

**Principles of Economics in Context, Second Edition**

## **CHAPTER 30: FINANCIAL INSTABILITY AND ECONOMIC INEQUALITY**

The financial crisis that commenced in the United States in 2007 and its aftermath have been widely referred to as the “Great Recession”—and with good reason. Not since the end of World War II had economic output contracted as quickly in the industrialized world as it did in the winter of 2008/2009, and never were as many jobs lost in such a short period of time. According to UN estimates, between 2007 and 2009 the number of unemployed globally had risen by 27 million, to a total of more than 200 million. In contrast to other economic crises since World War II, high-income countries were especially hard hit. In the rich countries such as the United States or the member states of the EU, more than 14 million jobs were lost. Why did this happen? Why were the effects of the crisis so large and so widespread? What lessons can be learned for the future?

This chapter provides some insights into these complicated questions. We begin by describing the 2007–2008 financial crisis and examining the causes of such crises in general. We then take a closer look at the growing inequality of wealth and income in the United States—a central aspect of the financial crisis and a major economic challenge of the current century. Towards the end of the chapter, we suggest some measures for avoiding future crises and creating a stronger and more sustainable economic system.

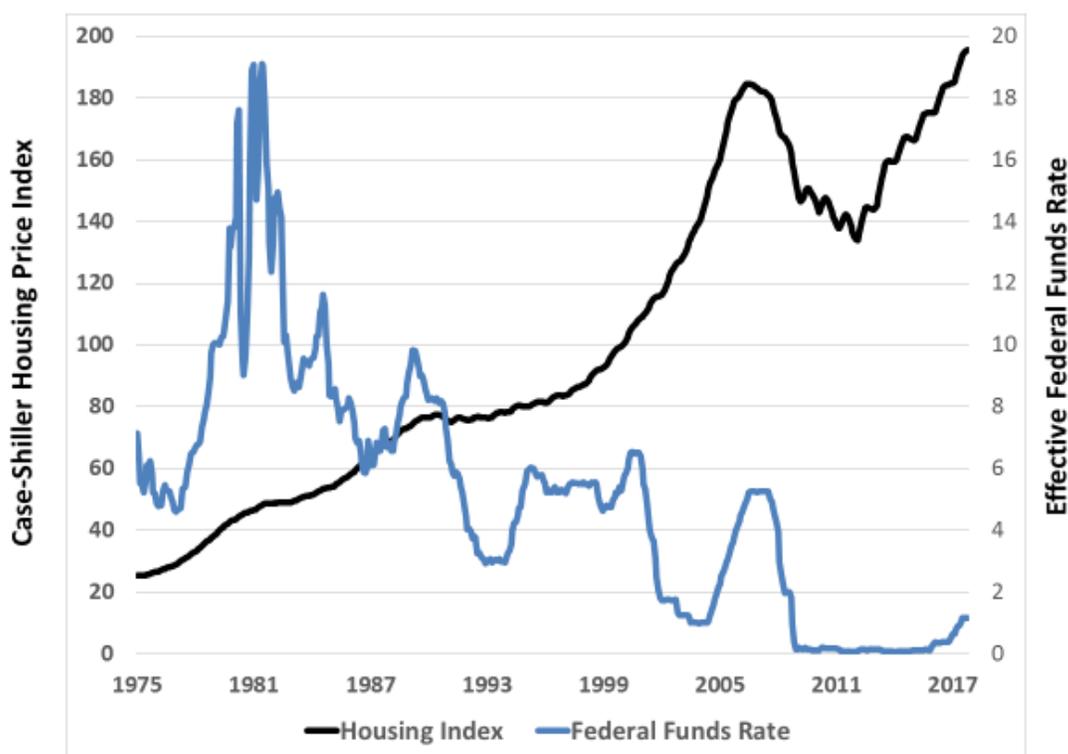
### **1. THE 2007-08 FINANCIAL CRISIS**

In retrospect, perhaps it is not difficult to see that something “big” was going to happen. Economic conditions were unusual. Interest rates were at historic lows; this motivated an unprecedented rush to buy real estate and resulted in a steep rise in home prices. Consumption and growth levels were increasing, even though real wages had remained stagnant for decades. At the same time, the financial sector was booming with the invention of new types of financial instruments—most of which were complex and very poorly understood. Yet many economists missed the typical signs of a looming crisis: rapidly rising asset prices along with growth driven by excessive borrowing. We will look at the factors leading to the crisis, and see what economic lessons can be learned from it.

#### **1.1 ENTERING THE CRISIS**

An earlier crisis, the collapse of the dot-com bubble (discussed in Chapters 19 and 28) led to a recession in 2001. In response to the recession, the Fed—chaired by Alan Greenspan—lowered the federal funds rate from 6 percent to 1.75 percent with the goal of promoting growth. In the summer of 2003, the rate was lowered still further to 1 percent—its lowest in 50 years. The low federal funds rate led to reductions across the board, including rates for loans and home mortgages.

**Figure 30.1: Housing Bubble and Credit Access**



Sources: Federal Reserve; Shiller dataset [www.econ.yale.edu/~shiller/data.htm](http://www.econ.yale.edu/~shiller/data.htm).

