Crises have been a feature of the financial landscape for hundreds of years. They often appear with little warning, as the sub-prime mortgage crisis of 2007 and the Asian crisis of 1997-1998 illustrate. It's not always clear what causes crises, whether they can be avoided and how their impact can be reduced. A recent book, titled Understanding Financial Crises (Oxford University Press), by Wharton finance professor Franklin Allen and Douglas Gale, a professor of economics at New York University, tackles this subject from a number of different angles. The authors review the history of financial crises in addition to offering their own approach to examining the underlying causes. Allen and Gale also discuss asset price volatility, the interaction between banks and markets, bubbles and financial contagion, among other topics. Below is an excerpt from the book.

What happened in Asia in 1997? Countries such as South Korea, Thailand, Indonesia, Singapore and Hong Kong whose economies had previously been the envy of the world experienced crises. Banks and other financial intermediaries were put under great strain and in many cases collapsed. Stock markets and currencies plunged. Their real economies were severely affected and their GDPs fell significantly. What were the causes of these dramatic events?

To many people these crises were a new phenomenon. There had been crises in other countries such as Mexico and Brazil but these could be attributed to inconsistent government macroeconomic policies. In those cases taxes were too small relative to government expenditures to maintain a fixed exchange rate. This was not the case for the Asian crisis. Other causes were looked for and found. The institutions in these countries were quite different from those in the U.S. Many had bank-based financial systems. There was little transparency either for banks or corporations. Corporate governance operated in a quite different way. In many cases it did not seem that managers' interests were aligned with those of shareholders. In some countries, such as Indonesia, corruption was rife. These factors were seen by many as the cause of the crises. However, they had all been present during the time that these countries were so successful.

Others blamed guarantees to banks and firms by governments or implicit promises of "bail-outs" by organizations such as the International Monetary Fund (IMF). Rather than inconsistent macroeconomic policies being the problem, bad microeconomic policies were the problem. Either way it was governments and international organizations that were to blame.

In this book we argue that it is important not to take too narrow a view of crises. They are nothing new. They have not been restricted to emerging economies even in recent times. The Scandinavian crises of the early 1990s are examples of this. Despite having sophisticated economies and institutions, Norway, Sweden and Finland all had severe crises. These were similar in many ways to what happened in the Asian crises of 1997. Banks collapsed, asset prices plunged, currencies came under attack and their value fell. Output was severely affected.

Taking an historical view, the period from 1945 to 1971 was exceptional. There were no banking crises
anywhere in the world, apart from one in Brazil in 1962. There were currency crises when exchange rates were pegged at the wrong levels but that was all. Going back to the first half of the twentieth century and before, there were many examples of financial crises. The stock market crash of 1929, the banking crises of the early 1930s and the Great Depression was one of the most dramatic episodes. There were many others, particularly in the U.S. in the last half of the nineteenth century when it had no central bank. In Europe, crises were much less frequent. The Bank of England had learned to prevent crises and the last one there (prior to the recent Northern Rock episode) was the Overend & Gurney crisis of 1866. Other central banks also learned to prevent crises and their incidence was significantly reduced. Prior to that, crises were endemic in Europe as well.

Particularly after the experience of the Great Depression in the period prior to 1945-1971, crises were perceived as a market failure. It was widely agreed they must be avoided at all costs. The reform of the Federal Reserve System in the early 1930s and the extensive regulation of the financial system that was put in place in the U.S. were part of this mindset. In other countries financial regulation went even farther. Governments controlled the allocation of funds to different industries through state-owned banks or heavily regulated banks. This extensive regulation was the cause of the virtual disappearance of banking crises from 1945 to 1971.

However, the elimination of crises came at a cost. Because of the extensive regulation and government intervention, the financial system ceased to perform its basic function of allocating investment. There were many inefficiencies as a result. This led to calls for deregulation and the return of market forces to the allocation of investment. As a result, crises have returned.

