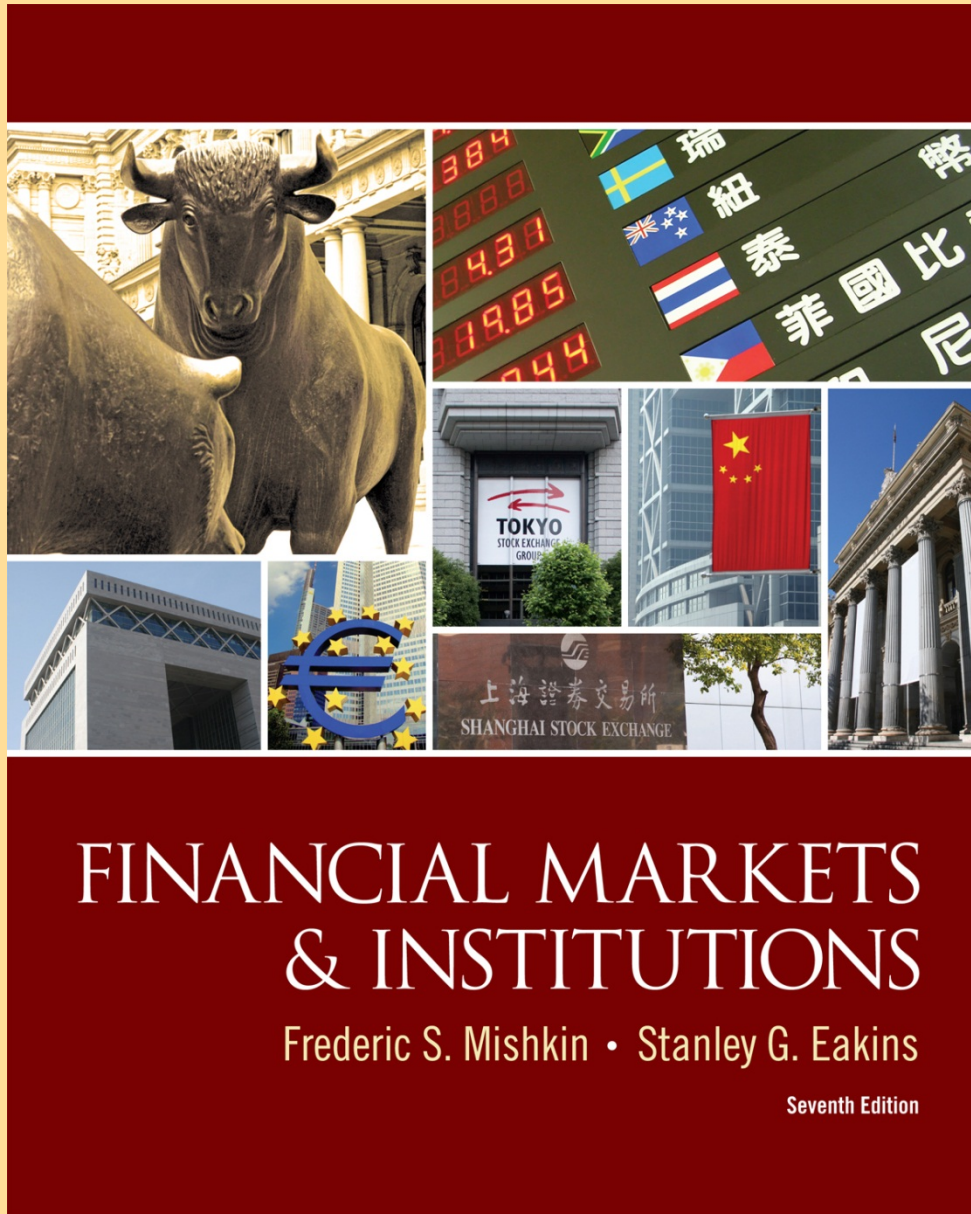


CHAPTER 8

Why Do Financial Crises Occur and Why Are They So Damaging to the Economy?



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Chapter Preview

Financial crises are major disruptions in financial markets characterized by sharp declines in asset prices and firm failures. Beginning in August 2007, the U.S. entered into a crisis that was described as a “once-in-a-century credit tsunami.”



Chapter Preview

Why did this financial crisis occur? Why have financial crises been so prevalent throughout U.S. history, as well as in so many other countries, and what insights do they provide on the current crisis? Why are financial crises almost always followed by severe contractions in economic activity? We will examine these questions in this chapter.



Chapter Preview

In this chapter, we develop a framework to understand the dynamics of financial crises. Topics include:

- Asymmetric Information and Financial Crises
- Dynamics of Financial Crises in Advanced Economies
- Dynamics of Financial Crises in Emerging Market Economies



Asymmetric Information and Financial Crises

- In chapter 7, we discussed how a functioning financial system is critical to a robust economy.
- However, both moral hazard and adverse selection are still present. The study of these problems (agency theory) is the basis for understanding and defining a financial crisis.