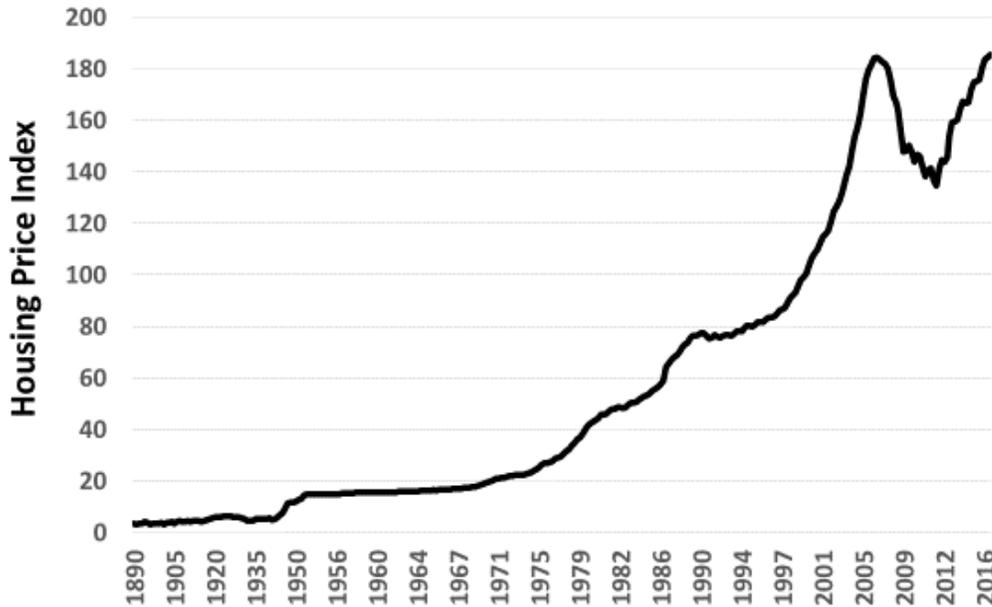
The low interest rate was a boon to consumers who, amid stagnant wages, increasingly turned to the credit market to meet their consumption needs. The housing market, in particular, saw a boost as the demand for real estate increased, with mortgage rates falling to a 50-year low of just over 5 percent in 2003. This increased demand fueled a rise in home prices, which in turn fed a speculative frenzy where millions rushed to buy believing that prices could only go in one direction—up! The buyers included not only would-be homeowners, but also speculators who were buying simply with an interest in “flipping” the property (reselling at a higher price). During the mid-1990s, U.S. households borrowed an annual average of approximately \$200 billion in mortgage loans. The figure rose abruptly to \$500 billion for the period 1998–2002 and to \$1 trillion from 2003 to 2006.

Housing prices—which had increased gradually for decades until the early 1990s—skyrocketed in the late 1990s and peaked in 2006, when the average price of a house was nearly twice its long-term average in the previous century. (Figure 30.2).

Many of the mortgages granted during this period were classified as “subprime.” Banks typically classified subprime borrowers as individuals who may have difficulty repaying loans due to high level of debt, relatively low income, or poor credit history. Historically, subprime borrowers were charged higher interest rates to compensate for the increased lending risk. During the housing bubble, however, they were allowed to borrow at low rates, often tied to risky conditions. For example, low-income families were often offered “teaser” rates of interest that were initially low but would be adjusted up to

the market rates in two to three years. Though this strategy was short-sighted, the borrowers could always refinance their loans before the rates went up, and so long as the prices of their homes increased they could continue borrowing. The rapid increase in mortgage borrowing, during the housing boom, was largely fueled by the rise in subprime mortgages. In 2002, less than 10 percent of U.S. mortgages were subprime; a mere three years later, approximately 25 percent were.

**Figure 30.2 Historical Housing Prices, 1890-2016**



Source: Shiller dataset.

While low interest rates are attractive to borrowers, they are decidedly unattractive to lenders. Why then were lenders willing to provide such high volumes of mortgages? First, financial institutions had a lot of funds to lend, as the low federal funds rate generated increased liquidity. Also, the U.S. current account deficit was increasing at the time, causing a massive inflow of foreign money into the U.S. financial system. Second, the lenders made a tremendous amount of income in the form of fees for originating and trading loans, encouraging them to issue more loans. An estimated \$2 trillion was generated in such fees between 2003 and 2008.<sup>1</sup> Finally, financial innovation in the form of **securitization** motivated the lenders to increase the supply of loans.

**subprime mortgage:** a mortgage given to someone with poor credit

**securitization:** the process of pooling various kinds of loans, slicing and sorting them according to their risk levels, and repackaging them into financial instruments

Securitization is the process of pooling various kinds of loans (mortgages, auto loans, credit card debts, and commercial bank loans), slicing and sorting them according to their

presumed risk levels, and repackaging them into new financial instruments. In the housing market, the rapid increase in the supply of mortgages was facilitated by the invention of **mortgage-backed securities (MBS)**—created by bundling independently issued home mortgages—and **collateralized debt obligations (CDOs)**—created by repackaging MBSs and other loans. After making an initial loan, the lender could quickly sell it off to another financial intermediary (such as an investment bank) and receive an up-front payment for it. These financial intermediaries would then repackage the loans into MBSs or CDOs, and sell them off to other investors—which are often other financial institutions such as hedge funds, pension funds, or foreign investors. The share of residential mortgages that were bundled into MBSs grew from 50 percent in 1995 to more than 80 percent in 2008.

