

## Box 3

**Case Study of a Financial Crisis**

**The Great Depression.** Federal Reserve officials viewed the stock market boom of 1928 and 1929, during which stock prices doubled, as excessive speculation. To curb it, they pursued a tight monetary policy to raise interest rates. The Fed got more than it bargained for when the stock market crashed in October 1929.

Although the 1929 crash had a great impact on the minds of a whole generation, most people forget that by the middle of 1930, more than half of the stock market decline had been reversed. What might have been a normal recession turned into something far different, however, with adverse shocks to the agricultural sector, a continuing decline in the stock market after the middle of 1930, and a sequence of bank collapses from October 1930 until March 1933 in which over one-third of the banks in the United States went out of business (events described in more detail in Chapter 18).

The continuing decline in stock prices after mid-1930 (by mid-1932 stocks had declined to 10% of their value at the 1929 peak) and the increase in uncertainty from the unsettled business conditions created by the economic contraction made adverse selection and moral hazard problems worse in the

credit markets. The loss of one-third of the banks reduced the amount of financial intermediation. This intensified adverse selection and moral hazard problems, thereby decreasing the ability of financial markets to channel funds to firms with productive investment opportunities. As our analysis predicts, the amount of outstanding commercial loans fell by half from 1929 to 1933, and investment spending collapsed, declining by 90% from its 1929 level.

The short-circuiting of the process that kept the economy from recovering quickly, which it does in most recessions, occurred because of a fall in the price level by 25% in the 1930–1933 period. This huge decline in prices triggered a debt deflation in which net worth fell because of the increased burden of indebtedness borne by firms. The decline in net worth and the resulting increase in adverse selection and moral hazard problems in the credit markets led to a prolonged economic contraction in which unemployment rose to 25% of the labor force. The financial crisis in the Great Depression was the worst ever experienced in the United States, and it explains why this economic contraction was also the most severe one ever experienced by the nation.\*

\*See Ben Bernanke, "Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression," *American Economic Review* 73 (1983): 257–276, for a discussion of the role of asymmetric information problems in the Great Depression period.


**Application**

**Financial Crises in Emerging-Market Countries: Mexico, 1994–1995; East Asia, 1997–1998; and Argentina, 2001–2002**

In recent years, many emerging-market countries have experienced financial crises, the most dramatic of which were the Mexican crisis, which started in December 1994; the East Asian crisis, which started in July 1997; and the Argentine crisis, which started in 2001. An important puzzle is how a developing country can shift dramatically from a path of high growth before a financial crisis—as was true for Mexico and particularly the East Asian countries of Thailand, Malaysia, Indonesia, the Philippines, and South Korea—to a sharp decline in economic activity. We can apply our asymmetric information

analysis of financial crises to explain this puzzle and to understand the Mexican, East Asian, and Argentine financial situations.<sup>7</sup>

Because of the different institutional features of emerging-market countries' debt markets, the sequence of events in the Mexican, East Asian, and Argentine crises is different from that occurring in the United States in the nineteenth and twentieth centuries. Figure 4 diagrams the sequence of events that occurred in Mexico, East Asia, and Argentina.