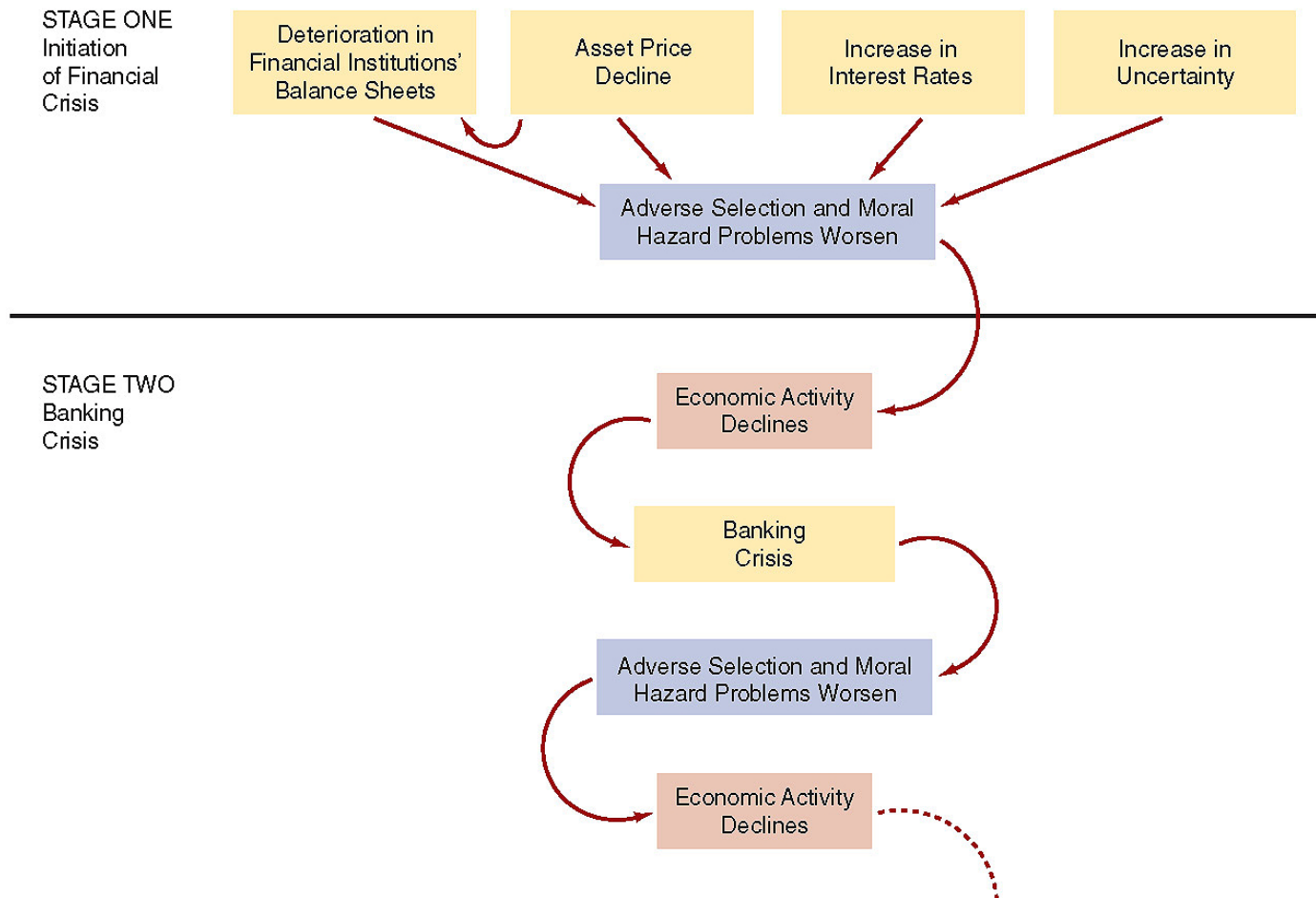


Dynamics of Financial Crises in Advanced Economies

- The dynamics of financial crises in emerging market economies have many of the same elements as those found in advanced countries like United States
- However, there are some important differences.
- The next slide outlines the key stages.



Sequence of Events in U.S. Financial Crises (a)





Sequence of Events in U.S. Financial Crises (b)

STAGE THREE
Debt
Deflation

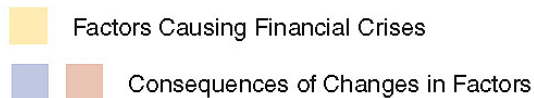
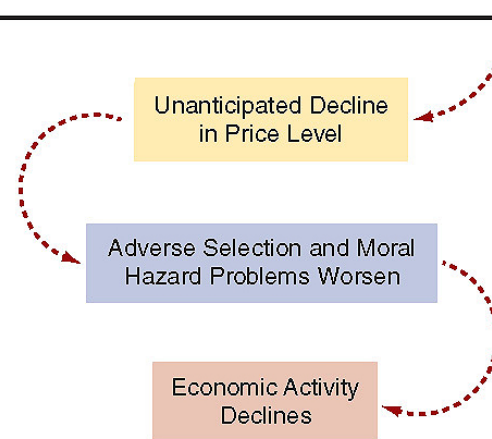


FIGURE 8.1 Sequence of Events in U.S. Financial Crises

The solid arrows in Stages One and Two trace the sequence of events in a typical financial crisis; the dotted arrows show the additional set of events that occur if the crisis develops into a debt deflation, Stage Three in our discussion.



Stage One: Initiation

Financial crisis can begin in several ways:

- mismanagement of financial liberalization or innovation
- asset price booms and busts
- a general increase in uncertainty caused by failures of major financial institutions



Stage One: Initiation

- The seeds of a financial crisis can begin with **mismanagement of financial liberalization or innovation**:
 - elimination of restrictions
 - introduction of new types of loans or other financial products
- Either can lead to a credit boom, where risk management is lacking.