**mortgage backed security (MBS):** a security composed of a bundle of many home mortgages issued by independent banks

**collateralized debt obligation (CDO):** an investment product that packages together numerous assets including mortgage-backed securities

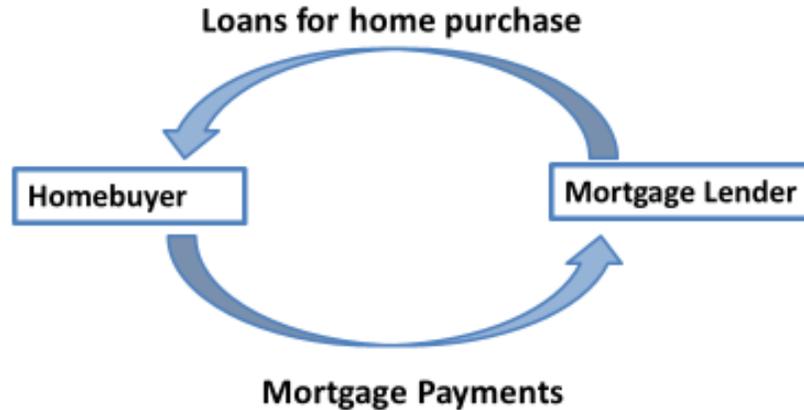
There were two direct benefits of securitization to the lenders. First, the ability to sell off the loans to other financial investors freed up capital to make new loans. Second—and perhaps more important—since the initial lenders could sell off the loans to other investors, they had little incentive to ensure that the borrowers would be able to make their payments down the road. Traditionally, home mortgages involved only the borrower, on one side, and the bank on the other. The banks generally continued to own the mortgages for their duration (usually 30 years) and took on the risk of default. The ability of lenders to transfer this risk to other financial institutions encouraged them to originate as many loans as possible without careful assessment of the risks. The creation of such perverse incentives is what economists refer to as the “**moral hazard**” problem. In this case, the loan originators had no financial incentive to protect against the risk of default by ensuring the creditworthiness of the borrower. Hence, they focused on maximizing the volume of loans. Foreclosure rates, which had been only 0.5 percent with the traditional structure, reached over 4.5 percent at the height of the crisis.<sup>2</sup>

**moral hazard:** the creation of perverse incentives that encourage excessive risk-taking because of protections against losses from that risk

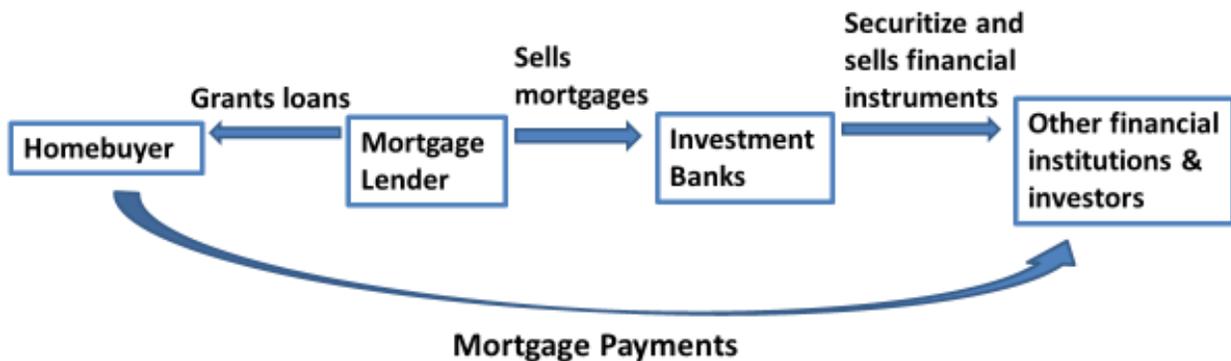
The investors buying the MBSs and CDOs obtain a share of mortgage payments, but they also took on the risks associated with these securities. Why weren't these investors worried about the creditworthiness of the borrowers? Unfortunately, most investors were not aware of the risks because securitization made MBSs and CDOs so complex that even sophisticated traders often did not understand what they were handling. Investment in these securities was mainly driven by their more attractive rates of return as compared to other types of bonds. In fact, even the banks making the initial loans bought and held on to some part of the MBSs and CDOs because of the high returns on them. In addition, the investors largely depended on the **credit rating agencies** (Standard & Poor's, Moody's, and Fitch Group) to evaluate the risks associated with these securities; and these agencies mostly rated the financial securities as being very safe.

**credit rating agencies:** companies that assign credit ratings, by evaluating the risks of default associated with various loans and other financial instruments

**Figure 30.3 (a): Traditional Mortgage Lending Structure**



**Figure 30.3 (b): Basic Structure of Securitized Mortgage Lending System**



The failure of the rating agencies to conduct a proper evaluation of the risks contained in the financial instruments is partly explained by the complex nature of these securities. There was also a moral hazard problem: the credit rating agencies were paid by the investment banks trying to sell the securities. Giving a bad rating could cost them the business of investment banks. In order to keep this business growing, the rating agencies had an incentive to understate the risks of default. Since the rating agencies didn't face any consequences for inaccurate ratings, they had no incentive to assess the risks more accurately.

Many investment banks—which were most likely aware of the high-risk nature of these financial securities—were actively creating, holding and trading them. This high risk-taking behavior of the banks is partly explained by their being **“too big to fail.”** Due to deregulation in the financial industry (discussed in Section 2.1 below), banks had become so large that their failure could spill over to the rest of the economy. If these banks reached the verge of failure, the government would have to save them. Knowing that the

government would come to their rescue, large banks had little incentive to manage risks well, thus creating another moral hazard issue.

**“too big to fail”:** when a company grows so large that its failure would cause widespread economic harm in terms of lost jobs and diminished asset values

Because large financial companies like Lehman Brothers and Merrill Lynch had many other big companies as their creditors, their failure could have a domino effect, causing these other companies in turn to fail. This occurred in the case of Lehman Brothers in September 2008, creating catastrophic impacts throughout the financial system. As a result, federal regulators “bailed out” other large institutions that came close to failure, despite resistance to helping the banks whose recklessness had led to the crisis. The moral hazard created by “too big to fail” in effect divorced the public’s interests from those of the banks, creating a situation in which the pensions or portfolios owned by many millions of households suffered large losses while major banks were bailed out.

