To my loving and supportive family:
Deb, Edie, and Daphne

MODERN FINANCIAL MACROECONOMICS

Panics, Crashes, and Crises

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CHAPTER 2

A Brief History of Financial Development

Introduction

Financial intermediation has long been an integral part of human and economic history. The oldest surviving written law is the Babylonian code of Hammurabi, which is engraved onto a stone obelisk and dates back to 1800 B.C. Among the many laws codified on this stone are regulations on the provision of credit, including a maximum interest rate on grain borrowing (33 1/3 percent) and on silver borrowing (20 percent). The fact that regulations on financial intermediation are included among our first written history illustrates two important facts: first, finance has always played a crucial role in facilitating trade and determining standards of living; second, governments have consistently played a role in shaping financial systems, influencing both their size and their efficiency.

The purpose of this chapter is to look at financial systems from a big-picture perspective and talk about the ways that they have changed and grown over time. Once again, the objective here is not to be comprehensive, but to highlight some of the important themes and trends in financial development. The historical evolution of banking systems and financial markets is briefly reviewed, with particular attention paid to the U.S. because of its unusual history (and suspicion) of finance. Also, an overview of central banking is provided, including the historical development of central banking, an examination of the responsibilities that modern central banks (such as the Federal Reserve and the European Central Bank [ECB]) assume in modern economies, and a brief discussion of the role that central banks play in managing the money supply.

Financial systems have not developed in isolation; instead, they have become interlinked across countries to the point that financial systems today are truly multinational. *Globalization* is a term often used to refer to the increasing cultural and economic integration among individuals, markets, and nations. After a brief

look at the history of international financial flows, this chapter examines some of the new developments in financial systems over the last 25 years, most of which are heavily dependent on two factors: increased globalization and advances in information technology. This chapter concludes with two case studies—one on securitization and the changing nature of the housing market, the other on hedge funds—that illustrate the important ways in which globalization and information technology have changed the nature of finance, modern economics, and the day-to-day lives of most of us.

A Brief History of Banking, Financial Markets, and Central Banking

As mentioned before, financial intermediation has always been an important component of trade, but prior to the 1600s finance tended to be informal and took place between individuals, or groups of individuals, who had previously established economic or family ties with one another. The first institution that somewhat resembles what we would today consider to be a modern financial institution dates back to the renaissance and the Medici family financial empire in Italy.

The first true financial market was the Amsterdam Stock Exchange, established in 1611. In 1634, the world's first boom and bust asset cycle took place in Amsterdam in the market for Tulips. During "tulipmania," the prices of certain tulips rose by nearly 6,000 percent (to more than £20,000 for one kind of tulip), only to fall by 93 percent from this peak in 1637.

While modern finance was started by the Dutch, it first came to full fruition in England in the 1700s. At the time, this small nation ruled over 25 percent of the world's surface and its population. In the opinion of Walter Bagehot (1873), the disproportionate political and economic influence exerted by England had much to do with its highly developed financial system, which allowed the English the unmatched ability to engage in risky and far-reaching trade, finance wars, sustain government bureaucracies, invest in new technologies, and acquire capital. The Bank of England, which was founded in 1694, played an extremely important role in strengthening England's financial system. The Bank of England was both a private and public institution that played many of the roles of modern central banks, including providing the English financial system with a degree of stability and financial concentration unmatched in other countries.

Financial dominance began to move to the U.S. in the early 1900s. The history of the U.S. financial system is interesting because it highlights many of the contradictory feelings that are still felt about finance to this day. In the opinion of Alexander Hamilton (1781): "banks were the happiest engines that ever were invented" for creating growth. On the other hand, many of the other American founding fathers were skeptical of "big finance." Their skepticism was influenced

by what they saw as the exploitive behavior of financial institutions in England, particularly the Bank of England, which they viewed as a tool of large industrial interests that worked against the needs of the common man, particularly small farmers. Representing this view, John Adams (1819) claimed that banks damage the "morality, tranquility, and even wealth" of countries. Likewise, Thomas Jefferson (1861) wrote that "I have ever been the enemy of banks . . . (and of) the tribe of bank-mongers, who were seeking to filch from the public their swindling, and barren gains."

This conflict is reflected throughout the history of banking in the U.S. Nationwide Commercial banking began in the U.S. in 1782 with the Bank of North America. Until 1863, all banks in the U.S. were chartered by states and prohibited from expanding across state lines, the primary rationale being to keep banks small and local, not large and impersonal. One result of this was that the U.S. had no national currency, just banknotes issued by various banks in each state. Another result was that the U.S. had a larger number of smaller banks than in other countries. In 1863, the National Banking Act was passed which allowed the federal government to charter banks (which were to be regulated by the Comptroller of the Currency) and establish a national currency, but restrictions on interstate banking remained, insuring banks stayed relatively small and numerous.

The widespread suspicion of big banking significantly influenced the debate over the creation of a central bank in the U.S. In 1791, the Bank of the United States was chartered by the federal government. This was a private bank that also served as the central bank of the U.S. The Bank of the United States was also the only bank that could operate across state lines, quickly making it the country's largest financial institution. Fueled by suspicion that it manipulated interest rates and its lending activities in favor of large industrial borrowers at the expense of small borrowers, its charter was revoked in 1811. However, after the U.S. government had difficulties financing the War of 1812, a general realization took place that the federal government had to take a stronger hand in the financial system. The Second Bank of the United States was chartered in 1816, only to expire again in 1836 at a time when it held one-third of all bank deposits. The deciding factor in its expiration was a veto by Andrew Jackson, who ran for president as a populist on a platform hostile to large economic interests.

The period of time between 1836 and 1863 is often referred to as the "free banking" era in the U.S., largely because the only supervision of the banking industry was conducted by weak and often politically motivated state regulatory agencies. This meant that banks in many states were effectively unregulated. Even after the National Banking Act of 1863, state banks remained weakly regulated, but at least now more individuals had the option of doing business with more highly regulated and safer national banks.

State banks, and to a lesser extent national banks, were prone to failure throughout the mid-to-late 1800s to the early 1900s. This was partly due to the weak

regulation of banking, particularly state banks, which often led to fraud or, at the least, risky lending activities. Another factor was the lack of interstate banking, which created small, undercapitalized, and undiversified banks. In addition, many banks in smaller states were effectively monopolies, and this lack of competition allowed them to remain inefficient. As a result, banking crises periodically interrupted financial intermediation and destabilized economic activity over this entire period. Friedman and Schwartz (1963) indicate that every recession but one in the U.S. between 1867 and 1950 was associated with a banking crisis.