Stage One: Initiation

- Government safety nets weaken incentives for risk management. Depositors ignore bank risk-taking.
- Eventually, loan losses accrue, and asset values fall, leading to a reduction in capital.
- Financial institutions cut back in lending, a process called **deleveraging**. Banking funding falls as well.



Stage One: Initiation

- As FIs cut back on lending, no one is left to evaluate firms. The financial system loses its primary institution to address adverse selection and moral hazard.
- Economic spending contracts as loans become scarce.



Stage One: Initiation

A financial crisis can also begin with an **asset pricing boom and bust**:

- A pricing bubble starts, where asset values exceed their fundamental prices.
- When the bubble bursts and prices fall, corporate net worth falls as well. Moral hazard increases as firms have little to lose.
- FIs also see a fall in their assets, leading again to deleveraging.



Stage One: Initiation

Finally, a financial crisis can begin with a **spike in interest rates** or an **increase in uncertainty**:

- Many 19th century crises initiated with a spike in rates, due to a liquidity problems or panics
- Moral hazard also increases as loan repayment becomes more uncertain
- Other periods of high uncertainty can lead to crises, such as stock market crashes or the failure of a major financial institution



Stage Two: Banking Crisis

Deteriorating balance sheets lead financial institutions into insolvency. If severe enough, these factors can lead to a **bank panic**.

- Panics occur when depositors are unsure which banks are insolvent, causing all depositors to withdraw all funds immediately
- As cash balances fall, FIs must sell assets quickly, further deteriorating their balance sheet
- Adverse selection and moral hazard become severe – it takes years for a full recovery



Stage Three: Debt Deflation

If the crisis also leads to a sharp decline in prices, **debt deflation** can occur, where asset prices fall, but debt levels do not adjust, increases debt burdens.

- Debt levels are typically fixed, not indexed to asset values
- Price level drops lead to an increase in adverse selection and moral hazard, which is followed by decreased lending
- Economic activity remains depressed for a long time.



Case: The Great Depression

- In 1928 and 1929, stock prices doubled in the U.S. The Fed tried to curb this period of excessive speculation with a tight monetary policy. But this led to a collapse of more than 60% in October of 1929.
- Further, between 1930 and 1933, one-third of U.S. banks went out of business as agricultural shocks led to bank failures



Stock Market Prices During The Great Depression



FIGURE 8.2 Stock Price Data During the Great Depression Period

Stock prices crashed in 1929, falling by more than 60%, and then continued to fall to only 10% of their peak value by 1932.

Source: Dow-Jones Industrial Average (DJIA), <http://lib.stat.cmu.edu/datasets/djdc0093>.



Case: The Great Depression

Adverse selection and moral hazard in credit markets became severe. Firms with productive uses of funds were unable to get financing. As seen in the next slide, credit spreads increased from 2% to nearly 8% during the height of the Depression.



