a pervasive sense that it is 'time to get on the train before it leaves the station' and the exceptionally profitable opportunities disappear. Asset prices increase further. An increasingly large share of the purchases of these assets is undertaken in anticipation of short-term capital gains and an exceptionally large share of these purchases is financed with credit.

The financial crises that are analyzed in this book are major both in size and in effect and most are international because they involve several different countries either at the same time or in a causal sequential way.

The term 'bubble' is a generic term for the increases in asset prices in the mania phase of the cycle. Recently, real estate bubbles and stock price bubbles have occurred at more or less the same time in Japan and in some of the Asian countries. The sharp increases in the prices of gold and silver in the late 1970s have been tagged as a bubble, but the increases in the price of crude petroleum in the same years were not; the distinction is that many of the buyers of gold and silver in that tumultuous and inflationary decade anticipated that the prices of both precious metals would continue to increase and that profits could be made from buying and holding these commodities for relatively short periods. In contrast many of the buyers of petroleum were concerned that the disruptions in oil supplies due to actions of the cartel and the war in the Persian Gulf would lead to shortages and increases in prices.

Chain letters, pyramid schemes, Ponzi finance, manias, and bubbles

Chain letters, bubbles, pyramid schemes, Ponzi finance, and manias are somewhat overlapping terms. The generic term is nonsustainable patterns of financial behavior, in that asset prices today are not consistent with asset prices at distant future dates. The Ponzi schemes generally involve promises to pay an interest rate of 30 or 40 or 50 percent a month; the entrepreneurs that develop these schemes always claim they have discovered a new secret formula so they can earn these high rates of return. They make the promised interest payments for the first few months with the money received from their new customers attracted by the promised high rates of return. But by the fourth or fifth month the money received from these new customers is less than the monies promised the first sets of customers and the entrepreneurs go to Brazil or jail or both.

A chain letter is a particular form of pyramid arrangement; the procedure is that individuals receive a letter asking them to send $1 (or $10 or $100) to the name at the top of the pyramid and to send the same letter to five friends or acquaintances within five days; the promise is that within thirty days you will receive $64 for each $1 'investment.'

Pyramid arrangements often involve sharing of commission incomes from the sale of securities or cosmetics or food supplements by those who actually make the sales to those who have recruited them to become sales personnel.

The bubble involves the purchase of an asset, usually real estate or a security, not because of the rate of return on the investment but in anticipation that the asset or security can be sold to someone else at an even higher price; the term 'the greater fool' has been used to suggest the last buyer was always counting on finding someone else to whom the stock or the condo apartment or the baseball cards could be sold.

The term mania describes the frenzied pattern of purchases, often an increase in prices accompanied by an increase in trading volumes; individuals are eager to buy before the prices increase further. The term bubble suggests that when the prices stop increasing, they are likely—indeed almost certain—to decline.

Chain letters and pyramid schemes rarely have macroeconomic consequences, but rather involve isolated segments of the economy and involve the redistribution of income from the late-comers to those who were in early. Asset price bubbles have often been associated with economic euphoria and increases in both business and household spending because the futures are so much brighter, at least until the bubble pops.

Virtually every mania is associated with a robust economic expansion, but only a few economic expansions are associated with a mania. Still the association between manias and economic expansions is sufficiently frequent and sufficiently uniform to merit renewed study.

Some economists have contested the view that the use of the term bubble is appropriate because it suggests irrational behavior that is highly unlikely or implausible; instead they seek to explain the rapid increase in real estate prices or stock prices in terms that are consistent with changes in the economic fundamentals. Thus the surge in the prices of NASDAQ stocks in the 1990s occurred because investors sought to buy shares in firms that would repeat the spectacular successes of Microsoft, Intel, Cisco, Dell, and Amgen.

The policy implications

The appearance of a mania or a bubble raises the policy issue of whether governments should seek to moderate the surge in asset prices to reduce the likelihood or the severity of the ensuing financial crisis or to ease the economic hardship that occurs when asset prices begin to decline. Virtually every large country has established a central bank as a domestic 'lender of last resort' to reduce the likelihood that a shortage of liquidity would cascade into solvency crisis. The practice leads to the question of the role for an international 'lender of last resort' that would assist countries in stabilizing the foreign exchange value of their currencies and reduce the likelihood that a sharp depreciation of the currencies because of a shortage of liquidity would trigger large numbers of bankruptcies.

During a crisis, many firms that had recently appeared robust tumble into bankruptcy because the failure of some firms often leads to a decline in asset prices and a slowdown in the economy. When asset prices decline sharply, government intervention may be desirable to provide the public good of stability. During financial crises the decline in asset prices may be so large and abrupt that the price changes become self-justifying. When asset prices tumble sharply, the surge in the demand for liquidity may drive many individuals and firms into bankruptcy, and the sale of assets in these distressed circumstances may induce further declines in asset prices. At such times a lender of last resort can provide financial stability or attenuate financial instability. The dilemma is that if investors knew in advance that governmental support would be forthcoming under generous dispensations when asset prices fall sharply, markets might break down somewhat more frequently because investors will be less cautious in their purchases of asset and of securities.

The role of the lender of last resort in coping with a crash or panic is fraught with ambiguity and dilemma. Thomas Joplin commented on the behavior of the Bank of England in the crisis of 1825, 'There are times

when rules and precedents cannot be broken; others, when they cannot be adhered to with safety.' Breaking the rule establishes a precedent and a new rule that should be adhered to or broken as occasion demands. In these circumstances intervention is an art rather than a science. The general rules that the state should always intervene or that the state should never intervene are both wrong. This same question of intervention reappeared with whether the U.S. government should have rescued Chrysler in 1979, New York City in 1975, and the Continental Illinois Bank in 1984. Similarly, should the Bank of England have rescued Baring Brothers in 1995 after the rogue trader Nick Leeson in its Singapore branch office had depleted the firm's capital through hidden transactions in option contracts? The question appears whenever a group of borrowers or banks or other financial institutions incurs such massive losses that they are likely to be forced to close, at least under their current owners. The United States acted as the lender of last resort at the time of the Mexican financial crisis at the end of 1994. The International Monetary Fund acted as the lender of last resort during the Russian financial crisis of 1998, primarily after prodding by the U.S. and German governments. Neither the United States nor the International Monetary Fund was willing to act as a lender of last resort during the Argentinean financial crisis at the beginning of 2001. The list of episodes highlights that coping with financial crises remains a major contemporary problem.