In an effort to provide the financial system with an institution that could serve as a lender of last resort in time of crisis and help improve financial stability, the Federal Reserve Act was passed in 1913, which created the Federal Reserve System. The Fed was purposefully structured to remain weak by decentralizing its power among 12 loosely connected regional central banks, once again reflecting the nation's suspicion of big banking. This lack of leadership was a major reason behind why the Fed behaved so ineptly during, and even contributed to, the Great Depression.

The Great Depression, the worst of which occurred between 1929 and 1933, fundamentally changed the nature of financial systems in the U.S. and across Europe. One reason for this is that much of the banking system disappeared: nearly 9,000 banks failed in the U.S., or roughly one-third of all banks, and nearly 3 percent of total deposits (an amount equivalent to nearly $300 billion in today's dollars) were lost by depositors. The Great Depression also ended the antiregulation, or *laissez-faire*, attitude that had existed toward banking in the U.S. and elsewhere, and governments increasingly became focused on acting to reduce the risk and instability associated with financial intermediaries and financial markets. In regards to financial markets, the Securities and Exchange Commission was created in the U.S. in 1933 to enforce accounting and information disclosure standards on firms as well as to enforce restrictions on *insider trading*, or trading based on information that is not publicly available (often by the executives of firms). In regard to the U.S. banking system, the Great Depression led to the creation of federal deposit insurance and stricter banking regulations along with it. In addition, the investment banking, stock, and bond securities industries were legally separated from the banking industry by the Glass–Stegal Act in 1933, based on the belief that stock market speculation by banks played a large role in the stock market crash of 1929. Finally, the Federal Reserve was strengthened and power centralized within a newly created Federal Reserve Board of Governors.

Today, the structure of U.S. banking system continues to reflect many aspects of its unusual history. For example, today roughly two-thirds of U.S. commercial banks are state chartered banks, with the remaining one-third being federally chartered banks. Coupled with the fact that different regulatory agencies have been added as new government programs have been developed over time, the result is a convoluted system of bank regulation in the U.S. that is much tighter and more

complex than in most industrialized countries. Every U.S. bank is monitored by multiple regulatory agencies. The agencies that a specific bank is supervised by depends upon whether they are state or locally chartered, the kinds of lending they are engaged in (e.g., whether they conduct investment banking activities), whether they are commercial banks as opposed to savings and loans or credit unions, and whether they are members of the Federal Reserve system. While these complex arrangements appear to be confusing and inefficient, some have argued that it has actually encouraged bank innovation by giving banks some choice over whom they will be regulated by. This creates competition among regulators that discourages overbearing and unnecessary regulation.

Although it remains distinctive in many other ways, the U.S. banking system is slowly becoming more concentrated with a large majority of banking activity taking place within a small number of banks. Over the last 20 years there has been a wave of consolidations and mergers within the U.S. banking industry. Since 1984, the total number of banks has fallen from more than 14,000 (a level that had been roughly constant since the mid-1930s) to less than 8,000 today. However, this is still many more banks than that which exist in other countries; for example, less than 100 banks exist in Japan and no other nation has more than 1,000 banks. Even given this large number of banks, an increasingly small number of banks dominate the U.S. banking industry; the ten largest banks in the U.S. now hold 60 percent of all commercial bank assets. In this respect, U.S. banking has become more like that in Europe and particularly in Asia, in which banking is also highly concentrated within a small number of very large banks.

Much of the consolidation in the U.S. banking industry has been driven by the wave of financial deregulation that has occurred since 1980. Mergers and acquisitions were initially driven by the avoidance and finally the elimination of restrictions on interstate banking, immediately leading to bank mergers across state lines. Consolidation was also fueled by the elimination of restrictions on interest rates and on newly developed methods of acquiring and lending funds, creating economies of scale in banking that could be taken advantage of by larger banks. Finally, consolidation and concentration was driven more recently by the ending of the legal separation of commercial banking from investment banking, which took place in 1999 with the passage of the Gramm–Leach–Bliley Act (although many banks had been finding loopholes in this legal partition for years). Since the repeal of the Glass–Stegal Act, many banks have merged with investment banks and other nonbank financial institutions in order to offer one-stop shopping, or *universal banking*, similar to what exists in Europe and Asia. Under universal banking, banks can hold stocks, bonds, stakes in investment funds, and even seats on the board of directors of nonfinancial firms. Thus, universal banking broadly expands the role banks can play in all sectors of the economy. One example of a universal bank is Citigroup Inc., which was created in 1999 and merged the second largest commercial bank (Citicorp) with the third largest investment bank

(Salomon Smith Barney), along with an insurance company (Travelers Insurance), pension funds, brokerages, mutual funds, and finance companies. Citigroup now forms the largest financial conglomerate in the world with more than $1.5 trillion in assets, surpassing other large banking conglomerates in countries such as Japan that have had universal banking for years.

Modern Central Banking

One important aspect of modern finance that separates it from past eras is the pervasiveness and power of central banks. Central banks play vital roles in ensuring the stability and efficiency of banking systems as well as influencing interest rates, bank lending, asset prices, inflation, output, unemployment, and other crucial aspects of macroeconomic performance. As a result, no other financial institutions (or possibly even government institutions) are as closely scrutinized as central banks.

As discussed previously, central banking has an interesting history in the U.S. After the Great Depression, the Federal Reserve was strengthened and power within it was centralized in order to allow it to more effectively serve as a lender of last resort and better manage the money supply. This was done by weakening the power of the regional Federal Reserve banks and centralizing the majority of the decision-making power, particularly regarding monetary policy, within an executive committee referred to as the Board of Governors. These governors are appointed to 14-year terms, making them fairly independent and insulating them from many (but not all) of the short-term political ramifications of their decisions.