Credit Spreads During The Great Depression

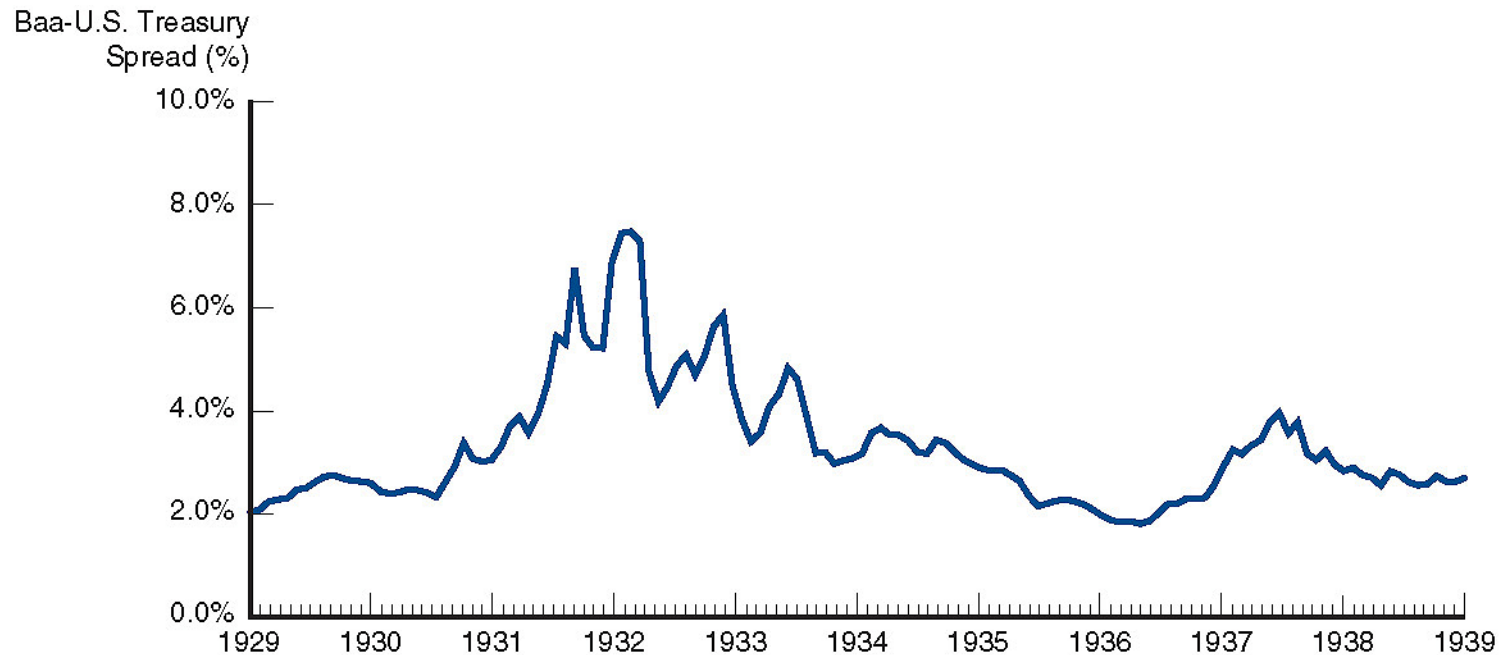


FIGURE 8.3 Credit Spreads During the Great Depression

Credit spreads (the difference between rates on Baa corporate bonds and U.S. Treasury bonds) rose sharply during the Great Depression.

Source: Federal Reserve Bank of St. Louis FRED database, <http://research.stlouisfed.org/fred2/categories/22>.



Case: The Great Depression

- The deflation during the period lead to a 25% decline in price levels.
- The prolonged economic contraction lead to an unemployment rate around 25%.
- The Depression was the worst financial crisis ever in the U.S. It explains why the economic contraction was also the most severe ever experienced by the nation.



Case: The 2007–2009 Financial Crisis

We begin our look at the 2007–2009 financial crisis by examining three central factors:

- financial innovation in mortgage markets
- agency problems in mortgage markets
- the role of asymmetric information in the credit rating process



Case: The 2007–2009 Financial Crisis

Financial innovation in mortgage markets developed along a few lines:

- Less-than-credit worthy borrowers found the ability to purchase homes through subprime lending, a practice almost nonexistent until the 2000s
- Financial engineering developed new financial products to further enhance and distribute risk from mortgage lending



Case: The 2007–2009 Financial Crisis

Agency problems in mortgage markets also reached new levels:

- Mortgage originators did not hold the actual mortgage, but sold the note in the secondary market
- Mortgage originators earned fees from the volume of the loans produced, not the quality
- In the extreme, unqualified borrowers bought houses they could not afford through either creative mortgage products or outright fraud (such as inflated income)



Case: The 2007–2009 Financial Crisis

Finally, the rating agencies didn't help:

- Agencies consulted with firms on structuring products to achieve the highest rating, creating a clear conflict
- Further, the rating system was hardly designed to address the complex nature of the structured debt designs
- The result was meaningless ratings that investors had relied on to assess the quality of their investments



Case: The 2007–2009 Financial Crisis

Many suffered as a result of the 2007–2009 financial crisis. We will look at five areas:

- U.S. residential housing
- FIs balance sheets
- The “shadow” banking system
- Global financial markets
- The failure of major financial firms



Case: The 2007–2009 Financial Crisis

- Initially, the housing boom was lauded by economists and politicians. The housing boom helped stimulate growth in the subprime market as well.
- However, underwriting standard fell. People were clearly buying houses they could not afford, except for the ability to sell the house for a higher price.



Case: The 2007–2009 Financial Crisis

- Lending standards also allowed for near 100% financing, so owners had little to lose by defaulting when the housing bubble burst.
- The next slide shows the rise and fall of housing prices in the U.S. The number of defaults continues to plague the U.S. banking system