**Crises in Different Eras**

Bordo [and others] have addressed the question of how recent crises such as the European Monetary System Crisis of 1992-93, the Mexican crisis of 1994-5, the Asian crisis of 1997-98, the Brazilian crisis of 1998, the Russian crisis of 1998, and the Argentinian crisis of 2001 compare with earlier crises. They identify four periods:

1. Gold Standard Era 1880-1913
2. The Interwar Years 1919-1939
4. Recent Period 1973-1997

As we shall see, there are a number of similarities between the periods but also some important differences. They consider 21 countries for the first three periods and then, for the recent period, give data for the original 21 as well as an expanded group of 56.

The first issue is how to define a crisis. They define a banking crisis as financial distress that is severe enough to result in the erosion of most or all of the capital in the banking system. A currency crisis is defined as a forced change in parity, abandonment of a pegged exchange rate or an international rescue. The second issue is how to measure the duration of a crisis. To do this, they compute the trend rate of GDP growth for five years before. The duration of the crisis is the amount of time before GDP growth returns to its trend rate. Finally, the depth of the crisis is measured by summing the output loss relative to trend for the duration of the crisis.

With regard to the frequency of crises in the four periods, comparing the data with the original 21 countries, the interwar years are the worst. This is perhaps not surprising given that this was when the Great Depression occurred. Banking crises were particularly prevalent during this period relative to the other periods.

The Bretton Woods period is very different from the other periods. After the Great Depression, policymakers in most countries were so determined not to allow such an event to happen again that they imposed severe regulations or brought the banks under state control to prevent them from taking much risk. As a result banking crises were almost completely eliminated. There was one twin crisis in Brazil in 1962, but apart from that, there were no other banking crises during the entire period. There were
frequent currency crises but as we have seen, these were mostly situations where macroeconomic policies were inconsistent with the level of the fixed exchange rates set in the Bretton Woods system.

Interestingly the most benign period was the Gold Standard Era from 1880-1913. Here banking crises did occur but were fairly limited, and currency and twin crises were limited compared to subsequent periods. Since the global financial system was fairly open at this time, the implication is that globalization does not inevitably lead to crises.

The recent period is not as bad as the interwar period but is nevertheless fairly bad. Banking and twin crises with both banking and currency crises are more frequent than in every period except the interwar years, and currency crises are much more frequent. This is especially true if the sample of 56 countries is used as the basis of comparison rather than the 21 countries used in the other periods. The countries that are added to create the larger sample are mostly emerging countries. This suggests that emerging countries are more prone to crises and particularly to currency crises.

In recent years, emerging countries have been particularly prone to currency crises and twin crises. During the Interwar period, it was the industrial countries that were particularly hard hit by crises. They were actually more prone to currency and twin crises than the emerging countries. Recessions with crises have a much higher loss of GDP than recessions without crises. This was particularly true in the interwar period. Also the average recovery time is somewhat higher in recessions with crises rather than recessions without crises.

Some Recent Crises

Now that we have seen a comparison of recent crises with crises in other eras, it is perhaps helpful to consider some of the more recent ones in greater detail. We start with those that occurred in Scandinavia in the early 1990s.

The Scandinavian Crises

Norway, Finland and Sweden experienced a classic boom-bust cycle that led to twin crises. In Norway, lending increased by 40 percent in 1985 and 1986. Asset prices soared while investment and consumption also increased significantly. The collapse in oil prices helped burst the bubble and caused the most severe banking crisis and recession since the war. In Finland an expansionary budget in 1987 resulted in massive credit expansion. Housing prices rose by a total of 68 percent in 1987 and 1988. In 1989, the central bank increased interest rates and imposed reserve requirements to moderate credit expansion. In 1990 and 1991, the economic situation was exacerbated by a fall in trade with the Soviet Union. Asset prices collapsed, banks had to be supported by the government and GDP shrank by 7 percent. In Sweden, a steady credit expansion through the late 1980s led to a property boom. In the fall of 1990, credit was tightened and interest rates rose. In 1991, a number of banks had severe difficulties because of lending based on inflated asset values. The government had to intervene and a severe recession followed.