The conclusion of *The World in Depression, 1929–1939*, was that the 1930s depression was wide, deep, and prolonged because there was no international lender of last resort.[2] Great Britain was unable to act in that capacity because it was exhausted by World War I, obsessed with pegging the British pound to gold at its pre-1914 parity and groggy from the aborted economic recovery of the 1920s. The United States was unwilling to act as an international lender of last resort; at the time few Americans had thought through what the United States might have done in that role. This book extends the analysis of the responsibilities of an international lender of last resort.

The monetary aspects of manias and panics are important and are examined at length in several chapters. The monetarist view—at least one monetarist view—is that the mania would not occur if the rate of growth of the money supply were stabilized or constant. Many of the manias are associated with the surge in the growth of credit, but some are not; a constant money supply growth rate might reduce the frequency of manias but is unlikely to consign them to the dustbins of history. The rate of increase in U.S. stock prices in the second half of the

1920s was exceptionally high relative to the rate of growth of the money supply, and similarly the rate of increase in the prices of NASDAQ stocks in the second half of the 1990s was exceedingly high relative to the rate of growth of the U.S. money supply. Some monetarists distinguish between 'real' financial crises that are caused by the shrinkage of the monetary base or high-powered money and 'pseudo' crises that do not. The financial crises in which the monetary base changes early or late in the process should be distinguished from those in which the money supply did not increase significantly.

The earliest manias discussed in the first edition of this book were the South Sea and Mississippi bubbles of 1719–1720. The earliest manias analyzed in this edition are the *Kipper- und Wipperzeit,* a monetary crisis from 1619 to 1622 at the outbreak of the Thirty Years War, and the much-discussed 'tulipmania' of 1636–1637. The view that there was a bubble in tulip bulbs in the Dutch Republic followed from widespread recognition at the time that exotic specimens of tulips are difficult to breed, but once bred propagate easily—and hence their prices would decline sharply.[3]

The early historical treatment centered on the European experiences. The most recent crisis noted in this edition is that of Argentina in 2001. The attention to the financial crises in Great Britain in the nineteenth century reflects both the central importance of London in international financial arrangements and the abundant writings by contemporary analysts. In contrast Amsterdam was the dominant financial power for much of the eighteenth century, but these experiences have been slighted because of the difficulties in accessing the Dutch literature.

The chapter-by-chapter story

The background to the analysis, and a model of speculation, credit expansion, financial distress at the peak, and then crisis that ends in a panic and crash is presented in Chapter 2. The model follows the early classical ideas of 'overtrading' followed by 'revulsion' and 'discredit'—musty terms used by earlier generations of economists including Adam Smith, John Stuart Mill, Knut Wicksell, and Irving Fisher. The same concepts were developed by the late Hyman Minsky, who argued that the financial system is unstable, fragile, and prone to crisis. The Minsky model has great explanatory power for earlier crises in the United States and in Western Europe, for the asset price bubbles in Japan in the second half of the 1980s and in Thailand and Malaysia and the other countries

in Southeast Asia in the mid-1990s, and for the bubble in U.S. stocks, especially those traded on the NASDAQ, at the end of the 1990s.

The mania phase of the economic expansion is the subject of Chapter 3. The central issue is whether speculation can be destabilizing as well as stabilizing—in other words, whether markets are always rational. The nature of the outside, exogenous shock that triggers the mania is examined in different historical settings including the onset and the end of a war, a series of good harvests and a series of bad harvests, the opening of new markets and of new sources of supply and the development of different innovations—the railroad, electricity, and e-mail. A particular recent form of displacement that shocks the system has been financial liberalization or deregulation in Japan, the Scandinavian countries, some of the Asian countries, Mexico, and Russia. Deregulation has led to monetary expansion, foreign borrowing, and speculative investment.[4]

Investors have speculated in commodity exports, commodity imports, agricultural land at home and abroad, urban building sites, railroads, new banks, discount houses, stocks, bonds (both foreign and domestic), glamour stocks, conglomerates, condominiums, shopping centers and office buildings. Moderate excesses burn themselves out without damage to the economy although individual investors encounter large losses. One question is whether the euphoria of the economic upswing endangers financial stability only if it involves at least two or more objects of speculation, a bad harvest, say, along with a railroad mania or an orgy of land speculation, or a bubble in real estate and in stocks at the same time.

The monetary dimensions of both manias and panics are analyzed in Chapter 4. The occasions when a boom or a panic has been triggered by a monetary event—a recoinage, a discovery of precious metals, a change in the ratio of the prices of gold and silver under bimetallism, an unexpected success of some flotation of a stock or bond, a sharp reduction in interest rates as a result of a massive debt conversion, or a rapid expansion of the monetary base—are noted. A sharp increase in interest rates may also cause trouble through disintermediation, as depositors flee banks and thrift institutions; the long-term securities still owned by these institutions fall in price. Innovations in finance, as in productive processes, can shock the system and lead to overinvestment in some types of financial services.[5]

The difficulty of managing the monetary mechanism to avoid manias and bubbles is stressed in this edition. Money is a public good but monetary arrangements can be exploited by private parties. Banking, moreover, is difficult to regulate. The current generation of monetarists

insists that many, perhaps most, of the cyclical difficulties of the past have resulted from mismanagement of the monetary mechanism. Such mistakes were frequent and serious. The argument advanced in Chapter 4, however, is that even when the supply of money was nearly adjusted to the demands of an economy the monetary mechanism did not stay right for very long. When government produces one quantity of the public good, money, the public may proceed to produce many close substitutes for money, just as lawyers find new loopholes in tax laws about as fast as legislation closes up older loopholes. The evolution of money from coins to bank notes, bills of exchange, bank deposits and finance paper illustrates the point. The Currency School might be right about the need for a fixed supply of money, but it is wrong to believe that the money supply could be fixed forever.