Housing Prices: 2002–2010

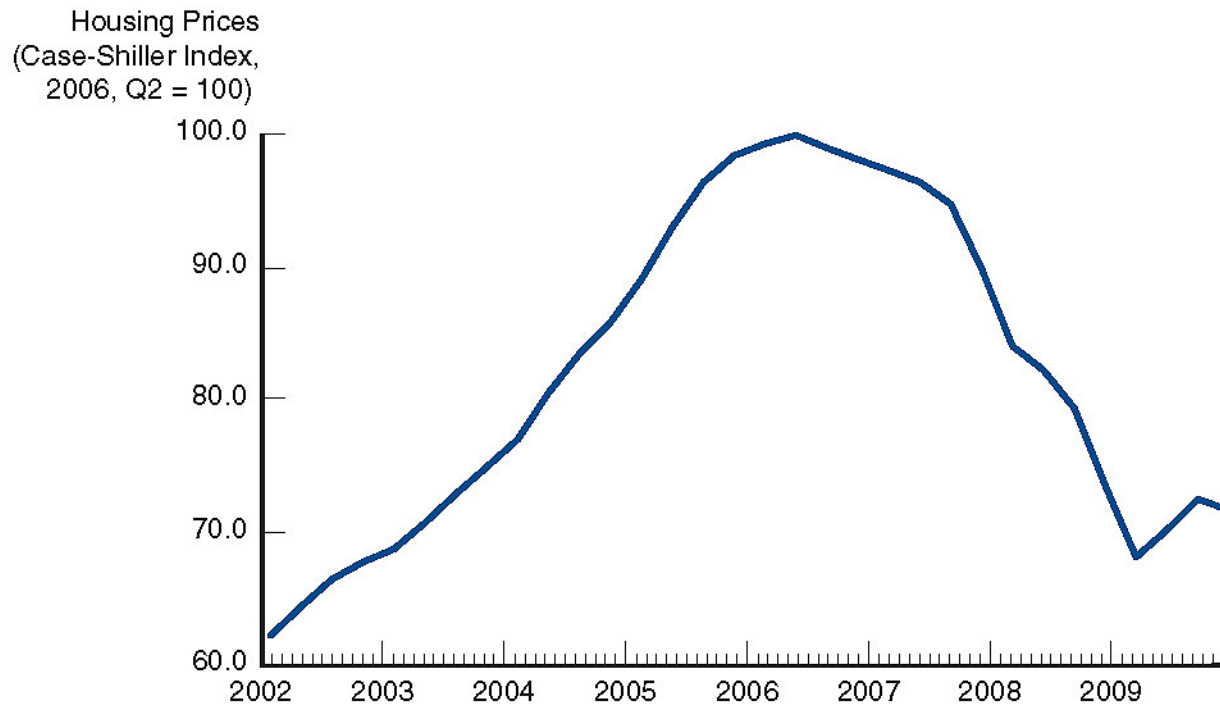


FIGURE 8.4 Housing Prices and the Financial Crisis of 2007–2009

Housing prices boomed from 2002 to 2006, but then fell by more than 25% subsequently.

Source: Adapted from Case-Shiller U.S. national composite house price index, available from http://www.macromarkets.com/csi_housing/index.asp.



Was the Fed to Blame for the Housing Price Bubble?

- Some argue that low interest rates from 2003 to 2006 fueled the housing bubble.
- In early 2009, Mr. Bernanke rebutted this argument. He argued rates were appropriate.
- He also pointed to new mortgage products, relaxed lending standards, and capital inflows as more likely causes.



Case: The 2007–2009 Financial Crisis

- As mortgage defaults rose, banks and other FIs saw the value of their assets fall. This was further complicated by the complexity of mortgages, CDOs, defaults swaps, and other difficult-to-value assets.
- Banks began the deleveraging process, selling assets and restricting credit, further depressing the struggling economy



Case: The 2007–2009 Financial Crisis

- The **shadow banking system** also experienced a run. These are the hedge funds, investment banks, and other liquidity providers in our financial system. When the short-term debt markets seized, so did the availability of credit to this system. This lead to further “fire” sales of assets to meet higher credit standards



Case: The 2007–2009 Financial Crisis

- As seen on the next two slides, the fall in the stock market and the rise in credit spreads further weakened both firm and household balance sheets.
- Both consumption and real investment fell, causing a sharp contraction in the economy.



Stock Prices: 2002–2010

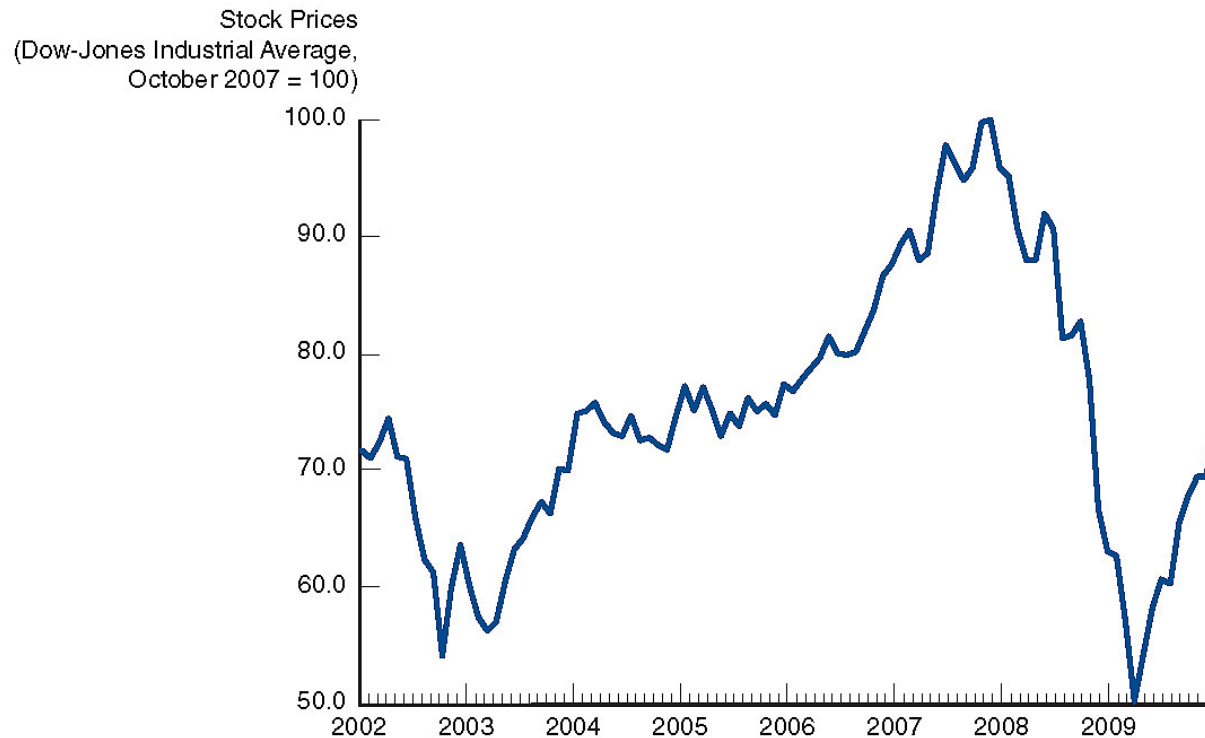


FIGURE 8.5 Stock Prices and the Financial Crisis of 2007–2009

Stock prices fell by 50% from October 2007 to March of 2009.