Japan

In the 1980s, the Japanese real estate and stock markets were affected by a bubble. Financial liberalization throughout the 1980s and the desire to support the United States dollar in the latter part of the decade led to an expansion in credit. During most of the 1980s, asset prices rose steadily, eventually reaching very high levels. For example, the Nikkei 225 index was around 10,000 in 1985. On December 19, 1989, it reached a peak of 38,916. A new Governor of the Bank of Japan, less concerned with supporting the U.S. dollar and more concerned with fighting inflation, tightened monetary policy, which led to a sharp increase in interest rates in early 1990. The bubble burst. The Nikkei 225 fell sharply during the first part of the year and by October 1, 1990, it had sunk to 20,222. Real estate prices followed a similar pattern. The next few years were marked by defaults and retrenchment in the financial system. Three big banks and one of the largest four securities firms failed. The real economy was adversely affected by the aftermath of the bubble and growth rates during the 1990s and 2000's have mostly been slightly positive or negative, in contrast to most of the post war period when they were much higher. Using the average growth rate of GDP of 4 percent from 1976-1991, the difference between trend GDP and actual GDP from 1992-1998 is around ¥340 trillion or about 68 percent of GDP.
The Asian Crisis

From the early 1950s until the eve of the crisis in 1997, the 'Dragons' (Hong Kong, Singapore, South Korea, and Taiwan) and the 'Tigers' (Indonesia, Malaysia, the Philippines, and Thailand) were held up as models of successful economic development. Their economies grew at high rates for many years. After sustained pressure, the Thai central bank stopped defending the baht on July 2, 1997, and it fell 14 percent in the onshore market and 19 percent in the offshore market. This marked the start of the Asian financial crisis.

The next currencies to come under pressure were the Philippine peso and the Malaysian ringgit. The Philippine central bank tried to defend the peso by raising interest rates, but it nevertheless lost $1.5 billion of foreign reserves. On July 11, it let the peso float and it promptly fell 11.5 percent. The Malaysian central bank also defended the ringgit until July 11 before letting it float. The Indonesian central bank defended the rupee until August 14.

The Dragons were also affected. At the beginning of August, Singapore decided not to defend its currency and by the end of September it had fallen 8 percent. Taiwan also decided to let their currency depreciate and was not much affected. Hong Kong's exchange rate, which was pegged to the dollar, came under attack. However, it was able to maintain the peg. Initially, the South Korean won appreciated against the other South East Asian currencies. However, in November it lost 25 percent of its value. By the end of December 1997, which marked the end of the crisis, the dollar had appreciated by 52, 52, 78, 107, and 151 percent against the Malaysian, Philippine, Thai, South Korean, and Indonesian currencies, respectively.

Although the turbulence in the currency markets was over by the end of 1997, the real effects of the crisis continued to be felt throughout the region. Many financial institutions and industrial and commercial firms went bankrupt and output fell sharply. Overall, the crisis was extremely painful for the economies involved.

The Russian Crisis and Long Term Capital Management (LTCM)

In 1994, John Meriwether, who had previously worked for Salomon Brothers and had been a very successful bond trader, founded LTCM. In addition to Meriwether, the other partners included two Nobel-prize winning economists, Myron Scholes and Robert Merton, and a former vice-chairman of the Federal Reserve Board, David Mullins. The fund had no problem raising $1.3 billion initially.

The fund's main strategy was to make convergence trades. These involved finding securities whose returns were highly correlated but whose prices were slightly different. The fund would then short (i.e. borrow) the one with the high price and use the proceeds to go long in the one with the low price. The convergence trades that were taken included the sovereign bonds of European countries that were moving towards European Monetary Union, and on-the-run and off-the-run U.S. government bonds. Since the price differences were small, the strategy involved a large amount of borrowing. For example, at the beginning of 1998, the firm had equity of about $5 billion and had borrowed over $125 billion.

In the first two years the fund was extremely successful and earned returns for its investors of around 40 percent. However, 1997 was not as successful, with a return of 27 percent, which was about the same as the return on equities that year. By this time, LTCM had about $7 billion under management. Meriwether decided to return about $2.7 billion to investors as they were not able to earn high returns with so much money under management.