The emphasis in Chapter 5 is on the domestic aspects of the crisis stage. One question is whether manias can be halted by official warning—moral suasion or jawboning. The evidence suggests that they cannot, or at least that many crises followed warnings that were intended to head them off. One widely noted remark was that of Alan Greenspan, chairman of the Federal Reserve Board, who stated on December 6, 1996, that he thought that the U.S. stock market was irrationally exuberant. The Dow Jones industrial average was 6,600; subsequently the Dow peaked at 11,700. The NASDAQ had been at 1,300 at the time of the Greenspan remark and peaked at more than 5,000 four years later. A similar warning had been issued in February 1929 by Paul M. Warburg, a private banker who was one of the fathers of the Federal Reserve system, without slowing for long the stock market's upward climb. The nature of the event that ultimately produces a turning point is discussed: some bankruptcy, defalcation or troubled area revealed or rumored, a sharp rise in the central bank discount rate to halt the hemorrhage of cash into domestic circulation or abroad. And then there is the interaction of falling prices—the crash—and its impact on the liquidity in the economy.

Domestic propagation of the mania and then the panic is the subject of Chapter 6. The inference from history is that a boom in one market spills over into other markets. 'A housing boom in Houston is an oil boom in drag.' Thus a financial crisis may be more serious if two or more assets are the subject of speculation. When and if a crash comes, the banking system may seize and banks may ration credit to reduce the likelihood of large loan losses even if the money supply is unchanged; indeed the money supply may be increasing. The connections between price changes in the stock and commodities markets were especially strong in New York in 1921 and the late 1920s, and those linking stocks

and real estate were strong in the late 1980s in Japan and in Norway, Sweden and Finland.

The international contagion of manias and crises is highlighted in Chapter 7. There are many possible linkages among countries, including trade, capital markets, flows of hot money, changes in central bank reserves of gold or foreign exchange, fluctuations in prices of commodities, securities or national currencies, changes in interest rates, and direct contagion of speculators in euphoria or gloom. Some crises are local, others international. What constitutes the difference? Did, for example, the 1907 panic in New York precipitate the collapse of the Società Bancaria Italiana via pressure on Paris communicated to Turin by withdrawals of bank deposits? There is fundamental ambiguity here, too. Tight money in a given financial center can serve either to attract funds or to repel them, depending on the expectations that a rise in interest rates generates. With inelastic expectation—no fear of crisis or of currency depreciation—an increase in the discount rate attracts funds from abroad and helps provide the cash needed to ensure liquidity; with elastic expectations of change—of falling prices, bankruptcies, or exchange depreciation—raising the discount rate may suggest to foreigners the need to take more funds out rather than bring new funds in. The trouble is familiar in economic life generally. A rise in the price of a commodity may lead consumers to postpone purchases in anticipation of the decline, or to speed purchases before prices rise further. And even where expectations are inelastic, and the increased discount rate at the central bank sets in motion the right reactions, lags in responses may be so long that the crisis supervenes before the Marines arrive.

One complex but not unusual method of initiating financial crisis is a sudden halt to foreign lending because of a domestic boom; thus the boom in Germany and Austria in 1873 led to a decline in the capital outflows and contributed to the difficulties of Jay Cooke in the United States. Similar developments occurred with the Baring crisis in 1890, when troubles in Argentina led the British to halt lending to South Africa, Australia, the United States and the remainder of Latin America. The stock market boom in New York in the late 1920s led Americans in 1928 to buy far fewer of the new bond issues of Germany and various Latin American countries, which in turn caused them to slide into depression. A halt to foreign trading is likely to precipitate depression abroad, which may in turn feed back to the country that launched the process.[6]

The discussion in Chapter 8—a new chapter in this edition—highlights the relationships among the three asset price bubbles in the last fifteen years of the twentieth century. The first of the three

bubbles was in Tokyo in the second half of the 1980s, the second was in Bangkok, Kuala Lumpur, and Jakarta and the other capitals in the region in the mid-1990s and the third was in New York in the second half of the 1990s. The likelihood that these three asset price bubbles were independent events is low; the theme of this chapter is that there was a systematic relationship among them. The bubble in Japan was *sui generis;* when that bubble imploded at the beginning of the 1990s, there was a surge in the flow of funds both to China and the various Asian countries and to the United States. The currency values and the asset prices in the countries that were receiving the money from Japan adjusted to an increase in the inflow of foreign savings. When the bubble in stock prices and real estate prices in Bangkok and the other Asian capitals imploded in 1997 and 1998, there was a surge in the flow of funds to New York as the borrowers in these Asian countries sought to reduce their indebtedness. The foreign exchange value of the U.S. dollar and U.S. asset prices increased in response to the increase in the inflow of foreign saving. The money had to go someplace, and the result was that the prices of U.S. stocks reached stratospheric levels.

Swindles that occur in the mania phase and then in the panic phase are reviewed in Chapter 9. The combination of failed thrift institutions and the rapid growth of junk bonds in the 1980s cost the American taxpayers $150 billion. Enron, MCIWorldCom, Tyco, Dynegy, Adelphia Cable are like a rogue's gallery of the 1990s. And then many of the large U.S. mutual fund families were exposed as providing favored treatment to hedge funds. Crashes and panics are often precipitated by the revelation of some misfeasance, malfeasance or malversation (the corruption of officials) that occurred during the mania. The inference from the historical record is that swindles are a response to the greedy appetite for wealth stimulated by the boom; the Smiths want to keep up with the Joneses and some Smiths engage in fraudulent behavior. As the monetary system gets stretched, institutions lose liquidity and unsuccessful swindles are about to be revealed, the temptation to take the money and run becomes virtually irresistible.

Jail time, fines and financial penalties: financial behavior in the 1990s U.S. economic boom

Enron was the poster-child of the 1990s boom; the company had transformed itself from the owner of regulated natural gas pipelines into a financial firm that traded natural gas, petroleum, electricity, and broadband width as well as owning water systems and an electrical power

generating system. The top executives of Enron felt the need to show continued growth in profits to keep the stock price high, and in the late 1990s they began to use off-balance sheet financing vehicles to obtain the capital to grow the firm; they also put exceptionally high prices on some of their long trading positions so they could report that their trading profits were increasing. The collapse of Enron led to the failure of Arthur Andersen, which previously had been the most highly regarded of the global accounting firms.