The other most influential central bank is the ECB. The ECB serves as the central bank for the 11 countries that are a part of the European Monetary Union (Austria, Belgium, Finland, France, Germany, Italy, Ireland, Luxembourg, the Netherlands, Portugal, and Spain). Not surprisingly, the ECB is set up along similar lines as the Federal Reserve System given that the ECB also has to serve a geographically diverse constituency that is somewhat skeptical of centralized power (similar to the situation that exists in the U.S.). Regional banks in each member country play a role in decision making, but the majority of the power rests with an independent executive board. In fact, the independence of the ECB is even greater than that of the Fed since the governments of every country in the European Monetary Union would have to agree to change the ECB's structure, while the Federal Reserve could be changed by a single act of congress.

Across a wide range of countries, the current trend is toward granting central banks more policy-making independence. The central banks of England, Japan, New Zealand, and Sweden have recently been granted more independent authority in their decision making. Early results suggest that such changes have been beneficial: Alesina and Summers (1993) find evidence that greater central bank independence leads to lower inflation without any negative effect on output growth.

Central banks serve four important functions in modern financial systems. First, central banks help facilitate financial transactions by issuing new currency, clearing checks and other payments, providing short-term and seasonal loans to banks, and monitoring payment systems. Second, central banks play a role in regulating the banking system, enforcing information disclosure requirements, setting loan and deposit creation standards, approving bank mergers and acquisitions, and monitoring bank activities. Third, central banks serve as a lender of last resort in order to enhance the stability of the banking system. By standing ready to provide loans to banks with short-term liquidity problems, central banks can prevent bank runs before they happen, usually without even providing a single loan. As the power of central banks have grown in the postwar era, bank runs have become much less frequent, to the point that they are now almost nonexistent in industrialized countries. For example, the last bank run and banking crisis in the U.S. was during the Great Depression, before the reform and strengthening of the Federal Reserve and the creation of deposit insurance. Note, however, that the central bank's role as lender of last resort does not extend to poorly run banks; if a bank becomes *insolvent*, or its liabilities exceed its assets, then a central bank has the responsibility to let this bank fail. At that point, the appropriate government agencies that provide deposit insurance will bailout depositors and sell the bank's assets (for U.S. commercial banks, this is the Federal Deposit Insurance Corporation).

The fourth and highest profile function of central banks is to set monetary policy and regulate the money supply. Thinking back to the definitions of M1 and M2 in Chapter 1, it is clear that central banks do not completely control the money supply. For example, central banks do not directly control the level of checking account deposits in M1 or any of the other banking and financial market assets in M2. It is the public's demand for these assets and banks' willingness to issue these assets that determines the money supply.

Central banks, however, play a crucial role in shaping the banking system's ability to issue assets that are part of the money supply. Central banks control two things: currency and total reserves held by banks. Together, the sum of currency plus total reserves is referred to as the *monetary base*. By changing the monetary base, either by changing the level of currency (through issuing more of it) or by changing the level of total reserves (either through extending more loans to banks or purchasing the illiquid assets of banks in return for reserves), a central bank can change the monetary base. As banks hold more currency and reserves, they are able to extend more loans. Some of these loans will be held in bank deposits that allow banks to create even more loans, generating a deposit expansion process that inflates the level of banking assets and the money supply.

While it is a fact that an increase in the monetary base increases the money supply, central banks do not have complete control over how large this increase

in the money supply will be. The ratio of the change in the money supply to the change in the monetary base is referred to as the *money multiplier*. For the M1 definition of the money supply, the money multiplier is determined by three things, only one of which central banks directly control. The determinant of the money multiplier that central banks control is the *required reserve ratio*, or the percentage of deposits that must be held in an account at the central bank. When a central bank reduces the required reserve ratio, it allows banks to lend out a greater fraction of any deposits they receive, expanding the deposit expansion process and increasing the money multiplier.

The other two determinants of the money multiplier are not controlled by the central bank. The first is the currency-to-deposit ratio, or the fraction of deposits that the public or banks choose to hold as currency. As this ratio increases, less money is deposited in banks and the deposit expansion process is weakened, reducing the money multiplier. The other determinant is the excess reserves-to-deposit ratio, or the fraction of deposits that banks choose not to lend out but to hold. Once again, as the excess reserve-to-deposit ratio increases, a smaller fraction of deposits is lent out and the deposit expansion process is weakened, reducing the money multiplier.

There is a common misperception that central banks have complete control over the money supply. In reality, they have complete discretion in setting one component of the money supply, the monetary base, but they have limited control over how changes in the monetary base translate into changes in the total money supply. One way to think about how central banks influence the money supply is the following analogy: think about the money supply as a poorly trained dog on a walk, the dog's leash as the tools that the central bank controls (the monetary base and the required reserve ratio), and the central bank as the person who is holding the leash. As the money supply begins to veer off route, the central bank has the power to yank the money supply back on course. However, the dog's path will not proceed in a straight line, and if the leash is long or the dog is strong, the path might be quite unpredictable at times. Likewise, a central bank's control over the money supply is good over the long term, but over the short term it can be quite loose.

A Brief History of International Capital Flows

Finance does not just take place nationally; international capital flows have been an important component of financial intermediation since the late 1800s. However, while the pace of domestic financial development in industrialized countries has been consistently positive, international financial flows have ebbed and flowed over time to a much greater extent.

Barry Eichengreen (2003a) identifies four international lending booms since the industrial revolution. The first era of financial globalization took place between

1880 and the beginning of World War I in 1913. This era's lending boom was driven by three factors that have also driven subsequent international lending booms: an expansion in world GDP and in international trade, financial innovation, and pro-trade government policies. The financial innovations that took place during this era were improvements in communications (such as telephones), transportation (railroads and shipping), and the development of bond markets and investment trusts (a precursor to modern mutual funds). In regard to the political environment, Europe was relatively peaceful and outward looking after the end of the Napoleonic wars. Finally, world economic growth and international trade were strong over this period. In many ways, this period was the height of international finance: capital flows as a percent of world GDP reached 3.5 percent, which is a level that has not been reached since, despite all of the recent talk of a new era of globalization (today, capital flows as a percentage of world GDP are roughly 2.5 percent). However, almost all of this international finance was between developed economies.

Pro-trade government policies disappeared during the World War I and were only reestablished during the early 1920s, sparking the second international capital boom. This boom was heavily influenced by expanding world GDP and ended with the onset of the Great Depression.