## **1.2 COLLAPSE OF THE HOUSING BUBBLE AND IMPACTS OF THE CRISIS**

As the economy moved from recession to boom during the years 2001–2006, the Fed started increasing interest rates gradually, from about 1 percent in 2004 to just over 5 percent in 2006. This change, despite being gradual, caused a sharp increase in mortgage payments for many homeowners. In 2006, home prices stopped rising and many borrowers began falling behind on their monthly payments. As defaults on mortgages rose, housing prices fell and some economists warned about the possibility of a large-scale crisis. The Fed, chaired by Ben Bernanke, started lowering interest rates in 2007 to add liquidity to the system. But given the huge amount of risky loans made during the boom years, this move came too late: the crisis was inevitable.

As home values declined, the value of financial assets such as MBSs and CDOs—derived from the value of mortgages—fell. First, the large mortgage companies, such as Countrywide and Washington Mutual, nearly collapsed because they held large amounts of bad loans. Securities firms and investment banks were next. In March 2008, the investment bank Bear Stearns took a huge loss from the sale of MBSs and CDOs. To prevent the crisis from spreading further, the Fed—which had essentially stayed out of the operations of investment banks—agreed to absorb \$30 billion of Bear Stearns’ liabilities, and Bear Stearns was bought by JP Morgan. The crisis, however, continued to worsen, with Lehman Brothers going bankrupt in September 2008, followed by Merrill Lynch selling itself to Bank of America, and Wachovia selling itself to Wells Fargo. By the end of 2008, all the investment banks had reorganized themselves as bank holding companies to make themselves eligible for federal loans.\*

With the failure of large financial firms, lenders became much less willing to give out new loans. This led to a “credit crunch” in which families and businesses were unable to obtain loans. With the tightening of credit, options for refinancing mortgages dwindled and

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\* Bank holding companies are companies that own or control banks. These companies are regulated and supervised by the Federal Reserve. Conversion of investment banks to bank holding companies imposes more regulations on the banks, but also provides them with easier access to funding through the Fed.

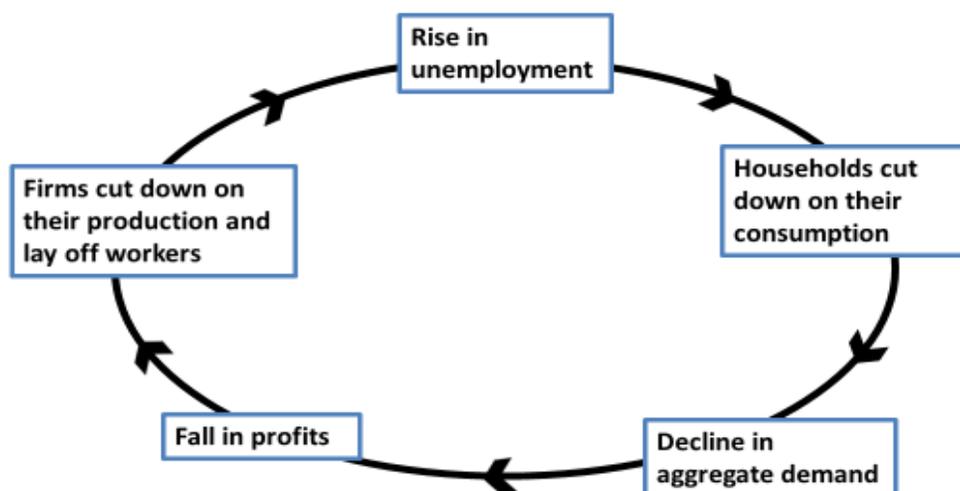
default rates increased, further intensifying the crisis. Approximately 11 million homebuyers faced foreclosure from 2008 to mid-2012, accounting for about a quarter of the mortgages in the United States. Additionally, an immense amount of financial wealth disappeared as U.S. families lost \$10.9 trillion in financial investments related to stocks and bonds (amounting to an average loss of nearly \$100,000 per household) from mid-2007 to early 2009.

The impacts of the crisis quickly spread from the financial sector to the real sector. During the housing boom, the real sector had experienced tremendous growth, not only from home purchases and construction but also through multiplier effects in durable goods industries related to housing. Consumers felt wealthier and spent more on consumer goods. In addition, consumers' increased ability to borrow based on the rising value of their houses helped the real sector grow. When the crisis hit, consumers cut their spending drastically, resulting in declining profits for businesses and rising unemployment.

From 2007 to 2009, the U.S. economy lost nearly 9 million jobs. The official unemployment rate hit 10 percent in October 2009 and stayed above 7 percent through late 2013. Total unemployment and underemployment numbers, including marginally attached workers and those working part time involuntarily, were much higher—reaching over 17 percent in late 2009, staying above 13 percent until the end of 2013, and only declining gradually to about 8 percent by 2017.

Although many families experienced hardship, certain groups were affected disproportionately. Young people, for example, suffered a heavy impact, as the unemployment rate for youth (in the 15–24 age group) increased from about 10 percent in 2007 to over 18 percent in 2010. Certain industries, such as construction and manufacturing, were hit particularly hard. Between 2007 and 2010, unemployment rates in the construction sector increased from 7.4 percent to 20.6 percent, while unemployment in the manufacturing sector jumped from 4.3 percent to 12.1 percent.<sup>3</sup>

**Figure 30.4: Vicious Cycle of Unemployment**



With rising unemployment, many families continued to cut down on their spending. Between 2008 and 2011, U.S. consumers on average reported spending \$175 per month less than they would have in the absence of a recession. This decline in aggregate

expenditure contributed to lowering profits and business investment, which pushed unemployment levels even higher. Hence the economy entered a vicious cycle of rising unemployment and declining demand (see Figure 30.4).