MCIWorldCom was one of the most rapidly growing telecommunications firms. Again the need to show continued increases in profits led the managers to claim that several billion dollars of expenses should be regarded as investments. Jack Grubman had been one of the sages in Salomon Smith Barney (a unit of the Citibank Group); he was continually promoting MCIWorldCom stock. Henry Blodgett was a security analyst for Merrill Lynch who was privately writing scathing e-mails about the economic prospects of some of the firms that he was otherwise promoting to investors; Merrill Lynch paid $100 million to move the story off the front pages. Ten investment banking firms paid $1.4 billion to forestall trials. The chairman and chief executive officer of the New York Stock Exchange resigned soon after it became known that he had a compensation package of more than $150 million; the exchange served both as a tent for trading stocks and as a regulator and it appeared that the managers of some of the firms that were being regulated served as directors of the exchange and participated in determining the compensation package. Then a number of large U.S. mutual funds were revealed to have allowed firms to trade on stale news.

More individuals have already gone to prison than in the aftermath of any previous crisis, and a number are still awaiting trial. Six Enron senior managers already have been jailed. One Arthur Andersen partner who worked on the Enron account went to prison. Two of the senior financial officials of MCIWorldCom have gone to jail. Martha Stewart was found guilty of obstruction of justice and imprisoned for five months.

The subject of Chapters 10 and 11 is crisis management at the domestic level. The first of these two chapters considers the range of domestic responses to a crisis; at one extreme the government may take a hands-off position, at the other there is a range of miscellaneous measures. Those who believe that the market is rational and can take care of itself prefer the hands-off approach; according to one formulation, it is healthy for the economy to go through the purgative fires of deflation and bankruptcy to get rid of the mistakes and excesses of the boom. Among the miscellaneous devices are holidays, bank holidays, the issuance of scrip, guarantees of liabilities, issuance of government debt, deposit insurance and the formation of special institutions like the Reconstruction Finance Corporation in the United States (in 1932) or the Istituto per la

Ricostruzione Industriale (IRI) in Italy (in 1933). The Italian literature calls the process the 'salvage' of banks and companies; the British in 1974–1975 referred to saving the fringe banks as a 'lifeboat' operation.

The questions related to a domestic lender of last resort are the focus of Chapter 11—primarily whether there should be a lender of last resort, who this lender should be and how it should operate. A key topic is 'moral hazard'—if investors are confident that they will be 'bailed out' by a lender of last resort, their self-reliance may be weakened. But on the other hand, the priority may be to stop the panic, to 'save the system today' despite the adverse effects on the incentives of investors. If there is a lender of last resort, however, whom should it save? Insiders? Outsiders and insiders? Only the solvent, if illiquid? But solvency depends on the extent and duration of the panic. These are political questions, and they are raised in particular when it becomes necessary to legislate to increase the capital of the Federal Deposit Insurance Corporation (FDIC) or the Federal Savings and Loan Insurance Corporation (FSLIC) when one or the other runs out of funds to lend to banks in trouble in time of acute stress. The issue was particularly acute in the 1990s in Japan, where the collapse of the Nikkei stock bubble in 1990 uncovered all sorts of bad real estate loans by banks, credit unions, and other financial houses, confronting the government with the neuralgic question of how much of a burden to put on the taxpayer. Particularly troubling was the catatonic state of government in Japan in the 1990s, slow to decide how to meet the crisis and slower to act.

The penultimate chapter centers on the need for an international lender of last resort to provide global monetary stability even though there is no responsible government or agency of government with the *de jure* responsibility for providing this public good. U.S. government support for Mexico, first in 1982 and again in 1994 was justified on the grounds that countries of the North American Free Trade Agreement (NAFTA) should stick together and that assistance to Mexico would dampen or neutralize the contagion effect and prevent a collapse of lending to the 'emerging market' countries of Brazil and Argentina and other developing countries. The sharp depreciation of the Thai baht in the early summer of 1997 triggered crises in nearby Asian countries including Indonesia, Malaysia, and South Korea as well as in Singapore, Hong Kong, and Taiwan.

The last chapter seeks to answer two questions; the first is why there has been so much economic turmoil in the international financial economy in the last thirty years, and the second is whether an international

lender of last resort would have made a difference. The International Monetary Fund was established in the 1940s to act as an international lender of last resort and to fill an institutional vacuum; the view was that financial crises in the 1920s and the 1930s would have been less severe had there been an international lender of last resort. The large number of crises in the last thirty years leads to the question of whether the presence of the IMF as a supplier of national currencies to countries with financial crises encouraged profligate national financial policies.

Financial arrangements need a lender of last resort to prevent the escalation of the panics that are associated with crashes in asset prices. But the commitment that a lender is needed should be distinguished from the view that individual borrowers will be 'bailed out' if they become over-extended. For example, uncertainty about whether New York City would be helped, and by whom, may have proved just right in the long run, so long as help was finally provided, and so long as there was doubt right to the end as to whether it would be. This is a neat trick: always come to the rescue, in order to prevent needless deflation, but always leave it uncertain whether rescue will arrive in time or at all, so as to instill caution in other speculators, banks, cities, or countries. In Voltaire's *Candide,* the head of a general was cut off 'to encourage the others.' A sleight of hand may be necessary to 'encourage' the others (without, of course, cutting off actual heads) to participate in the lender of last resort activities because the alternative is likely to have very expensive consequences for the economic system.

2
Anatomy of a Typical Crisis

History vs economics

For historians each event is unique. In contrast economists maintain that there are patterns in the data and particular events are likely to induce similar responses. History is particular; economics is general. The business cycle is a standard feature of market economies; increases in investment in plant and equipment lead to increases in household income and the rate of growth of national income. Macroeconomics focuses on the explanations for the cyclical variations in the rate of growth of national income relative to its long-run trend rate of growth.