On August 17, 1998, Russia devalued the rouble and declared a moratorium on about 281 billion roubles ($13.5 billion) of government debt. Despite the small scale of the default, this triggered a global crisis with extreme volatility in many financial markets. Many of the convergence trades that LTCM had made started to lose money as the flight to quality caused prices to move in unexpected directions. By September 22, 1998, the value of LTCM's capital had fallen to $600 million. Goldman Sachs, AIG, and Warren Buffett offered to pay $250 million to buy out the partners and to inject $4 billion into the business so that it would not be forced to sell out its positions. Eventually, the Federal Reserve Bank of New York coordinated a rescue whereby the banks that had lent significant amounts to LTCM would put $3.5 million for 90 percent of the equity of the fund and take over the management of the portfolio. The
reason the Fed did this was to avoid the possibility of a meltdown in global asset markets and the systemic crisis that would follow.

The Argentina Crisis of 2001-2002

During the 1970s and 1980s, Argentina's economy did poorly. It had a number of inflationary episodes and crises. In 1991, it introduced a currency board that pegged the Argentinian peso at a one-to-one exchange rate with the dollar. This ushered in a period of low inflation and economic growth. Despite these favorable developments, a number of weaknesses developed during this period, including an increase in public sector debt and a low share of exports in output and a high concentration of these in a limited number of sectors.

In the last half of 1998, a number of events, including the crisis in Brazil and the resulting devaluation and the Russian crisis, triggered a sharp downturn in Argentina's economy. The public debt the government had accumulated limited the amount of fiscal stimulation that the government could undertake. Also the currency board meant that monetary policy could not be used to stimulate the economy. The recession continued to deepen. At the end of 2001, it began to become clearer that Argentina's situation was not sustainable. The government tried to take a number of measures to improve the situation, such as modifying the way that the currency board operated. Exporters were subject to an exchange rate that was subsidized and importers paid a tax. The effect of these kinds of measures was to lower confidence rather than raise it. Despite an agreement with the IMF in September 2001 to inject funds of $5 billion immediately and the prospect of another $3 billion subsequently, the situation continued to worsen. There were a number of attempts to restructure the public debt but again, this did not restore confidence.

During November 28 to 30, there was a run on private sector deposits. The government then suspended convertibility in the sense that it imposed a number of controls, including a weekly limit of 250 pesos on the amount that could be withdrawn from banks. In December 2001, the economy collapsed. Industrial production fell 18 percent year-on-year. Imports fell by 50 percent and construction fell 36 percent. In January 2002, the fifth president in three weeks introduced a new currency system. This involved multiple exchange rates depending on the type of transaction. In February, the peso was allowed to float and it soon fell to 1.8 pesos to the dollar.

Overall, the crisis was devastating. Real GDP fell by about 11 percent in 2002 and inflation in April 2002 went to 10 per cent a month. The government defaulted on its debt. The economy started to recover in 2003 and has done well since then.

Theories of Crises

The contrast between the majority view concerning the cause of crises in the 1930s and the view of many today is striking. In the 1930s, the market was the problem and government intervention through regulation or direct ownership of banks was the solution. Today many argue that inconsistent government macroeconomic policies or moral hazard in the financial system caused by government guarantees is at the root of recent crises. Here the view is that government is the cause of crises and not the solution. Market forces are the solution.

The aim of this book is to provide some perspective on this debate by developing a theoretical approach to analyze financial crises. In each chapter we develop the basic ideas and then provide a brief account of the theoretical and empirical literature on the topic.

We start in Chapter 2 with some background material. Chapter 3 considers intermediation. Chapter 4 investigates the operation of asset markets where asset price volatility is driven by liquidity shocks. Rather than just focusing on banks as in Chapter 3, or on markets as in Chapter 4, in Chapter 5 the interaction of banks and markets is considered. It is shown that small events can trigger a large effect so there is financial fragility as in the Russian Crisis of 1998. While in Chapters 3-5 the focus is on understanding the positive aspects of how various types of crisis can arise, in Chapter 6 we develop a general framework for understanding the normative aspects of crises. The model is a benchmark for investigating the welfare properties of financial systems. Having identified when there is a market failure, the natural question that follows is whether there exist policies that can correct the undesirable
effects of such failures. This is the topic of Chapter 7. Chapter 8 considers the effect of allowing for money and the denomination of debt and other contracts in nominal terms. The final two chapters in the book consider two forms of crisis that appear to be particularly important. In many instances, financial crises occur after a bubble in asset prices collapses. How these bubbles form and collapse and their effect on the financial system is the subject of Chapter 9. Contagion through interbank markets is the subject matter of Chapter 10.