Source: Dow-Jones Industrial Average (DJIA), available at <http://finance.yahoo.com/q/hp?s=%5EDJI>.



Credit Spreads: 2002–2010

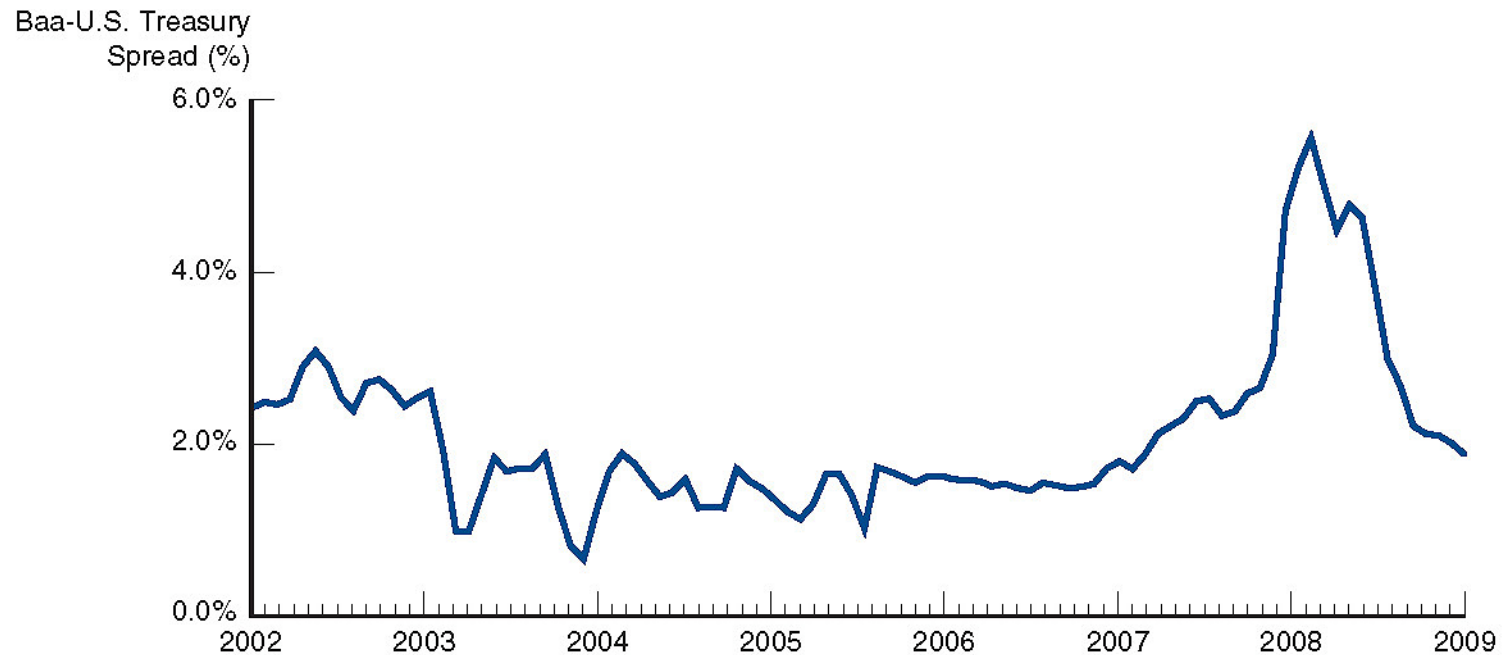


FIGURE 8.6 Credit Spreads and the 2007–2009 Financial Crisis

Credit spreads (the difference between rates on Baa corporate bonds and U.S. Treasury bonds) rose by more than 400 basis points (4 percentage points) during the crisis.

Source: Federal Reserve Bank of St. Louis FRED database, <http://research.stlouisfed.org/fred2/categories/22>.



Case: The 2007–2009 Financial Crisis

- Europe was actually first to raise the alarm in the crisis. With the downgrade of \$10 billion in mortgage related products, short term money markets froze, and in August 2007, a French investment house suspended redemption of some of its money market funds. Banks and firms began to hoard cash.



Case: The 2007–2009 Financial Crisis

- The end of credit lead to several bank failures.
- Northern Rock was one of the first, relying on short-term credit markets for funding. Others soon followed.
- By most standards, Europe experienced a more severe downturn than the U.S.



Case: The 2007–2009 Financial Crisis

Finally, the collapse of several high-profile U.S. investment firms only further deteriorated confidence in the U.S.

- March 2008: Bear Sterns fails and is sold to JP Morgan for 5% of its value only 1 year ago
- September 2008: both Freddie and Fannie put into conservatorship after heaving subprime losses.



Case: The 2007–2009 Financial Crisis

Finally, the collapse of several high–profile U.S. investment firms only further deteriorated confidence in the U.S.

- September 2008: Lehman Brothers files for bankruptcy. Merrill Lynch sold to Bank of America at “fire” sale prices. AIG also experiences a liquidity crisis.



Case: The 2007–2009 Financial Crisis

The crisis and impaired credit markets have caused the worst economic contraction since World War II. The fall in real GDP and increase in unemployment to over 10% in 2009 impacted almost everyone.