Income and wealth inequality, already severe before the crisis, only intensified after it. While the wealthiest members of society lost the most in dollar terms (although much of it was recovered by 2010), the lower and middle class, on average, lost a far greater share of their existing wealth. The value of retirement accounts plummeted during the crisis, wrecking the retirement plans of millions of middle-class families. From 2007 through 2010, the median household lost nearly 40 percent of their wealth, while the average household net worth of the poorest 25 percent fell to zero. The wealth of middle-income families increased by 68 percent (from \$95,879 to \$161,050) between 1983 and 2007, but most of this gain had disappeared by 2013 as their wealth levels had fallen to \$98,000. At the same time, upper-income families saw their wealth more than double from 1983 to 2007 (from \$323,402 to \$729,930), and though they also faced losses during the recession, by 2013 their wealth had risen to \$650,074.<sup>4</sup>

The impacts of the crisis spread to many other countries throughout the world (see Box 30.1). Global economic growth declined drastically as a result, becoming negative in 2009. This clearly demonstrated the dependence of the global economic system on a healthy financial sector, and its vulnerability when that sector came close to collapse.

### **BOX 30.1 GLOBAL IMPACTS OF THE 2008 FINANCIAL CRISIS**

The financial crisis that started in the United States quickly spread to the rest of the world. World economic growth, which had remained relatively steady between 2004 and 2007, experienced a sharp decline of almost 3 percent in 2009. While high-income countries experienced the steepest decline, developing countries also suffered as their growth rate (while still positive) declined in 2008 and 2009 (Figure 30.5).<sup>5</sup>

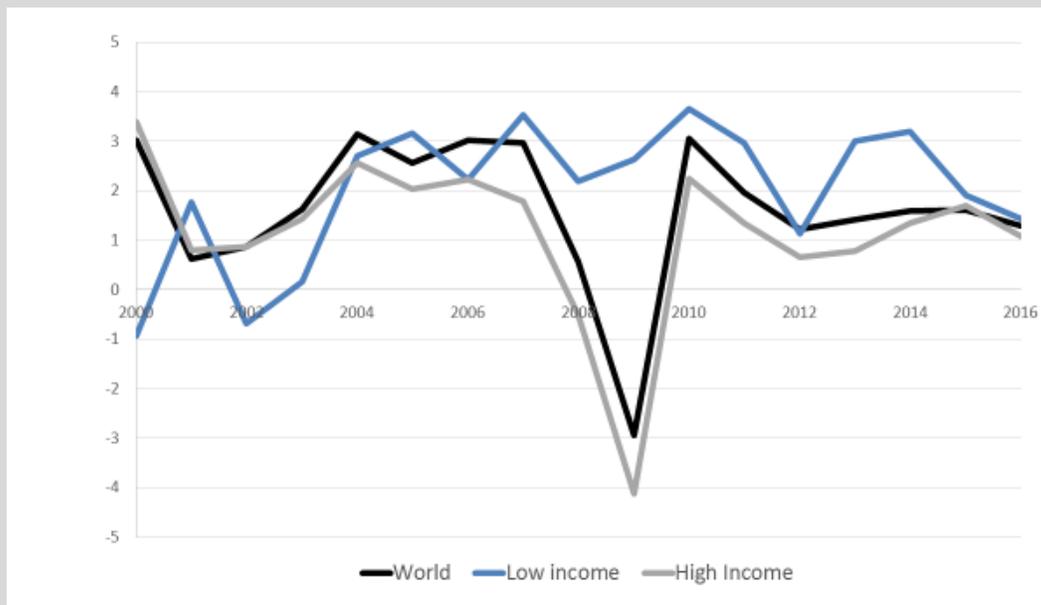
There were several channels through which the crisis in the U.S. spread to these other countries. First, other advanced economies that were highly connected to the U.S. financial markets were severely hit, as foreign financial institutions had invested heavily in U.S. financial securities that failed during the crisis. The loss in investor confidence during the crisis also caused an overall decline in the value of financial assets. Globally, it is estimated that about \$50 trillion in financial wealth was wiped out during the crisis. Additionally, as U.S. banks faced liquidity pressures at home, they repatriated their funds from foreign banks. This caused the foreign institutes to reduce their lending activities, resulting in an overall decline in spending and growth.

Problems were especially severe in Europe, where some countries had accumulated high levels of debt. With the surfacing of the highly risky nature of the financial assets, investors started worrying about the repayment of these debts and demanded higher interest rates. To meet these demands, governments cut down on their spending and increased taxes, lowering overall demand and exacerbating the crisis. As a result, the crisis in the U.S became a prelude to a second debt crisis in Europe, which led to further contraction in output and more job losses in countries such as Greece, Ireland, Portugal, Italy and Spain.