The Great Depression, which was followed by the World War II, marked the beginning of a protracted period of restricted international capital flows that lasted until the 1970s. Much of this was the result of the Bretton Woods agreement, which was a system of fixed exchange rates established in 1945. Under the Bretton Woods agreement, the U.S. maintained the dollar on the gold standard, and every other country maintained a fixed exchange rate to the dollar. While the stated purpose of Bretton Woods was to encourage capital and trade flows, in reality it opened up many avenues for governments to manipulate exchange rates and create trade barriers to protect their domestic industries. It also provided governments with a rationale for clamping down on domestic financial systems in an effort to discourage speculation and other activities that could undermine their exchange rate target. Together, these factors served to depress the international movement of capital. Skepticism regarding international capital movements during this era was prevalent even in the economics profession. The preeminent economist of the time and one of the architects of the Bretton Woods agreement, John Maynard Keynes (1936), stated: "Ideas, knowledge, science, hospitality, travel—these are the things which should of their nature be international. But let goods be homespun whenever it is reasonable and conveniently possible, and above all else let finance be primarily national."

During the mid-1960s, however, international capital flows began to gradually expand. In fact, expanding capital flows eventually led to the collapse of the Bretton Woods system as countries found it increasingly difficult to maintain overvalued exchange rates in a world where capital could so easily and so quickly flow into and out of countries. (The Bretton Woods system, its collapse, and the role of

the International Monetary Fund are discussed in more detail in Chapter 10.) The lending boom of the 1970s was driven by the same factors that drove previous international lending booms. World trade increased by 9 percent a year over this decade. A number of new financial developments took place, including larger financial markets, Eurodollar accounts, the growth of large institutional investors, and improved communication and computer technologies. The 1970s also began an extended period of financial deregulation and liberalization in which the barriers to financial flows at both a national and international level were gradually reduced. Finally, a large portion of the capital flows during the 1970s were driven by a spike in oil prices, which encouraged many countries with oil reserves, especially those that were poorer, to borrow heavily against these reserves. This was a unique development in the history of international capital flows because prior to the 1970s most capital flowed from rich countries to other rich countries, with less developed nations receiving a relatively small fraction of foreign lending.

Unfortunately, the debt boom of the 1970s was not sustainable after oil prices plummeted in the early 1980s. In fact, it took most of the 1980s for banks and debtor nations to clean up the foreign debt crisis that resulted. The governments of many industrialized nations, particularly in Europe and the U.S., played active roles in restructuring debt payments and negotiating debt relief in an attempt to prevent massive defaults and renew the flow of foreign capital to poorer economies.

Globalization and Financial Development in the 1990s

Over the last 20 years, a fourth international lending boom has taken place across the globe. Many economies, both rich and poor, have enjoyed incredible amounts of financial development in the size of financial markets, the size of financial intermediaries, in the types of financial services, and in the types of financial assets that they offer. To get some idea of the size of this expansion, the U.S. serves as an interesting example. Table 2.1 presents the levels of selected financial assets at the end of 2003 and the growth rates of these assets over the previous 24 years. The sustained growth rates of all of these assets, many of which barely existed 20 years ago, have been remarkable. To get a feel of how large this asset explosion has been, nominal GDP growth over this same period was 6.1 percent a year, meaning that the growth rates of all of these instruments have outpaced nominal income growth. Similar growth, though generally to a somewhat lesser extent than in the U.S., has taken place in other industrialized and many emerging economies.

This remarkable growth has also been stimulated by the creation of different types of financial intermediaries that are able to offer new and unique services to savers. The best example of this is the amazing growth of the mutual fund industry, which has seen its assets grow by 20 percent a year since 1980. In 1990, mutual

Table 2.1 Growth of Financial Assets in the U.S.

Type of Instrument	*Amount Outstanding as of December 31, 2003 ($ Billions)*	*Average Annual Growth Rate (Percent) 1980–2003*
Commercial paper	1,289	12.1
U.S. T-bills	929	6.7
Eurodollars	212	6.7
Negotiable CDs	1,233	6.2
Residential mortgages	7,685	8.9
Corporate bonds	3,582	9.8
U.S. T-bonds	2,646	8.3
State and local government bonds	1,899	8.5
Commercial and farm mortgages	1,588	6.9
Corporate equities	15,473	12.4
Mutual funds	4,665	20.7

Sources: Federal Reserve System, Flow of Funds Accounts, release Z.1 at http://www.federalreserve.gov/releases/Z1, U.S. Treasury Bulletin, and Economic Report of the President.

funds had roughly one-third of the assets of commercial banks and held 12 percent of household wealth. Today, they hold more assets than commercial banks (more than $6.4 trillion in assets in 2006) and hold more than 22 percent of household wealth.

Three factors have driven this fourth international boom in capital flows. First, the 1990s were a good time for the world economy, not just in the industrialized countries such as the U.S. and Europe, but in emerging market economies in Asia, China, parts of Latin America, and India. In addition, the development strategies of many of these emerging economies were pro-trade and placed a heavy emphasis on expanding export markets. Many of these countries were following the export promotion strategies followed so successfully in Japan and East Asia.

The second factor in the recent lending boom is government policy. Government policies became increasingly pro-trade and pro-capital flows beginning in the mid-to-late 1980s. Many factors drove this economic liberalization: the end of the Cold War, the success of export-dominated development policies in East Asia, increasing economic integration in Europe and in North America (with the formation of the European Economic Union [EU] and the North American Free Trade Agreement [NAFTA]), the development of international trade agreements that liberalized trade across the globe (with the expansion of the Generalized Agreement on Tariffs and Trade [GATT]), and increasing financial liberalization at the national level.

The third factor driving today's globalization boom is the rapid advancement in information and communications technology. As we have talked about before, finance is fueled by information. With the development of cellular and wireless

communications, the Internet, and computer infrastructure systems, the amount of information available is larger and the costs of obtaining this information are lower now than it has ever been before. Information is particularly important in international finance, where the availability and costs of information in many countries prior to new communication technologies made finance prohibitively risky and expensive. Information technology has also encouraged international finance by reducing transactions costs and risk in many other ways. By eliminating the use of middlemen in many financial market transactions, information technology has increased the number of transactions, making markets more efficient and liquid. Information technology has reduced the monitoring and screening costs associated with financial intermediation. Finally, information technology has also led to the creation of new financial assets that were unavailable until reductions in information and computational costs made them possible; these new assets allow for better hedging of risk, better diversification, and more collateral, each of which facilitates lending.