An economic model of a general financial crisis is presented in this chapter, while the various phases of the speculative manias that lead to crises are illustrated in the following chapters. This model of general financial crises covers the boom and the subsequent bust and centers on the episodic nature of the manias and the subsequent crises. This model differs from those that focus on the variations and the periodicity of economic expansions and contractions, including the Kitchin inventory cycle of thirty-nine months, the Juglar cycle of investment in plant and equipment that has a periodicity of seven or eight years and the Kuznets cycle of twenty years that highlights the rise and fall in housing construction.[1] In the first two-thirds of the nineteenth century, crises occurred regularly at ten-year intervals (1816, 1826, 1837, 1847, 1857, 1866), thereafter crises occurred less regularly (1873, 1907, 1921, 1929).

The model

A model developed by Hyman Minsky is used to interpret the financial crises in the United States, Great Britain, and other market economies. Minsky highlighted the pro-cyclical changes in the supply of credit, which increased when the economy was booming and decreased during economic slowdowns. During the expansion phase investors became more optimistic about the future and they revised upward their estimates of the profitability of a wide range of investments and so they became more eager to borrow. At the same time, both the lenders' assessments of the risk of individual investments and their risk averseness declined and so they became more willing to make loans, including some for investments that previously had seemed too risky.

When the economic conditions slowed, the investors became less optimistic and more cautious. At the same time, the loan losses of the lenders increased and they became much more cautious.

Minsky believed that the pro-cyclical increases in the supply of credit in good times and the decline in the supply of credit in less buoyant economic times led to fragility in financial arrangements and increased the likelihood of financial crisis.

This model is in the tradition of the classical economists, including John Stuart Mill, Alfred Marshall, Knut Wicksell, and Irving Fisher, who also focused on the instability in the supply of credit. Minsky followed Fisher and attached great importance to the behavior of heavily indebted borrowers, particularly those that increased their indebtedness in the expansion to finance the purchase of real estate or stocks or commodities for short-term capital gains. The motive for these transactions was that the anticipated rates of increase in the prices of these assets would exceed the interest rates on the funds borrowed to finance their purchases. When the economy slowed some of these borrowers might be disappointed because the rates of increase in the prices of the assets proved smaller than the interest rates on the borrowed money and so many would become distress sellers.

Minsky argued that the events that lead to a crisis start with a 'displacement,' some exogenous, outside shock to the macroeconomic system.[2] If the shock was sufficiently large and pervasive, the economic outlook and the anticipated profit opportunities would improve in at least one important sector of the economy. Business firms and individuals would

borrow to take advantage of the increase in the anticipated profits associated with a wide range of investments. The rate of economic growth would accelerate and in turn there might be a feedback to even greater optimism. It's 'Japan as Number One' or the 'East Asian Miracle' or 'The New American Economy'—a new sense of more profound optimism about the economic environment. The words differ across the countries but the tune is the same.

The nature of the shock varies from one speculative boom to another. The shock in the United States in the 1920s was the rapid expansion of automobile production and associated development of highways together with the electrification of much of the country and the rapid expansion of the number of households with telephones. The shocks in Japan in the 1980s were financial liberalization and the surge in the foreign exchange value of the yen. The shock in the Nordic countries in the 1980s was financial liberalization.

The shock in the Asian countries in the 1990s was the implosion of the asset price bubble in Japan and the appreciation of the yen which led to increases in the inflows of money from Tokyo together with financial liberalization at home. The shock in the United States in the 1990s was the revolution in information technology and new and lower-cost forms of communication and control that involved the computer, wireless communication, and e-mail. At times the shock has been outbreak of war or the end of a war, a bumper harvest or crop failure, the widespread adoption of an invention with pervasive effects—canals, railroads. An unanticipated change of monetary policy has been a major shock.

If the shock is sufficiently large and pervasive, the anticipated profit opportunities improve in at least one important sector of the economy: the profit share of GDP increases. In the early 1980s, U.S. corporate profits were 3 percent of GDP; toward the end of the 1990s this ratio had increased to 10 percent. That corporate profits were increasing one-third more rapidly than U.S. GDP in turn contributed to the significant increase in stock prices.

The boom in the Minsky model is fueled by an expansion of credit. In the prebanking seventeenth and eighteenth centuries personal credit or vendor financing fueled the speculative boom. Once banks had been developed they expanded the supply of credit and their liabilities; in the first several decades of the nineteenth century they increased the supplies of bank notes and subsequently they added to the deposit balances of individual borrowers. In addition to the expansion of credit by the established banks, new banks may be formed; the efforts of these new

banks to increase market share can lead to rapid growth of credit and money because the established banks have often been reluctant to accept a decline in market share that they would otherwise incur. In the 1970s the European banks were beginning to poach on the turf of the U.S. banks in making loans to the governments in Latin America.

Minsky argued that the growth of bank credit has been very unstable; at times the banks as lenders have become more euphoric and have lent freely and then at other times they have become extremely cautious and let the borrowers 'swing in the wind.'

One central policy issue centers on the control of credit from banks and from other suppliers of credit. Often the authorities in a country have applied strict controls to the ability of banks to make certain types of loans. The banks then set up wholly-owned subsidiaries that can make the loans the banks themselves are prohibited from making. Or the loans are made by the bank holding companies. Even if the instability of credits from the financial institutions were controlled, increases in the supply of personal credit could finance the boom.

Assume an increase in the effective demand for goods and services. After a time, the increase in demand presses against the capacity to produce goods. Market prices increase, and the more rapid increase in profits attracts both more investment and more firms. Positive feedback develops as the increase in investment leads to increases in the rate of growth of national income that in turn induce additional investment so the rate of growth of national income accelerates.

Minsky noted that 'euphoria' might develop at this stage. Investors buy goods and securities to profit from the capital gains associated with the anticipated increases in the prices of these goods and securities. The authorities recognize that something exceptional is happening in the economy and while they are mindful of earlier manias, 'this time it's different,' and they have extensive explanations for the difference. Chairman Greenspan discovered a surge in U.S. productivity about a year after he first became concerned about the high level of U.S. stock prices in 1996; the increase in productivity meant that profits would increase at a more rapid rate, and so the higher level of stock prices relative to corporate earnings did not seem unreasonable.