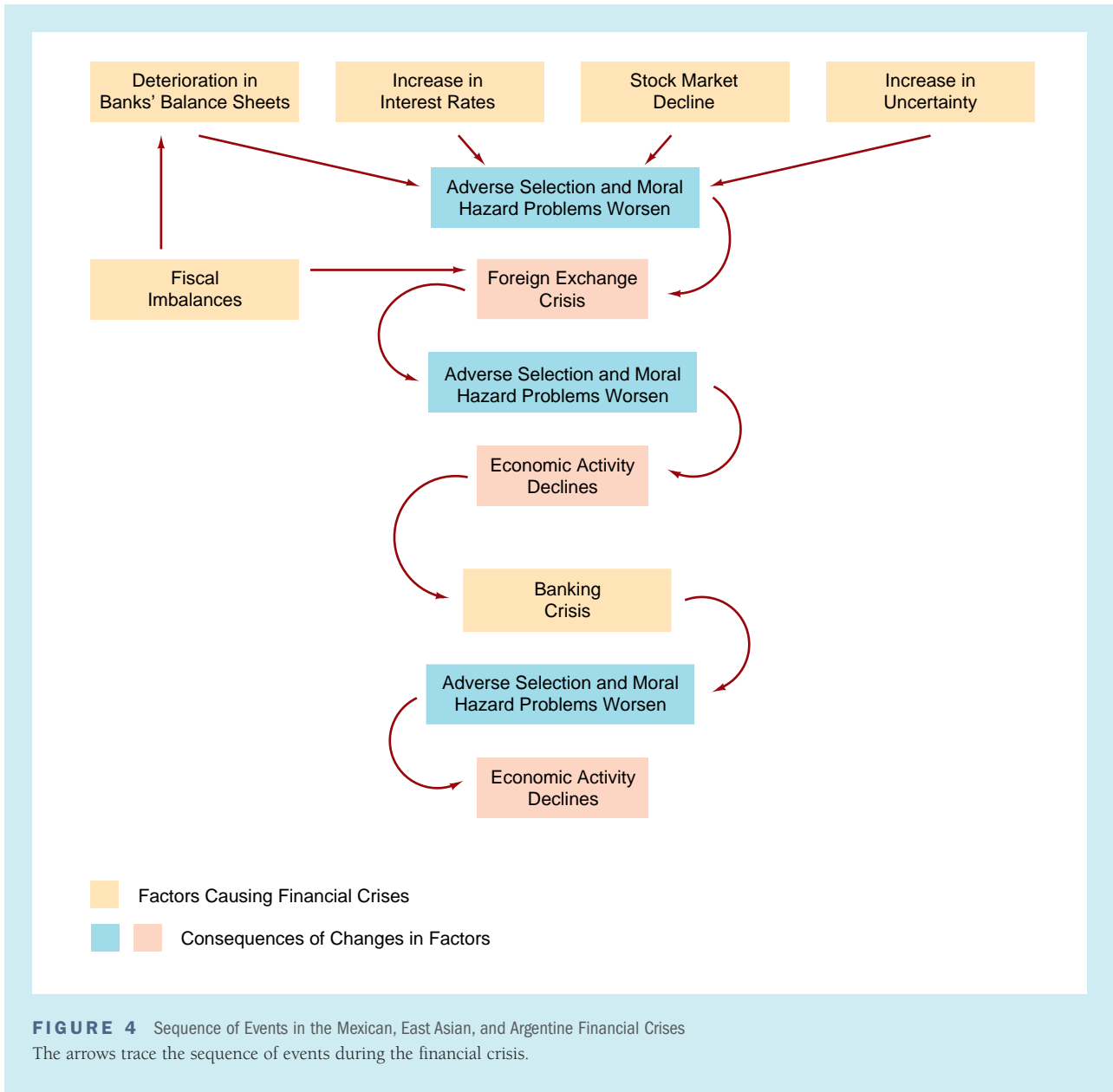
An important factor leading up to the financial crises in Mexico and East Asia was the deterioration in banks' balance sheets because of increasing loan losses. When financial markets in these countries were deregulated in the early 1990s, a lending boom ensued in which bank credit to the private non-financial business sector accelerated sharply. Because of weak supervision by bank regulators and a lack of expertise in screening and monitoring borrowers at banking institutions, losses on the loans began to mount, causing an erosion of banks' net worth (capital). As a result of this erosion, banks had fewer resources to lend, and this lack of lending eventually led to a contraction in economic activity.

Argentina also experienced a deterioration in bank balance sheets leading up to its crisis, but the source of this deterioration was quite different. In contrast to Mexico and the East Asian crisis countries, Argentina had a well-supervised banking system, and a lending boom did not occur before the crisis. On the other hand, in 1998 Argentina entered a recession (you can find out more on why this occurred in Chapter 20) that led to some loan losses. However, it was the fiscal problems of the Argentine government that led to severe weakening of bank balance sheets. Again in contrast to Mexico and the East Asian countries before their crises, Argentina was running substantial budget deficits that could not be financed by foreign borrowing. To solve its fiscal problems, the Argentine government coerced banks into absorbing large amounts of government debt. When investors lost confidence in the ability of the Argentine government to repay this debt, the price of this debt plummeted, leaving big holes in commercial banks' balance sheets. This weakening in bank balance sheets, as in Mexico and East Asia, helped lead to a contraction of economic activity.