The decline in demand in the United States and other developed countries, as consumers cut down on their spending, also affected oil exporting nations in the Middle East as well as the economies of countries like China, Japan and Mexico that have the U.S. and Europe as their major export markets. In 2009, exports from China fell by 17 percent.<sup>6</sup> In addition, Mexico's GDP—about a quarter of which is dependent on exports—declined by 6.6 percent as exports fell by over 17 percent in 2009.<sup>7</sup>

Other countries that did not have close trading or financial relations with the U.S. were affected through indirect channels. For example, the decline in the Middle East economy from falling oil exports resulted in a rise in unemployment, especially for migrant workers from Asia and North Africa. This led to a fall in remittances sent home by these migrants, adversely affecting remittance-dependent economies such as the Philippines, Nepal and Gambia. In the United States, unemployment for immigrants from Mexico and Central America increased faster than that for native born Americans (11.5 percent for these immigrants compared to 9.5 percent for those born in the U.S., as of October 2009). Consequently, remittances received by these countries declined. For example, remittances to Mexico declined 13.4 percent for the first nine months of 2009 as compared to a year earlier.<sup>8</sup> The impacts of the financial crisis thus became truly global.

**Figure 30.5: GDP per capita Growth Rates**



Source: World Development Indicators, World Bank

### 1.3 POLICY RESPONSES FOR RECOVERY

Recovery from the 2008 financial crisis involved active management of the economy, including both fiscal and monetary policy. In both areas, unprecedented steps were taken in response to the sweeping nature of the crisis. In addition, regulatory reforms were adopted with the goal of averting future crises. A decade later, it is possible to provide an

evaluation of the impacts of these measures, though some issues, such as the appropriate extent and nature of financial regulation, remain controversial.

### ***Fiscal and Monetary Responses***

To address the economic decline after the crisis, the government instituted a massive fiscal stimulus. To this end, Congress passed the American Recovery and Reinvestment Act (ARRA) (discussed in Chapter 25). As of 2013, a total of \$816.3 billion had been spent, of which \$270.7 billion was in the form of tax relief, \$264.4 billion was in benefits (unemployment, food stamps and Medicare), and \$261.2 billion was in job creation contracts, grants and loans.<sup>9</sup> Independent analysts estimate that ARRA created between 1.5 million and 7.9 million new jobs from 2009 to 2012. Nevertheless, with the unemployment rate over 7 percent through 2013, employment growth remained lackluster. While economist Paul Krugman and others have criticized the fiscal stimulus as being not big enough,<sup>10</sup> others have expressed concern over its contribution to raising the government deficit, which may lead to other problems in the long-term. (We review issues of debt and deficits in Chapter 31).

While the federal bill was rapidly boosting spending, many state and local governments were cutting down on their spending due to a decline in their tax revenues from the reduction in overall income and employment levels that resulted from the crisis. State budget deficits ballooned, peaking at a total of \$191 billion in 2010. While states received some federal assistance as a part of ARRA, it only covered about 40 percent of their budget shortfalls from 2009 to 2011. To make up the rest, 46 states had cut their spending on services and 30 states had increased taxes by 2012. These unintended procyclical policies partially countervailed the recovery efforts at the federal level and significantly slowed the rate of job creation in the early stages of economic recovery.<sup>11</sup>

The recovery efforts of the government also included a \$700 billion Treasury bailout—known as the Troubled Asset Relief Program (TARP)—to make emergency loans to firms that were in critical condition. Major recipients of this bailout included the insurance giant AIG, along with large financial corporations such as Citibank, JP Morgan Chase, Bank of America, and Goldman Sachs. Even nonfinancial firms, such as General Motors and Chrysler, received billions of dollars in TARP loans as they had invested heavily in financial assets. The goal was to keep the financial system from complete collapse (in which the bailout program was successful), and to get lending going again (which had much less success). Although TARP loans were paid back to the government by 2014, there was widespread criticism of a policy that bailed out the banks that created the crisis, rather than helping the middle and low-income homeowners who lost so much wealth as a result.

In the area of monetary policy, the Fed implemented several facilities to pump liquidity into the system. It lowered the effective federal funds rate from over 5 percent in August 2007 to 0–0.25 percent by the end of 2008. During the same period, it lowered the discount rate from 5.75 percent to 0.5 percent. The Fed also purchased billions of dollars' worth of shaky assets, including MBSs and CDOs that had lost majority of their value with the decline in home prices, through its quantitative easing program (discussed in Chapter 27). The result was that the assets on the Fed's balance sheet jumped from about \$950 billion in 2007 to more than \$2.5 trillion in 2008. These Fed purchases of “toxic assets” in

danger of default helped to inject liquidity into the financial system and reduce the likelihood of systemic crisis.

Despite these efforts, the impact of expansionary monetary policies on promoting economic recovery was limited, since the increase in the flow of money did not alleviate the pessimism felt by consumers and businesses, who remained unwilling to start borrowing and spending. In addition, banks were not willing to increase their lending, both because they did not trust the creditworthiness of the borrowers and because they had just suffered huge capital losses. (Remember the Keynesian argument on why monetary policy might not be effective during an economic crisis, discussed in Chapter 27.)

### **BOX 30.2 THE GREAT DEPRESSION AND THE GREAT RECESSION COMPARED**

How does the “Great Recession” of 2007–2009 compare to the other “great” economic downturn of the past century, the Great Depression? Both downturns were preceded by a period of economic strength. In the 1920s people were feeling optimistic and were spending, many immoderately, driving prices up. Average annual growth during the 1920s is estimated to have been more than 4 percent, similar to the 4.4 percent average annual growth between 2005 and 2007. The asset price bubble in the housing market in the 2008 crisis is comparable to the rapidly inflating asset bubble in 1920, most manifest in the main stock indexes like the Dow Jones Industrials. In addition, inequality levels were at historically high levels preceding both of these crises.