Minsky's three-part taxonomy

Minsky distinguished between three types of finance—hedge finance, speculative finance, and Ponzi finance—on the basis of the relation

between the operating income and the debt service payments of individual borrowers. A firm is in the hedge finance group if its anticipated operating income is more than sufficient to pay both the interest and scheduled reduction in its indebtedness. A firm is in the speculative finance group if its anticipated operating income is sufficient so it can pay the interest on its indebtedness; however the firm must use cash from new loans to repay part or all of the amounts due on maturing loans. A firm is in the Ponzi group if its anticipated operating income is not likely to be sufficiently large to pay all of the interest on its indebtedness on the scheduled due dates; to get the cash the firm must either increase its indebtedness or sell some assets.

Minsky's hypothesis is that when the economy slows, some of the firms that had been involved in hedge finance are shunted to the group involved in speculative finance and that some of the firms that had been involved in the speculative finance group now find they are in the Ponzi finance group.

The term 'Ponzi finance' memorializes Carlos Ponzi, who operated a small loans company in one of the Boston suburbs in the early 1920s. Ponzi promised his depositors that he would pay interest at the rate of 30 percent a month and his financial transactions went smoothly for three months. In the fourth month however the inflow of cash from new depositors was smaller than the interest payments promised to the older borrowers and eventually Ponzi went to prison.

The term Ponzi finance is now a generic term for a nonsustainable pattern of finance. The borrowers can only meet their commitments to pay the high interest rates on their outstanding loans or deposits if they obtain the cash from new loans or deposits. Since in many arrangements the interest rates are very high, often 30 to 40 percent a year, the continuation of the arrangement requires that there be a continuous injection of new money and often at an accelerating rate. Initially many of the existing depositors are so pleased with their high returns that they allow their interest income to compound; the cliché is that they are 'earning interest on the interest.' As a result the inflow of new money can be below the promised interest rate for a few months. But to the extent that some depositors take some of their interest returns in cash, the arrangement can operate only as long as these withdrawals are smaller than the inflow of new money.

The result of the continuation of the process is what Adam Smith and his contemporaries called 'overtrading.' This term is less than precise and includes speculation about increases in the prices of assets or commodities, an overestimate of prospective returns, or 'excessive leverage.'[3] Speculation involves buying commodities for the capital gain from anticipated increases in their prices rather than for their use. Similarly speculation involves buying securities for resale rather than for investment income

attached to these commodities. The euphoria leads to an increase in the optimism about the rate of economic growth and about the rate of increase in corporate profits and affects firms engaged in production and distribution. In the late 1990s Wall Street security analysts projected that U.S. corporate profits would increase at the rate of 15 percent a year for five years. (If their forecasts had been correct, then at the end of the fifth year the share of U.S. corporate profits in U.S. GDP would have been 40 percent higher than ever before.) Loan losses incurred by the lenders decline and they respond and become more optimistic and reduce the minimum down payments and the minimum margin requirements. Even though bank loans are increasing, the leverage—the ratio of debt to capital or to equity—of many of their borrowers may decline because the increase in the prices of the real estate or securities means that the net worth of the borrowers may be increasing at a rapid rate.

A follow-the-leader process develops as firms and households see that others are profiting from speculative purchases. 'There is nothing as disturbing to one's well-being and judgment as to see a friend get rich.'[4] Unless it is to see a nonfriend get rich. Similarly banks may increase their loans to various groups of borrowers because they are reluctant to lose market share to other lenders which are increasing their loans at a more rapid rate. More and more firms and households that previously had been aloof from these speculative ventures begin to participate in the scramble for high rates of return. Making money never seemed easier. Speculation for capital gains leads away from normal, rational behavior to what has been described as a 'mania' or a 'bubble.'

The word 'mania' emphasizes irrationality; 'bubble' foreshadows that some values will eventually burst. Economists use the term bubble to mean any deviation in the price of an asset or a security or a commodity that cannot be explained in terms of the 'fundamentals.' Small price variations based on fundamentals are called 'noise.' In this book, a bubble is an upward price movement over an extended period of fifteen to forty months that then implodes. Someone with 'perfect foresight' should have foreseen that the process was not sustainable and that an implosion was inevitable.

In the twentieth century most of the manias and bubbles have centered on real estate and stocks. There was a mania in land in Southeast Florida in the mid-1920s and an unprecedented bubble in U.S. stocks in the second half of the 1920s. In Japan in the 1980s the speculative purchases of real estate induced a boom in the stock market. Similarly the bubble in the Asian countries in the 1990s involved both real estate and

stocks, and generally increases in real estate prices pulled up stock prices. The U.S. bubble in the late 1990s primarily involved stocks, although the increases in household wealth in Silicon Valley and several regions led to surges in real estate prices. The oil price shocks of the 1970s led to surges in real estate activity in Texas, Oklahoma, and Louisiana. Similarly the sharp increases in the prices of cereals in the inflationary 1970s led to surges in land prices in Iowa, Nebraska, and Kansas and other Midwest farm states.

International propagation

Minsky focused on the instability in the supply of credit in a single country. Historically euphoria has often spread from one country to others through one of several different channels. The bubble in Japan in the 1980s had significant impacts on South Korea, Taiwan, and the State of Hawaii. South Korea and Taiwan were parts of the Japanese supply chain; if Japan is doing well economically, its former colonies will do well. Hawaii is to Tokyo as Miami is to New York; Japanese travel to Hawaii for rest and recreation in the sun. Hawaii experienced a real estate boom in the 1980s as the Japanese bought second homes and golf courses and hotels.

One conduit from a shock in one country to its impacts in other countries is arbitrage which ensures that the changes in the price of a commodity in one national market will lead to comparable changes in the prices of the more or less identical commodity in other national markets. Thus changes in the price of gold in Zurich, Beirut, and Hong Kong are closely tied to changes in the price of gold in London. Similarly changes in the prices of securities in one national market will lead to nearly identical changes in the prices of the same securities in other national markets.