The globalization of finance has also had a big impact on financial intermediaries, particularly commercial banks. Banking is increasingly becoming an international business. Overall, U.S. banks earn 15 percent of their income from foreign operations, but the five largest U.S. banks earn 45 percent. Likewise, foreign banks operating in the U.S. own 10 percent of domestic banking assets and provide 19 percent of the lending in the U.S. Figure 2.1 presents the level of cross-country bank lending worldwide, illustrating that nearly twice the level of international bank lending is taking place today as 10 years ago. Because foreign banks are required to abide by the same rules and regulations as the domestic banks in the countries in which they operate, it is increasingly the case that the country of origin of international banks means very little to its customers. For example, the largest U.S. bank, Citigroup, earned 60 percent of its income outside of the U.S. in 2006, raising questions about whether such a corporation can still be classified as American.

Globalization has also had a big impact on financial markets. Figure 2.2 presents cross-country trades in bonds, illustrating the incredible extent to which bond markets have become internationalized over the last 20 years.

Another important way that finance has been internationalized is through the development of new markets and new instruments that meet the specific needs of foreign investors. One such new source of international finance has come from the growth of Eurodollar accounts and *Eurobonds* (bonds issued in one market but denominated in a foreign currency, usually in dollars). The use here of "Euro" is a misnomer—these assets can be issued or traded anywhere by anyone, as long as they are denominated in a foreign currency. The largest markets for these assets are located in London, Hong Kong, Singapore, and the Caribbean.

Eurodollars and Eurobonds have become important sources of funds for many borrowers. For example, the corporations and governments of many emerging market economies have raised funds through these markets because they are

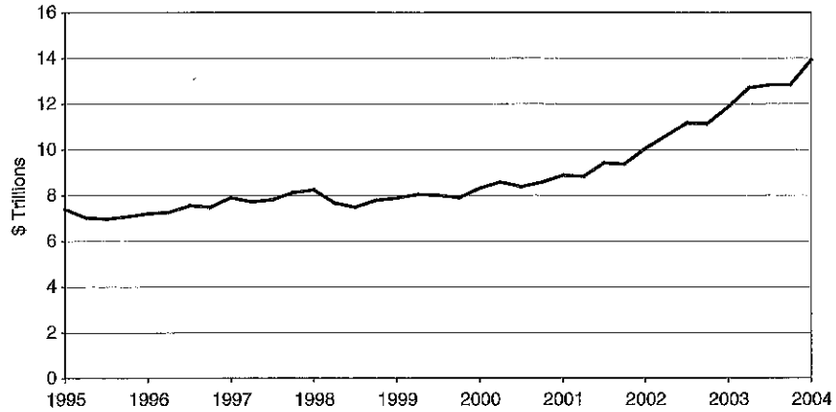

Figure 2.1
Cross-Country Bank Lending.
Source: The Bank of International Settlements.

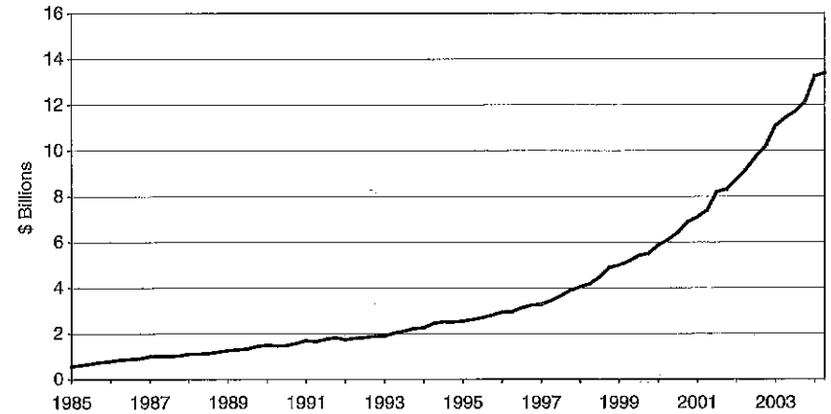

Figure 2.2
Cross-Country Bond Issues.
Source: The Bank of International Settlements.

attractive to foreign investors who would prefer to hold their assets in dollars or Euros as opposed to other more volatile and risky currencies. In addition, some countries leave Eurodollar accounts unregulated, making them attractive to certain savers and borrowers. (Such situations in the Caribbean and East Asia are often referred to as *offshore banking.*) As a result of these advantages, even the U.S. treasury and other U.S. corporations have taken to issuing Eurobonds dominated

in dollars in foreign bond markets. To get a feel of how large these "Euromarkets" have become, here are a few facts. Eurodollar accounts now hold more than $5 trillion in deposits and are a $190 billion source of funds for U.S. banks. The Eurobond market is now home to 80 percent of the bond trade outside of the U.S., and the value of new Eurobond issues now has surpassed the value of new bond issues in the U.S. bond market.

While this fourth international lending boom has been driven by many of the same factors as previous booms—increases in trade, technology, and pro-trade government polices—there are at least three ways in which this latest boom is different from previous eras. First, the growth of international capital flows has not been driven by growth in industrialized countries, but by growth in poorer emerging economies, such as China. As late as 1990, net private capital flows to developing countries amounted to only $50 billion, but grew to more than $650 billion in 2006. These are net inflows, which hide the fact that while emerging economies are receiving large capital flows from rich countries, they are also sending large amounts of capital to rich countries. In fact, many developing countries are actually net lenders to developed countries. The largest example is China, which received $55 billion of net foreign investment in 2004 at the same time that it was holding more than $711 billion of foreign reserves, primarily U.S. T-Bonds.

Foreign investment can be broken into two categories. *Foreign direct investment* involves a corporation purchasing and operating capital within a foreign country, such as setting up a factory. *Foreign portfolio investment* refers the purchase of a domestic financial asset by a foreigner, such as a stock, bond, or bank deposit. Today, emerging economies account for 30 percent of foreign portfolio investment and more than 40 percent of foreign direct investment. These numbers were 10 percent and 15 percent in 1990, illustrating exactly how remarkable the growth in capital flows to emerging economies has been. This continues a process that began during the 1970s oil lending boom, but the recent lending boom appears to be much less dependent on a single commodity or a single region, though China and India are playing very large roles.