In terms of possible explanations for each economic downturn, the two episodes may have been more similar than different. But in terms of economic consequences, the differences are noteworthy. For example, in the Great Recession, the U.S. economy moved into its recovery phase a mere year and a half after the financial collapse. During the Great Depression, it took almost four years, and the limited recovery was then interrupted by further downturns. Although inflation declined significantly in the wake of the 2008 financial crisis, there was no deflation, whereas a decline in prices of more than 25 percent took place during the Great Depression. In addition, over 5,000 banks and 85,000 businesses failed in the early years of the Great Depression, causing millions of depositors to lose their savings. GDP fell by 46 percent in the four years between 1929 and 1933. In contrast, far fewer banks failed in the 2008 recession, depositors’ accounts were protected by the FDIC, and GDP fell by only about 3 percent between 2007 and 2009. The unemployment rate at the nadir of the Great Recession was about 10 percent, compared to 25 percent during the Great Depression.

The principal reason for the difference in impacts of these two big economic downturns is explained by the existence of government regulation, automatic stabilizers, and discretionary fiscal and monetary policy in the recent crisis. During the Great Depression, the government was primarily focused on maintaining a balanced budget, despite the economic downturn; while in the recent crisis the government ran huge deficits to help the economy recover. For example, government-financed “social safety net” spending made a major difference in terms of the impacts on unemployment. Unemployment benefits—which did not exist during the Great Depression—were extended to 99 weeks during the 2007–2009 recession and

throughout much of the subsequent slow recovery. Such benefits helped many of those involuntarily jobless to spend on necessities, keeping consumption from collapsing too far and also averting the fears of deflation.

The expansionary fiscal and monetary policies implemented by the government also helped minimize the cost of the current recession. The absence of such basic government support during the 1930s consigned millions to misery and prolonged depression. After much discussion about deregulation and pressure to reduce social safety nets over the previous three decades, the financial crisis revealed the importance of these government activities in preventing a second Great Depression.

### **The Dodd-Frank Bill**

In the wake of the crisis, the political environment—which had been focused on deregulation since the early 1970s—changed abruptly, and the need for regulating the financial sector to prevent future crisis became a priority. The principal response to the call for reform was the 2010 Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank), cosponsored by Senator Chris Dodd (D-CT) and Representative Barney Frank (D-MA). The key goals of the Dodd Frank reform include:

- **Protecting consumers:** The Consumer Financial Protection Bureau was created to monitor loosely regulated lenders and protect vulnerable borrowers by ensuring they get clear and accurate information needed to shop for mortgages, credit cards, and other financial products and protect them from hidden fees and abusive terms.
- **Preventing predatory lending:** Minimum criteria, related to credit history, income and debt levels, were set to determine the eligibility of mortgages for prospective borrowers.
- **Discouraging risky practices:** The extent to which banks could transfer risks through MBSs and other securities was reduced, by requiring the securitizers to hold at least 5 percent of the instruments they create, thus exposing them to a minimum amount of mortgage default risk.
- **Controlling executive pay:** The act called for the Securities and Exchange Commission to ensure that corporate board members who determine CEO compensation do not have private interests in the company, which might give them an incentive to favor higher CEO pay over broad shareholder interests. For the same reason, it proposed allowing shareholders to have more say on corporate affairs with a non-binding vote on executive pay.
- **Protecting investors:** Rating agencies were required to disclose the method used to rate each security, in order to increase transparency to investors.
- **Ending “too big to fail”:** The act was designed to limit the amount of leverage (borrowing for investment) permitted to large financial firms, to prevent artificial increases in asset prices based on huge amounts of borrowing. It imposed restrictions on the activities of financial companies that hold assets in excess of \$50 billion, required large financial institutions to hold larger capital reserves, and limited the growth in size of large firms by forbidding any merger that allows a

single firm to hold more than 10 percent of the liabilities of the entire financial sector.

- **Enforcing regulations:** The act strengthened oversight and empowered regulators to aggressively pursue financial fraud, conflicts of interest, and manipulation of the system.

The financial sector was critical of the bill from the start, arguing that it would create significant costs to them and slow down job creation. Over time, the bill has been “watered down,” to a great extent due to intense lobbying efforts from the financial sector. While the bill has been credited for making the financial sector safer and more resilient with higher capital and leverage requirements, it has also been criticized as being too complex and not sufficient to deal with some of the key problems in the financial sector.<sup>12</sup> For example, the bulk of derivatives (indirect forms of investment such as options to buy or sell stocks) are still traded directly by banks with little government supervision, and the rating agencies are still paid by the firms that they rate, thus failing to address the moral hazard issue discussed above. Also, no regulators were fired and no big bankers subjected to criminal prosecution in the aftermath of the crisis, so there has been little incentive to change behavior in the financial sector. The basic structure, business model and practices of large banks have remained unaltered, meaning that the goal of eliminating “too big to fail” has not been achieved. In addition, the expansion of the “shadow banking system” of nonbank financial institutions has continued with little regulation, raising new dangers for financial stability.

More recent efforts on financial regulation have been focused on reducing regulations. The Trump administration has a stated goal of undoing most of the regulations put in place by Dodd-Frank. In 2018, legislation was passed to revise regulations pertaining to small and regional banks, to free midsize lenders from some of the strictest post-crisis oversight by raising the regulatory threshold from \$50 to \$250 billion, and to weaken some accountability measures for larger banks.

### **Discussion Questions**

1. Would you prefer interest rates in the economy to be high or low? On what does it depend? Who benefited from low interest rates during the inflation of the housing bubble? How did the low interest rates create problems?
2. What do you think of the measures that were taken to recover from the 2008 crisis? Have we done enough to avoid similar problems in the future?

## **2. A BROADER UNDERSTANDING OF THE CRISIS**

To understand what caused the crisis and why its impacts were so large, we first need to examine two key transformations in the U.S. financial sector over the past century: deregulation and financialization. We will discuss these next and then develop a theoretical framework for understanding the occurrence of financial crises in general.