In addition increases in national income in one country induce increases in its demand for imports and hence increases in counterpart exports in other countries and in the national incomes in these countries. Capital flows constitute a third link; the increase in the exports of securities from one country will lead to increases in both the price of these securities and the value of its currency in the foreign exchange market.

Moreover there are psychological connections, as when investor euphoria or pessimism in one country affects investors in others. The declines in stock prices on October 19, 1987, were practically instantaneous in all national financial centers (except Tokyo), far faster than can

be accounted for by arbitrage, income changes, capital flows, or money movements.

In the ideal textbook world an increase in the gold coins in circulation in one country because of the flow of gold to that country would be matched by a corresponding decline in the gold supplies in other countries, and the increase in the money supply and the credit expansion in the first country would be offset by the contraction of credit and the money supply in the second. In the real world, however, the increase in the credit expansion in the first country may not be followed by a contraction of credit in the second country, because investors in the second country may respond to rising prices and profits abroad by demanding more credit so they can buy the assets and securities whose prices they anticipate will increase. The potential contraction from the shrinkage in the monetary base in the second country may be overwhelmed by the increase in speculative interest and the increase in the demand for credit.

As the speculative boom continues, interest rates, the speed of payments and the commodity price level increase. The purchases of securities or real estate by 'outsiders' means that the insiders—those who owned or purchased these assets earlier—sell the same securities and real estate and take some profits. A few insiders take their profits and sell; indeed if newcomers to the market are buyers, then the insiders must be sellers. At every moment the purchases of real estate or stocks by the new investors or outsiders are necessarily balanced by sales by the insiders. In 1928 the market value of the stocks traded on the New York Stock Exchange increased at an annual rate of 36 percent, and in the first eight months of 1929 the market value increased at an annual rate of 53 percent. Similarly in 1998 the market value of the stocks traded on the NASDAQ increased at an annual rate of 41 percent; in the subsequent fifteen months they increased at the annual rate of 101 percent. Investors rush to get on the train before it leaves the station and accelerates. If the eagerness of the outsiders to buy is stronger than the eagerness of the insiders to sell, the prices of the assets or securities continue to increase. In contrast if the sellers become more eager than the buyers, then the prices will decline.

As the buyers become less eager and the sellers become more eager an uneasy period of 'financial distress' follows; the term is from corporate finance and reflects that a firm is unable to adhere to its debt servicing commitments. For the economy as a whole, the equivalent is the awareness on the part of a considerable segment of both firms and individual

investors that it is time to become more liquid—to reduce holdings of real estate and stocks and to increase holdings of money. The prices of goods and securities may fall sharply. Some highly leveraged investors may go bankrupt because the decline in asset prices is so sharp that the value of their assets declines below the amounts borrowed to buy the same assets. Some investors continue to hold the assets despite the decline in price because they believe that the decline in prices is temporary, a hiccup. The prices of the securities may begin to increase again; in Tokyo in the 1990s there were six 'bear market rallies' that involved stock price increases of more than 20 percent even though the trend was that stock prices had been declining. But some investors believed that stock prices had declined too far, and so they wanted to be among the first to buy the stocks while they were still cheap.

As the decline in prices continues, more and more investors realize that prices are unlikely to increase and that they should sell before prices decline further; in some cases this realization occurs gradually and in others suddenly. The race out of real or long-term financial securities and into money may turn into a stampede.

The specific signal that precipitates the crisis may be the failure of a bank or of a firm, the revelation of a swindle or defalcation by an investor who sought to escape distress by dishonest means, or a sharp fall in the price of a security or a commodity. The rush is on—prices decline and bankruptcies increase. Liquidation sometimes is orderly but may degenerate into panic as the realization spreads that only a relatively few investors can sell while prices remain not far below their peak values. In the nineteenth century the word 'revulsion' was used to describe this behavior. The banks become much more cautious in their lending on the collateral of commodities and securities. In the early nineteenth century this condition was known as 'discredit.'

'Overtrading,' 'revulsion,' 'discredit' have a musty, old-fashioned flavor; they convey a graphic picture of the decline in investor optimism.

Revulsion and discredit may lead to panic (or as the Germans put it, *Torschlusspanik*, 'door-shut-panic') as investors crowd to get through the door before it slams shut. The panic feeds on itself until prices have declined so far and have become so low that investors are tempted to buy the less liquid assets, or until trade in the assets is stopped by setting limits on price declines, shutting down exchanges or otherwise closing trading, or a lender of last resort succeeds in convincing investors that money will be made available in the amounts needed to meet the

demand for cash and that hence security prices will no longer decline because of a shortage of liquidity. Confidence may be restored even without a large increase in the volume of money because the confidence that one can get money may be sufficient to reduce the demand for liquidity.

Whether a lender of last resort should provide liquidity to forestall a panic and the decline in prices of real estate and stocks has been debated extensively. Those who oppose the provision of liquidity from a lender of last resort argue that the knowledge that such credits will be available encourages speculation. Those who want a lender of last resort worry more about coping with the current crisis and reducing the likelihood that a liquidity crisis will cascade into a solvency crisis than they do about forestalling a future crisis. In domestic crises, government or the central bank has responsibility to act as a lender of last resort. At the international level, there is neither a world government nor any world bank adequately equipped to serve as a lender of last resort. The International Monetary Fund has not met the expectations of its founders as a lender of last resort.

The validity of the model

Three types of criticism have been directed at the Minsky model. One criticism is that each crisis is unique so that a general model is not relevant. A second is that this type of model is no longer relevant because of changes in business and economic environments. A third is that asset price bubbles are highly improbable because 'all the information is in the price'—the mantra of the efficient market view of finance.

Each criticism merits its own response.

The first criticism is that each crisis is unique, a product of a unique set of circumstances, or that there are such wide differences among economic crises as a class that they should be broken down into various species, each with its own particular features. Financial crises were frequent in the first two-thirds of the nineteenth century and in the last third of the twentieth century. In this view, each unique crisis is a product of a specific series of historical accidents—which was said about 1848 and about 1929,[5] and may be inferred from the historical accounts of separate crises referred to throughout this book. Each crisis also has its unique individual features—the nature of the shock, the object of speculation, the form of credit expansion, the ingenuity of the swindlers, and the nature of the incident that touches off revulsion. But if one may

borrow a French phrase, the more something changes, the more it remains the same. Details proliferate; structure abides.