The second difference in this current boom is that during the first era of globalization (1880–1913), most foreign portfolio investment was in the form of bonds and flowed primarily to major borrowers such as railroads and governments. Today, foreign portfolio investment is increasingly flowing to a broad and diverse array of sectors in these recipient economies. In addition, foreign portfolio investment is much more heavily weighted toward stocks. This has in large part been driven by improved financial information about international corporations as well as by the rising importance of international institutional investors such insurance companies, mutual funds, and pension funds.

The third and final difference in this most recent lending boom is that it has been driven by improved information. As a result, the flow of foreign capital is increasingly determined by which countries are able to provide quality information and

convince investors that they are an attractive place to invest, while those countries that cannot maintain investors' confidence fail to attract capital. In a world where capital is increasingly mobile, information-driven lending has had many positive implications: it increases the accountability of firms that do not act appropriately, it forces governments to focus on efficiency and maintain fiscal discipline, it acts to break down the economic and even political barriers between countries, and it compels financial systems and economies as a whole to become more efficient in order to compete for capital flows. The negative implication, however, is that confidence is often fleeting, and when a country loses investors' confidence, it will lose their capital as well, often very quickly and with devastating effects. Thus, in today's international financial system, capital mobility may increase financial volatility and economic insecurity. The role that international finance plays in economic volatility and business cycles is an important topic that is addressed at length later in this book (Chapters 9 and 10).

CASE STUDY: The Housing Market, Mortgages, and Securitization

Real estate has never been hotter than it has been over the last decade. Since 1997, nominal housing prices have increased by more than 100 percent in Australia, Britain, Ireland, Spain, and Sweden. In the U.S., nominal housing prices are up 95 percent between 1997 and 2006, the largest gain over any similar period in its history.

While a number of factors have played a role in fueling this boom, one of the most important is the ease by which individuals today can obtain a mortgage. Before the Great Depression, obtaining a home mortgage in the U.S. was not easy or cheap. Mortgages almost always had variable interest rates, high down payments (50 percent or more), and short maturities (5–10 years). A generation ago, families had to scrimp and save to stockpile the minimum 20 percent down payment needed to purchase most homes. In addition, households often had to pay sizeable *points* (fees associated with a mortgage which are calculated as a percentage of the money borrowed) and other fees that could significantly add to the costs of buying a house. Finally, the total funds available for mortgage lending were much more limited. Mortgages were almost solely provided by banks relying upon small deposits.

Much of this has changed, and now getting a mortgage and buying a house is considerably easier than it has ever been before. The down payments required from many families have fallen to 5 percent, and sometimes as low as 0 percent depending upon the circumstances. The costs associated with obtaining a mortgage have also fallen significantly, as can be seen in Figure 2.3, which presents the transaction costs (as a percentage of total mortgage loans) incurred by U.S.

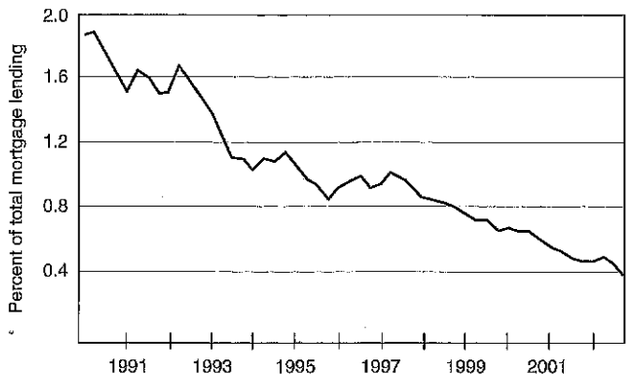

Figure 2.3
Initial Fees and Points for U.S. Mortgages.
Source: Federal Housing Finance Board at http://www.fnfb.gov.

mortgage borrowers. In addition, the creation of Internet banking as well as deregulation in the banking industry have expanded competition in the mortgage market, increasing the ease by which borrowers can shop around to get the best deal on a mortgage. Finally, financial development has dramatically increased the pool of funds available to finance mortgages. The result is that U.S. homeowners have choices in their mortgage lending that were previously unavailable. Because of this, mortgage debt, which was 20 percent of household income in 1949, has risen to 73 percent of income by 2001. In addition, 68 percent of households now own their own homes, creating a significant improvement in both their quality of life and their wealth.

Many of these developments in the mortgage market have been fueled by the explosive growth in the securitization of mortgages. *Securitization* refers to the process of transforming illiquid financial assets that are hard to resell into standardized financial instruments that are liquid. Individual mortgages are a classic example of a financial asset that is illiquid. This is because each mortgage is unique. Not only do individual mortgages differ in their default risk depending upon the credit risk of the borrower, but they are for nonstandard amounts, have different interest rates, are for different lengths of time, and are often paid-off early. All of these factors make mortgages unattractive to small savers or institutional investors. As a result, until recently there was no secondary market for mortgages; a bank that issued a mortgage would simply hold it until it was paid-off by the borrower.

While an individual mortgage is heterogeneous, large pools of mortgages behave in predictable ways. If the pool is large enough, not only will risk be reduced through diversification, but a financial analyst can accurately quantify the risk of a pool of loans. In addition, the other drawbacks of mortgages—their

nonstandard amounts, their varying lengths, the fact that they are often paid-off early—disappear if a large enough pool of loans is created where these irregularities average out. The securitization boom that began in the 1980s was driven by this fact that heterogeneous assets can be homogenized by pooling a large amount of them together. Financial analysts realized that they could issue bonds to raise money to buy large portfolios of mortgages and then use the proceeds from mortgage payments to make the interest payments on these bonds (and, of course, make some profit for themselves). The result was an explosion in reselling mortgages on secondary markets (today, over 75 percent of all mortgages are securitized) and an expansion in the number of bonds backed by securitized mortgages. Because these bonds are relatively safe and provide a higher return than many corporate bonds of similar risk, they are also very attractive to savers. Over time, there has also been an increase in the variety of financial instruments that can be created through securitization, such as bonds of varying risk (and interest rates) as well as options and other financial derivatives.