Global: Ireland and the 2007–2009 Financial Crisis

- From '95–'07, Ireland had a booming economy, with 6.3% average annual real GDP growth.
- But, rising real estate prices and a boom in mortgage lending were laying the groundwork for a recession.
- Housing prices doubled twice from 1995 to 2007, while construction was 13% of GDP



Global: Ireland and the 2007–2009 Financial Crisis

- Houses prices then fell by 20% in 2007
- Banks were hit hard, with high exposure to real estate and reliance on short-term funding from money markets
- The Irish government nationalized a large bank, and guaranteed all deposits in an effort to control the recession



Global: Ireland and the 2007–2009 Financial Crisis

- Unemployment rose from 4.5% to 12.5%
- GDP fell by more than 10%, and aggregate price levels fell
- Like the U.S., budget deficits rose, and tax increases followed to overset the increase in spending

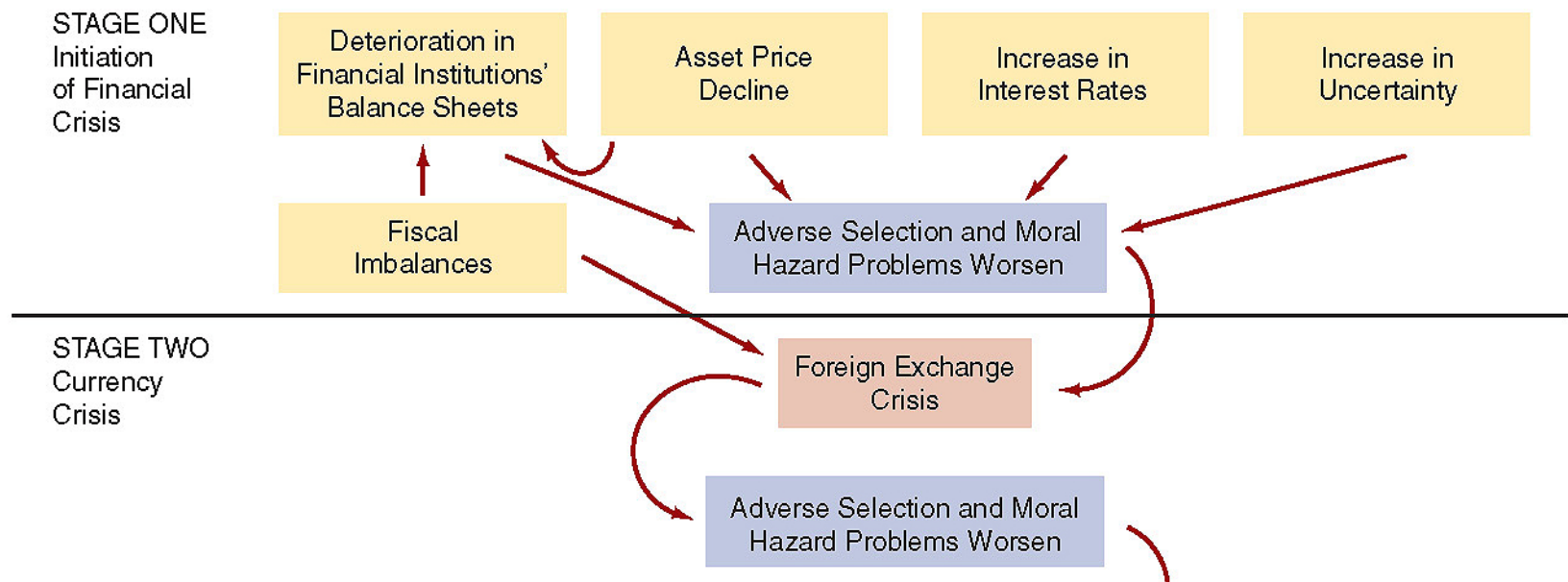


Dynamics of Financial Crises in Emerging Market Economies

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- The next slide outlines the key stages.



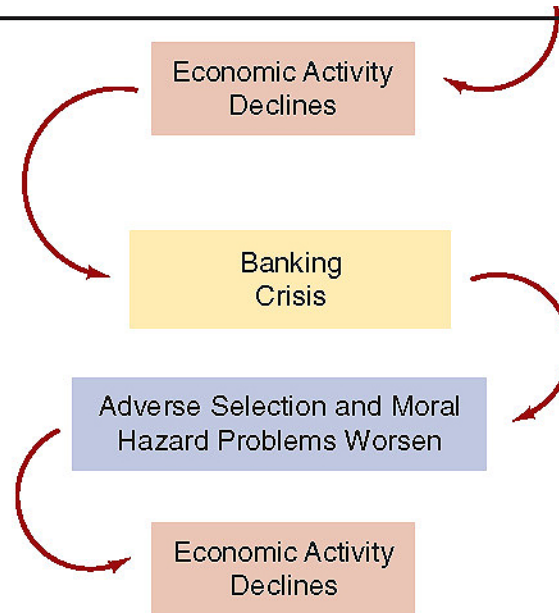
Emerging Market Financial Crisis: Sequence of Events (a)





Emerging Market Financial Crisis: Sequence of Events (b)

STAGE THREE
Full-Fledged
Financial
Crisis



- Factors Causing Financial Crises
- Consequences of Changes in Factors

FIGURE 8.7 Sequence of Events in Emerging Market Financial Crises

The arrows trace the sequence of events during financial crises.