More compelling is the suggestion that the genus 'crises' should be divided into commercial, industrial, monetary, banking, fiscal, and financial (in the sense of financial markets) species or into local, regional, national, and international groups. Taxonomies along such lines abound. This view is not accepted because the primary concern is with international financial crises that involve a number of critical elements—speculation, monetary expansion, an increase in the prices of securities or real estate or commodities followed by a sharp fall and a rush into money. The test is whether use of the Minsky model provides insights about the broad features of the crises.

The second criticism is that the Minsky model of the instability of the supply of credit is no longer relevant because of structural changes in the institutional underpinnings of the economy, including the rise of the corporation, the emergence of big labor unions and big government, modern banking and speedier communications. The financial debacles in Mexico, Brazil, Argentina, and more than ten other developing countries in the early 1980s are consistent with the Minsky model; the increases in the external indebtedness of these countries were much higher than the interest rates on their loans so the borrowers were obtaining all of the cash to pay the scheduled interest from the lenders. The bubble in real estate prices and stock prices in Japan in the second half of the 1980s and the subsequent implosion of asset prices is consistent with the Minsky model since the annual increases in the prices of stocks and real estate was three or four times higher than the interest rates on the funds borrowed to finance the purchases of these assets. The booms and the subsequent busts in Thailand and Hong Kong and Indonesia and then in Russia feature the same pattern of cash flows.

The third criticism is that there can be no bubbles because market prices always reflect the economic fundamentals, and that sharp declines in asset prices usually reflect 'policy switching' by government or central banks. Those who take this position suggest that the alleged bubble appears to be the result of herd behavior, positive feedback or bandwagon effects—credulous suckers following smart insiders. These critics suggest that the model is 'misspecified,' that is, that something was going on not taken into account by the theory, and that more research is called for.[6] Some of the research ignored by those with this belief is offered in this book.

A more cogent attack on the Minsky model was by Alvin Hansen who claimed that the model was relevant prior to the middle of the nineteenth century but ceased to be so because of changes in the institutional environment.

> Theories based on uncertainty of the market, on speculation in commodities, on 'overtrading,' on the excesses of bank credit, on the psychology of traders and merchants, did indeed reasonably fit the early 'mercantile' or commercial phase of modern capitalism. But as the nineteenth century wore on, captains of industry... became the main outlets for funds seeking a profitable return through savings and investments.[7]

Hansen—who was a foremost expositor of the Keynesian model of the business cycle and especially of persistent high levels of unemployment—sought to explain the business cycle and wanted to downplay the significance of alternative explanations for changes in the level of economic activity. Hansen's emphasis on the importance of the relation between savings and investment does not require the rejection of the view that changes in the supply of credit can have important impacts on the prices of securities and the level of economic activity.

The model's relevance today

The Minsky model can be readily applied to the foreign exchange market and to periods of overvaluation and undervaluation of national currencies that are associated with 'overshooting' and 'undershooting.' Changes in the foreign exchange values of national currencies have been large relative to long-run equilibrium values despite sizable intervention in the market by central banks. Speculation in foreign currencies has resulted in large losses for some firms and some banks while others have made substantial trading profits.[8]

Consider the growth in the external debt of Mexico, Brazil, Argentina, and the other developing countries from $125 billion in 1972 to $800 billion in 1982; bank loans to these countries increased at the rate of 30 percent a year and the total external debt of these countries was increasing at the rate of 20 percent a year. The bank loans generally had a maturity of eight years and interest rates were floating and set with a specified markup over the LIBOR, the London Interbank Offer Rate. An

average of the interest rates was about 8 percent although they tended to increase throughout the decade. The cash that borrowers received from new loans was substantially larger than the interest payments on their outstanding loans, so in effect they incurred no burden or hardship in making their debt service payments on a timely basis.

The inflow of foreign funds led to a real appreciation of the currencies of the capital-importing countries which was necessary so that the increase in their trade and current account deficits would more or less match the increase in their capital account surpluses. Obviously at some future date the inflow of cash from new loans would decline below the interest payments on the outstanding loans, and at that time the foreign exchange value of their currencies would decline; the counterpart of the decline in the capital inflow was that these countries would need trade and current account surpluses to get some of the cash necessary to pay the interest to their foreign creditors. Most of these borrowers effectively defaulted on their loans when the lenders stopped making new loans. The cost to the lenders of these defaults has been estimated at $250 billion in the form of the reduction in the face value of the loans and what in effect was a reduction in the interest rates. The lenders had failed to ask the question 'Where will the borrowers get the cash to pay us the interest if we stop supplying them with the cash in the form of new loans?'

During the 1980s real estate prices in Japan increased by a factor of ten and stock prices by a factor of six or seven; in the second half of the decade Japan experienced an economic boom. The rates of return earned by real estate investors appeared to be about 30 percent a year. Business firms recognized that the profit rate on real estate investment was substantially higher than the profit rate from making steel or automobiles or TV sets and so they became large investors in real estate using money borrowed from the banks. Real estate prices were increasing many times more rapidly than rents. At some stage, the net rental income declined below the interest payments on the funds borrowed to buy the real estate and so the borrowers had a 'negative carry.' The borrowers might obtain the funds to make the interest payments by increasing their loans against some of the properties that they already owned. At the beginning of 1990, the incoming governor of the Bank of Japan instructed the banks to limit the growth in new real estate loans as a share of their total loans. Once the bank loans for real estate began to increase at 5 or 6 percent a year rather than 30 percent a year, some of the firms and investors that needed the cash from new loans to pay the interest on the

outstanding loans were no longer able to obtain new loans. They sold real estate and the bubble began to implode.

The current U.S. international financial position in some ways parallels that of Mexico, Brazil, and Argentina in the 1970s. These countries had unsustainably large current account deficits and obtained the cash to pay the interest to their foreign creditors from the foreign creditors. The implication is that the U.S. external payments position is not sustainable.

This book is a study in financial history, not economic forecasting. Investors seem not to have learned from experience.