Securitization has been good for savers and for securities firms, and it has also been remarkably good for banks and for homeowners. By selling their mortgages to institutions that engage in securitization, banks have been able to make their balance sheets more liquid and have generated an important new source of revenue without assuming much risk. In addition, securitization has increased the supply of funds in the mortgage market, which has played a big role in driving down mortgage rates and the transaction costs associated with obtaining mortgages, while at the same time increasing the amount of mortgage lending. Figure 2.4 illustrates the rapid growth of mortgage lending in the U.S., which has grown to more than $10 trillion. Securitization has also increased the variety of mortgages available to homeowners, including interest-only mortgages and negative amortization loans (in which the buyer pays less than the full interest payment, with the shortfall added to the principal to be repaid at the end of the loan). Finally, securitization has led to the creation of a subprime mortgage market, where potential homebuyers with low credit ratings can obtain mortgages. Today, subprime lending accounts for 20 percent of all new mortgage lending and 10 percent of total mortgage lending, up from essentially zero a decade ago.

While securitization creates win-win-win-win situations, securitization was not possible before the use of computers and improved communication systems. Securitization is a technical exercise, and its financial ramifications are almost impossible to grasp with a calculator alone. Likewise, purchasing large enough pools of mortgages requires the communication of large amounts of information, the costs of which was prohibitively expensive until the 1980s when new information technologies became available.

Governments have also played a crucial role in facilitating securitization. In the U.S., one federal government agency has been created, the Government National Mortgage Association (GNMA, or Ginnie Mae), and two other private

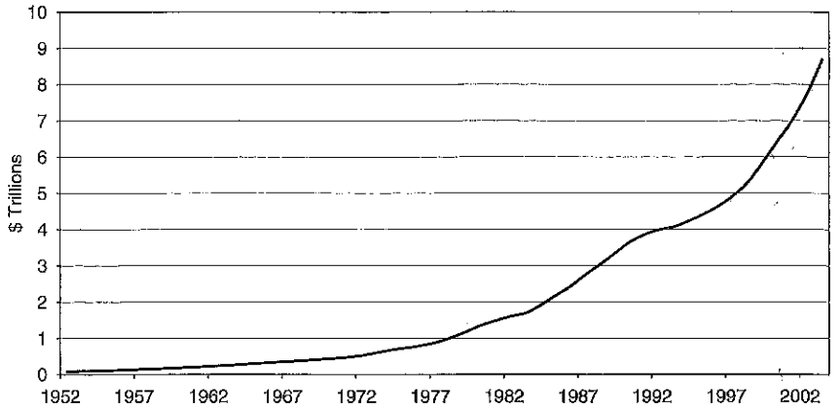

Figure 2.4
Outstanding Mortgage Loans in the U.S.
Source: Federal Reserve System, Flow of Funds Accounts, release Z.1 at http://www.federalreserve.gov/releases/Z1.

organizations have been sponsored and subsidized by the government, the Federal National Mortgage Association (FNMA, or Fannie Mae) and the Federal Home Loan Mortgage Corporation (FHLMC, or Freddie Mac), to help securitize mortgages. These organizations both securitize mortgages themselves as well as provide default insurance on mortgages that are securitized by other private securities companies. By 2003, Fannie Mae and Freddie Mac either held or guaranteed 43 percent of all mortgages. The rationale behind government involvement in the mortgage market is to encourage home ownership by reducing the costs and reducing the risk of mortgages (primarily by increasing maturities and encouraging fixed rate mortgages loans). This is exactly what has happened over the last 70 years.

Financial development in U.S. mortgage markets has outpaced mortgage market development in other economies. According to Green and Wachter (2005), in some countries—such as the U.K., Canada, and Japan—considerably less securitization takes place, with banks still the primary source of mortgage lending. As a result, mortgages tend to be of variable rate and not fixed, lending limits are often imposed, and consumer choice is limited. Other countries—such as Germany and Denmark—have high levels of securitization and large mortgage markets, but are regulated in such a way as to limit the credit risk to lenders, which limits the flexibility consumers have in choosing different types of mortgages. Finally, countries such as France, Italy, and South Korea have small and relatively underdeveloped mortgage and securitization markets, either because of government regulation or because of underdeveloped bond and stock markets.

Today, securitization has moved to other financial assets. Commercial loans, consumer loans, car loans, and credit card loans are all being securitized. Japan has securitized the bad loans in their banking system associated with their decade long banking crisis. Even the rock star David Bowie has securitized his music catalog and the royalties that he earns from it.

CASE STUDY: Hedge Funds

Financial development has not just led to the creation of new financial instruments, but to new financial institutions as well. One new type of institution that has received a great deal of attention is hedge funds. *Hedge funds* are private, international, and unregulated investment institutions that specialize in *short selling* (selling borrowed assets in the hope that these assets will fall in value and can be bought back at a profit) and maximizing *leverage* (purchasing assets with borrowed funds) in ways that generate significant speculative profits. Because the minimum amount needed to invest in a hedge fund is typically $10 million, the primary investors in hedge funds are major banks, pension funds, and other investment funds.

Hedge funds, contrary to their name, take on speculative risk in order to maximize returns. Most hedge funds utilize highly technical trading strategies that emphasize the use of financial derivatives such as options and futures contracts. Hedge funds typically make large, undiversified bets in which they place a significant share of their resources in only a small number of positions at one time. In addition, hedge funds attempt to remain fairly liquid so that they are able to swoop in and fully exploit short-term profit opportunities when they arise.

The growth of hedge funds has been remarkable. This growth has been fueled by their exceptional profitability. Figure 2.5 presents the number of hedge funds and their total assets. Hedge fund assets were up by 17 percent in 2004, which is roughly on par with their growth since the late 1980s. Today, hedge funds have more than $1 trillion in assets and are responsible for half of all trades in U.S. and British stock markets. While their returns and growth have been remarkable, it has been their focus on short selling that has gained them much of their notoriety, because hedge funds typically do well when asset prices are falling and other investment funds are doing badly. Dr. Mahathir Mohamad, former Prime Minister of Malaysia, has referred to hedge funds as the "highwaymen of the global economy." This is because of their penchant, in his opinion, for robbing from the poor, in this case from the less developed and emerging economies with more volatile financial markets where hedge funds do much of their business.