Stage One: Initiation

Financial crises in emerging market countries develop along two basic paths:

- the mismanagement of financial liberalization or globalization
- severe fiscal imbalances



Stage One: Initiation

Crisis initiation involving the mismanagement of financial liberalization or globalization usually proceeds as follows:

- The country often starts with a solid fiscal policy
- A weak credit culture and capital inflows exasperate the credit boom that follows liberalization, leading to risky lending
- High loan losses eventually materialize



Stage One: Initiation

Crisis initiation involving the mismanagement of financial liberalization or globalization usually proceeds as follows:

- As bank balance sheets deteriorate, lending is cut back (more severe here since the rest of the economy is not as developed)
- A lending crash fully materializes



Stage One: Initiation

- Why does prudential regulation fail to stem a banking crisis? Is this different than the U.S. and other developed economies?
- The story is similar to the U.S., with various interests trying to prevent regulators from doing their jobs. However, in developing economies, these interest (business) probably have more power



Stage One: Initiation

Crisis initiation can also involve severe fiscal imbalances:

- The government faces a large deficit and either cajoles or forces banks to buy gov't bonds
- If confidence falls, the gov't bonds are sold by investors, leading to a price decline
- As a result, bank balance sheets deteriorate, and the usual lending freeze follows



Stage One: Initiation

Crisis initiation can also involve other factors:

- A rise in rates in developed economies can spill over into risk taking in developing countries (e.g., the Mexican crisis)
- Asset price declines are less severe, but certainly increase problems
- Unstable political systems create high levels of uncertainty, increasing agency conflicts



Stage Two: Currency Crisis

- The FX markets will soon start taking bets on the depreciation of the currency of the emerging market, in what is called a **speculative attack**. Over supply begins, the value of the currency falls, and a currency crisis ensues.



Stage Two: Currency Crisis

- The government can attempt to defend the home currency by raising interest rates. That should encourage capital inflows. However, banks must pay more to obtain funds, decreasing bank profitability, which may lead to insolvency.
- Speculators in the FX market know this. Mass sell-offs of the currency continue.



Stage Two: Currency Crisis

- The currency crisis can also result from a large fiscal imbalance. If investors in a country's debt suspect its inability to repay the loans, sell-offs will occur. This is accompanied by selling the domestic currency, again leading to a speculative attack on the currency.



Stage Three: Full Financial Crisis

- Many emerging market firm denominate their debt in U.S. dollars or yen. An unexpected currency devaluation increases their debt burden, leading to a decline in their net worth.
- This crisis, along with the currency crisis, leads the country into a full-fledged financial crisis.



Stage Three: Full Financial Crisis

- The currency collapse can also lead to higher inflation. The increase in interest rates again leads to lower firm cash flows and increased agency problems.
- Bank losses are inevitable as debtors are no longer able to meet interest obligations. Banks will likely fail as well.



Stage Three: Full Financial Crisis

With this framework in mind, we now turn to three actual financial crises in emerging economies:

- Mexico, 1994–1995
- East Asia, 1997–1998
- Argentina, 2001–2002



Case: Financial Crises in Emerging Market Countries

Mexico, East Asia, and Argentina

- The three countries show how a country can shift from a path of high growth just before a financial crises.
- An important factor was the deterioration in banks' balance sheets due to increasing loan losses.



Case: Financial Crises in Emerging Market Countries

- The Mexican and Argentine crises were also preceded by rising international interest rates. This led to increased rates in these countries, and an accompanying increase in information problems. Stock market declines were also in the mix; although in Asia, it occurred simultaneously instead of before the crisis.



Case: Financial Crises in Emerging Market Countries

- Argentina was particularly interesting. It had a well-supervised banking system (unlike Mexico and East Asia). The fiscal problems of the government weakened the banking system balance sheet when the government forced banks to take on gov't debt. Confidence in the government failed, and the banks' debt values (assets) fell dramatically.



Case: Financial Crises in Emerging Market Countries

- Full-blown speculative attacks developed in the foreign exchange for each of these countries:
 - Mexico tried to intervene by raising interest rates, but was forced to devalue the peso
 - The speculative attack on the baht successfully lead to its devaluation
- Foreign denominated debt worsened the situation. And a rise in inflation played out as we described.



Case: Financial Crises in Emerging Market Countries

The institutional structure of debt markets in Mexico and East Asia interacted with the currency devaluations to propel the economies into full-fledged financial crises. This negative shock was especially severe for Indonesia and Argentina, which saw the value of their currencies fall by more than 70%!



Case: Financial Crises in Emerging Market Countries

The sharp decline in lending helped lead to a collapse of economic activity, with real GDP growth falling sharply. Further deterioration in the economy occurred because the collapse in economic activity and the deterioration in the cash flow and balance sheets of both firms and households worsened banking crises.



Case: Financial Crises in Emerging Market Countries

- Mexico began to recover in 1996
- The crisis countries in East Asia tentatively began their recovery in 1999, with a stronger recovery later.
- Argentina was still in a severe depression in 2003, but subsequently the economy bounced back



Chapter Summary

- Asymmetric Information and Financial Crises: we revisited the ideas of embodied in agency theory as a framework to examine world financial crises.
- Dynamics of Financial Crises in Advanced Economies: We examined the stages of a crisis in an advanced economy. We further examined the '07–'09 U.S. Financial Crisis.



Chapter Summary (cont.)

- Dynamics of Financial Crises in Emerging Market Economies: Finally, we also examined the stages of a crisis in emerging economies, contrasting those with advanced economies. We examined actual crises in Mexico, East Asia, and Argentina.