Consistent with the U.S. experience in the nineteenth and early twentieth centuries, another precipitating factor in the Mexican and Argentine (but not East Asian) financial crises was a rise in interest rates abroad. Before the Mexican crisis, in February 1994, and before the Argentine crisis, in mid-1999, the Federal Reserve began a cycle of raising the federal funds rate to head off inflationary pressures. Although the monetary policy moves by the Fed were quite successful in keeping inflation in check in the United States, they put upward pressure on interest rates in both Mexico and Argentina.

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<sup>7</sup>This chapter does not examine two other recent crises, those in Brazil and Russia. Russia's financial crisis in August 1998 can also be explained with the asymmetric information story here, but it is more appropriate to view it as a symptom of a wider breakdown in the economy—and this is why we do not focus on it here. The Brazilian crisis in January 1999 has features of a more traditional balance-of-payments crisis (see Chapter 20), rather than a financial crisis.



**FIGURE 4** Sequence of Events in the Mexican, East Asian, and Argentine Financial Crises  
 The arrows trace the sequence of events during the financial crisis.

The rise in interest rates in Mexico and Argentina directly added to increased adverse selection in their financial markets because, as discussed earlier, it was more likely that the parties willing to take on the most risk would seek loans.

Also consistent with the U.S. experience in the nineteenth and early twentieth centuries, stock market declines and increases in uncertainty occurred prior to and contributed to full-blown crises in Mexico, Thailand,

South Korea, and Argentina. (The stock market declines in Malaysia, Indonesia, and the Philippines, on the other hand, occurred simultaneously with the onset of the crisis.) The Mexican economy was hit by political shocks in 1994 (specifically, the assassination of the ruling party's presidential candidate and an uprising in the southern state of Chiapas) that created uncertainty, while the ongoing recession increased uncertainty in Argentina. Right before their crises, Thailand and Korea experienced major failures of financial and nonfinancial firms that increased general uncertainty in financial markets

As we have seen, an increase in uncertainty and a decrease in net worth as a result of a stock market decline increase asymmetric information problems. It becomes harder to screen out good from bad borrowers, and the decline in net worth decreases the value of firms' collateral and increases their incentives to make risky investments because there is less equity to lose if the investments are unsuccessful. The increase in uncertainty and stock market declines that occurred before the crisis, along with the deterioration in banks' balance sheets, worsened adverse selection and moral hazard problems (shown at the top of the diagram in Figure 4) and made the economies ripe for a serious financial crisis.

At this point, full-blown speculative attacks developed in the foreign exchange market, plunging these countries into a full-scale crisis. With the Colosio assassination, the Chiapas uprising, and the growing weakness in the banking sector, the Mexican peso came under attack. Even though the Mexican central bank intervened in the foreign exchange market and raised interest rates sharply, it was unable to stem the attack and was forced to devalue the peso on December 20, 1994. In the case of Thailand, concerns about the large current account deficit and weakness in the Thai financial system, culminating with the failure of a major finance company, Finance One, led to a successful speculative attack that forced the Thai central bank to allow the baht to float downward in July 1997. Soon thereafter, speculative attacks developed against the other countries in the region, leading to the collapse of the Philippine peso, the Indonesian rupiah, the Malaysian ringgit, and the South Korean won. In Argentina, a full-scale banking panic began in October–November 2001. This, along with realization that the government was going to default on its debt, also led to a speculative attack on the Argentine peso, resulting in its collapse on January 6, 2002.