In fact, hedge funds have been blamed not just for taking advantage of economic crises, but for creating them in the first place. The most cited example of such an event was the European Monetary System crisis in 1992. The European Monetary System was a system of fixed exchange rates that predated the European Monetary Union. In 1992, George Soros, manager of the Quantum hedge fund, realized

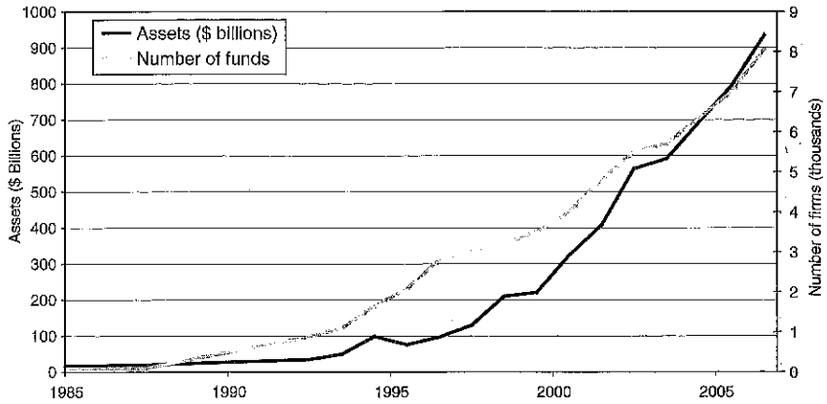

Figure 2.5
Hedge Fund Assets versus Number of Hedge Funds.
Source: The Hedge Fund Association at http://www.thehfa.org/pressreleases.cfm.

that because of looser monetary and fiscal policies, interest rates in Britain were unsustainably lower than those in Germany. The result was a profit opportunity for investors to borrow money in Britain, sell their pounds for deutschemarks, then invest these funds in Germany. Soros also realized that this situation could not last and that if enough people began selling pounds and buying deutschemarks, Britain would eventually have to devalue the pound. Before this happened, Soros bet heavily against the pound by short selling British assets, while at the same time writing public editorials that the pound was unsustainably overvalued. In essence, he was actively encouraging flight from the pound from which he stood to benefit. In the end, investors fled the pound, Britain was forced to devalue, and Soros made more than $1 billion. Many applauded Soros as someone who represents the best of capitalism: someone who was more astute and aggressive than his competitors. But others, including members of the British government, viewed this episode as a manufactured crisis that would never had taken place if Soros and other investment funds had not manipulated markets and sparked panic. Similar (though unsubstantiated) charges were made against hedge funds and Soros during the East Asian crisis, which is discussed in more detail later in Chapter 9.

Things do not always work out so profitably for hedge funds, however, and because of their riskiness, when things go bad, they go very bad. The best example of this was the collapse of one of the best-known hedge funds, Long Term Capital Management (LTCM), the directors of which included two Nobel Prize winning economists, Myron Scholes and Robert Merton. In 1997, LTCM had heavily invested in Russian bonds and sold short U.S. T-bonds on a bet that the interest rate difference between the two, or the *spread*, was too large and would

narrow over time. Instead, a financial crisis struck Russia in August of 1998 and the spread between Russian bonds and T-bonds actually increased, resulting in huge losses suffered by LTCM. By September of 1998, LTCM was facing the fact that they would have to liquidate their $80 billion asset portfolio in order to make payments to their creditors. Many market watchers became worried that this massive sell-off could drive down asset prices and spark a financial panic across the globe, particularly because many of the investors in LTCM were large U.S. banks that would have suffered significant losses, maybe critically large, by losing their LTCM stakes. Thus, there was the potential that the collapse of LTCM could have had ripple effects that would significantly disrupt financial markets and international banking systems across the globe. In the end, the Federal Reserve helped negotiate a rescue plan in which LTCM's debts were restructured in return for an additional $3.6 billion infusion of funds from LTCM's investors. LTCM did eventually liquidate its assets and it no longer exists today. A crisis was averted, but not without significant losses to investors and significant risk to the financial system as a whole. (More on LTCM in Chapter 9, which discusses currency crises and contagion.)

Numerous questions about hedge funds remain. Do such large, unregulated investment institutions really encourage more and more efficient financial intermediation? Or are they a sign of how modern finance has become self-predatory, creating a suicidal and inherently unstable form of capitalism? And should governments attempt to more strictly regulate hedge funds before the next crisis occurs? These questions will become more pressing as smaller investors begin to participate in hedge fund finance. *Fund of funds* institutions, which are mutual funds that hold stakes in a variety of hedge funds, are beginning to offer smaller investors the chance to participate in the hedge funds sector in a way that allows for more diversification (but still potentially very risky).

Conclusions

Over the last 25 years, financial systems in industrialized and emerging economies have expanded faster than their economies as a whole. There are a number of factors that have contributed to this remarkable growth. First, information technology has improved the quantity and quality of information, which is the most crucial input into financial transactions. Also, as discussed in more detail later in this book, many governments have acted to deregulate and liberalize their financial markets, creating growth and innovation in financial systems that was previously impossible. In addition, the maturity of central banking has helped stabilize financial systems and have improved the efficiency of financial intermediation. Finally, helped in part by these first three factors, no other sector has taken such advantage of the new openness between countries that began after the fall of the Berlin

Wall in 1989 and the end of the Cold War. When people talk about globalization today, they are in large part talking about the ways that financial systems across the globe have become increasingly integrated. While there have been other eras during which large amounts of capital flowed between countries, this most recent era is distinctive because inflows and outflows are largely based upon the flow of information and the maintenance of confidence. More importantly, this era is distinctive because capital is flowing to a broader range of countries, including both the poor and the rich, and to a broader array of sectors within these economies, making its potential impact on growth much larger.

Financial development has taken place to such an extent that it is safe to say that many modern economies have become "financialized," meaning that their mechanisms, their growth, and their fluctuations are increasingly determined by the workings of their financial systems. While the growth benefits of this incredible financial development are clear, many of its potential costs are not as clear. One of the most common critiques of modern finance is the possibility (some would say probability) that financial development, particularly international capital flows, makes financial systems and economies more volatile. The result would be more frequent and severe recessions and even depressions. In order to understand the impact of finance on business cycles more thoroughly, it is important to take a thoughtful look at macroeconomic theory, which has had quite a bit to say about the workings of financial systems and their role in creating economic instability. This is where the next section of this book takes us.