The institutional structure of debt markets in Mexico and East Asia now interacted with the currency devaluations to propel the economies into full-fledged financial crises. Because so many firms in these countries had debt denominated in foreign currencies like the dollar and the yen, depreciation of their currencies resulted in increases in their indebtedness in domestic currency terms, even though the value of their assets remained unchanged. When the peso lost half its value by March 1995 and the Thai, Philippine, Malaysian, and South Korean currencies lost between a third and half of their value by the beginning of 1998, firms' balance sheets took a big negative hit, causing a dramatic increase in adverse selection and moral hazard problems. This negative shock was especially severe for Indonesia and Argentina, which saw the value of their currencies fall by over 70%, resulting in insolvency for firms with substantial amounts of debt denominated in foreign currencies.

The collapse of currencies also led to a rise in actual and expected inflation in these countries, and market interest rates rose sky-high (to around 100% in Mexico and Argentina). The resulting increase in interest payments caused reductions in households' and firms' cash flow, which led to further deterioration in their balance sheets. A feature of debt markets in emerging-market countries, like those in Mexico, East Asia, and Argentina is that debt contracts have very short durations, typically less than one month. Thus the rise in short-term interest rates in these countries meant that the effect on cash flow and hence on balance sheets was substantial. As our asymmetric information analysis suggests, this deterioration in households' and firms' balance sheets increased adverse selection and moral hazard problems in the credit markets, making domestic and foreign lenders even less willing to lend.

Consistent with the theory of financial crises outlined in this chapter, the sharp decline in lending helped lead to a collapse of economic activity, with real GDP growth falling sharply.

As shown in Figure 4, 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 led to worsening banking crises. The problems of firms and households meant that many of them were no longer able to pay off their debts, resulting in substantial losses for the banks. Even more problematic for the banks was that they had many short-term liabilities denominated in foreign currencies, and the sharp increase in the value of these liabilities after the devaluation led to a further deterioration in the banks' balance sheets. Under these circumstances, the banking system would have collapsed in the absence of a government safety net—as it did in the United States during the Great Depression—but with the assistance of the International Monetary Fund, these countries were in some cases able to protect depositors and avoid a bank panic. However, given the loss of bank capital and the need for the government to intervene to prop up the banks, the banks' ability to lend was nevertheless sharply curtailed. As we have seen, a banking crisis of this type hinders the ability of the banks to lend and also makes adverse selection and moral hazard problems worse in financial markets, because banks are less capable of playing their traditional financial intermediation role. The banking crisis, along with other factors that increased adverse selection and moral hazard problems in the credit markets of Mexico, East Asia, and Argentina, explains the collapse of lending and hence economic activity in the aftermath of the crisis.

In the aftermath of their crises, Mexico began to recover in 1996, while the crisis countries in East Asia saw the glimmer of recovery in 1999. Argentina was still in a severe depression in 2003. In all these countries, the economic hardship caused by the financial crises was tremendous. Unemployment rose sharply, poverty increased substantially, and even the social fabric of the society was stretched thin. For example, Mexico City and Buenos Aires have become crime-ridden, while Indonesia has experienced waves of ethnic violence.

## Summary

1. There are eight basic puzzles about our financial structure. The first four emphasize the importance of financial intermediaries and the relative unimportance of securities markets for the financing of corporations; the fifth recognizes that financial markets are among the most heavily regulated sectors of the economy; the sixth states that only large, well-established corporations have access to securities markets; the seventh indicates that collateral is an important feature of debt contracts; and the eighth presents debt contracts as complicated legal documents that place substantial restrictions on the behavior of the borrower.
2. Transaction costs freeze many small savers and borrowers out of direct involvement with financial markets. Financial intermediaries can take advantage of economies of scale and are better able to develop expertise to lower transaction costs, thus enabling their savers and borrowers to benefit from the existence of financial markets.
3. Asymmetric information results in two problems: adverse selection, which occurs before the transaction, and moral hazard, which occurs after the transaction. Adverse selection refers to the fact that bad credit risks are the ones most likely to seek loans, and moral hazard refers to the risk of the borrower's engaging in activities that are undesirable from the lender's point of view.
4. Adverse selection interferes with the efficient functioning of financial markets. Tools to help reduce the adverse selection problem include private production and sale of information, government regulation to increase information, financial intermediation, and collateral and net worth. The free-rider problem occurs when people who do not pay for information take advantage of information that other people have paid for. This problem explains why financial intermediaries, particularly banks, play a more important role in financing the activities of businesses than securities markets do.
5. Moral hazard in equity contracts is known as the principal–agent problem, because managers (the agents) have less incentive to maximize profits than stockholders (the principals). The principal–agent problem explains why debt contracts are so much more prevalent in financial markets than equity contracts. Tools to help reduce the principal–agent problem include monitoring, government regulation to increase information, and financial intermediation.
6. Tools to reduce the moral hazard problem in debt contracts include net worth, monitoring and enforcement of restrictive covenants, and financial intermediaries.
7. Financial crises are major disruptions in financial markets. They are caused by increases in adverse selection and moral hazard problems that prevent financial markets from channeling funds to people with productive investment opportunities, leading to a sharp contraction in economic activity. The five types of factors that lead to financial crises are increases in interest rates, increases in uncertainty, asset market effects on balance sheets, problems in the banking sector, and government fiscal imbalances.



## Key Terms

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|-----------------------------------|------------------------------------|----------------------------------|
| agency theory, p. 175, 189        | debt deflation, p. 192             | pecking order hypothesis, p. 180 |
| bank panic, p. 191                | financial crisis, p. 189           | principal–agent problem, p. 181  |
| cash flow, p. 190                 | free-rider problem, p. 176         | restrictive covenants, p. 172    |
| collateral, p. 172                | incentive-compatible, p. 185       | secured debt, p. 172             |
| costly state verification, p. 182 | insolvent, p. 192                  | unsecured debt, p. 172           |
| creditor, p. 188                  | net worth (equity capital), p. 180 | venture capital firm, p. 182     |



## Questions and Problems

Questions marked with an asterisk are answered at the end of the book in an appendix, “Answers to Selected Questions and Problems.”

1. How can economies of scale help explain the existence of financial intermediaries?
- \*2. Describe two ways in which financial intermediaries help lower transaction costs in the economy.
3. Would moral hazard and adverse selection still arise in financial markets if information were not asymmetric? Explain.
- \*4. How do standard accounting principles required by the government help financial markets work more efficiently?
5. Do you think the lemons problem would be more severe for stocks traded on the New York Stock Exchange or those traded over-the-counter? Explain.
- \*6. Which firms are most likely to use bank financing rather than to issue bonds or stocks to finance their activities? Why?
7. How can the existence of asymmetric information provide a rationale for government regulation of financial markets?
- \*8. Would you be more willing to lend to a friend if she put all of her life savings into her business than you would if she had not done so? Why?
9. Rich people often worry that others will seek to marry them only for their money. Is this a problem of adverse selection?
- \*10. The more collateral there is backing a loan, the less the lender has to worry about adverse selection. Is this statement true, false, or uncertain? Explain your answer.
11. How does the free-rider problem aggravate adverse selection and moral hazard problems in financial markets?
- \*12. Explain how the separation of ownership and control in American corporations might lead to poor management.
13. Is a financial crisis more likely to occur when the economy is experiencing deflation or inflation? Explain.
- \*14. How can a stock market crash provoke a financial crisis?
15. How can a sharp rise in interest rates provoke a financial crisis?



## Web Exercises



1. In this chapter we discuss the lemons problem and its effect on the efficient functioning of a market. This theory was initially developed by George Akerlof. Go to [www.nobel.se/economics/laureates/2001/public.html](http://www.nobel.se/economics/laureates/2001/public.html). This site reports that Akerlof, Spence, and Stiglitz were awarded the Nobel prize in economics in 2001 for their work. Read this report down through the section on George Akerlof. Summarize his research ideas in one page.
2. This chapter discusses how an understanding of adverse selection and moral hazard can help us better understand financial crises. The greatest financial crisis faced by the U.S. has been the Great Depression from 1929–1933. Go to [www.amatecon.com/greatdepression.html](http://www.amatecon.com/greatdepression.html). This site contains a brief discussion of the factors that led to the Depression. Write a one-page summary explaining how adverse selection and moral hazard contributed to the Depression.