## 2.1 DEREGULATION AND FINANCIALIZATION

The stock market crash of 1929, which triggered the Great Depression, brought about major changes in the financial sector. Most important were regulations set in place to minimize the risk-taking behavior of this sector. These included the Glass-Steagall Act (see Chapter 26), which separated investment banks from commercial banks, essentially preventing commercial banks from engaging in risky investments and investment banks from holding deposits. Also, interest was prohibited on checking accounts and an interest rate ceiling was imposed on savings accounts (regulation Q). Most banking activity could not be conducted across state lines. In addition, several capital and leverage requirements were imposed on the financial sector, the Federal Deposit Insurance Corporation (FDIC) was set up to insure bank deposits, and the Securities and Exchange Commission (SEC) was established to maintain an orderly and efficient financial sector.

As discussed in Chapters 22 and 26, the primary role of finance is to facilitate the flow of funds through the economy. Households borrow from the financial sector to buy a car or a house or to pay for college, and they rely on it for pension and retirement plans. Businesses borrow from the financial sector to invest in capital goods, like machinery and building, needed to produce goods and services. The financial sector also facilitates investment in financial assets such as stocks, bonds, foreign currencies, certificates of deposits, and money market funds. Individuals can hold on to such financial assets as wealth, or trade them over the financial market to make monetary gains. Until the 1960s, finance was mostly limited to these activities.

By the late 1960s and early 1970s, the economic environment changed significantly. Businesses experienced declining profits—partly due to increased regulations, higher corporate taxes, and increased competition from other developed nations—and the economic and political system became more responsive to the demands of businesses. This led to an era of deregulation starting in the 1980s, justified by the “free-market” mantra that banks and other financial institutions could be depended on to self-regulate, on the assumption that profit-seeking enterprises would voluntarily avoid risky practices that might cause them to fail.

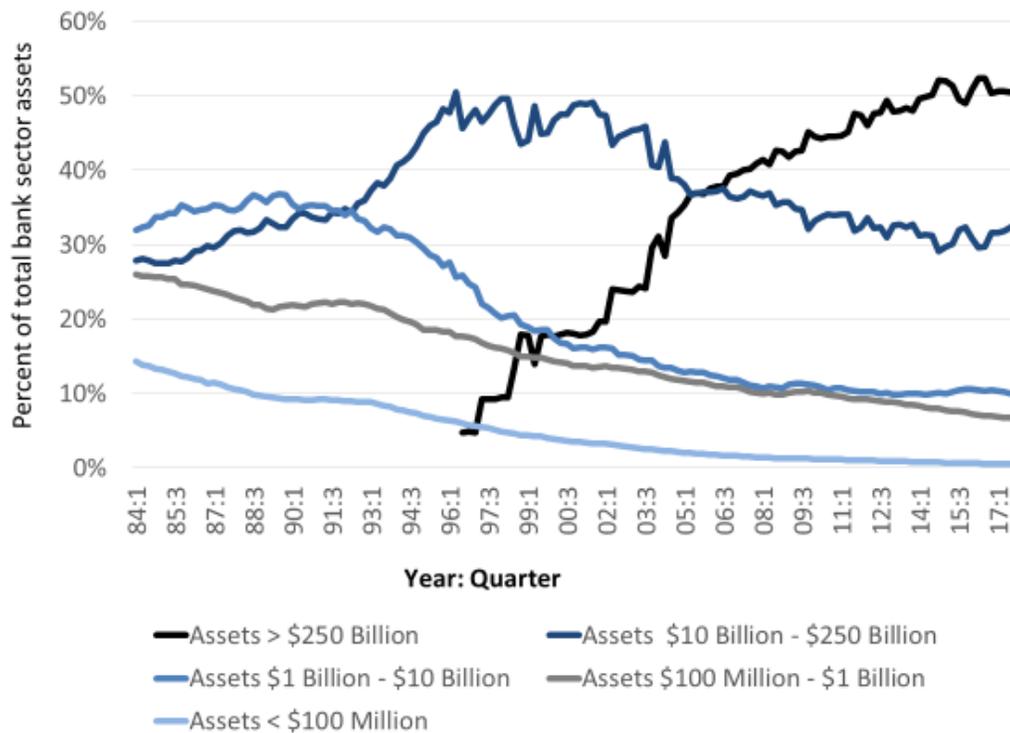
The deregulation of the financial sector included policies for loosening restrictions on capital across borders, removing interest rate ceilings, allowing banks to measure the riskiness of their own products, permitting financial institutions to offer interest-bearing checking, and increasing the amount of leverage permitted to investment banks. The 1994 Riegle-Neal Interstate Banking and Branching Act repealed the prohibitions on interstate banking, resulting in a surge in bank mergers. In addition, the separation between investment and commercial banks was gradually eroded through the 1980s and 1990s, with the Fed becoming increasingly lenient about which activities were permitted for commercial banks. In 1999, the Financial Services Modernization Act allowed large financial companies to engage in commercial and investment banking as well as in insurance activities. This act, perhaps more than any other piece of legislation, contributed to the increase in the number of “megabanks,” notable among them being Citigroup, the largest financial company in the world.

The increasing size of the banks was justified with claims that large banks are more efficient and less vulnerable to risk than small banks. Supporters of larger banks argued that having a more diverse source of income (e.g., stocks, real estate, various loans) and

being able to lend to more geographically dispersed borrowers made larger banks safer than smaller ones. Opponents argued that such benefits only encouraged larger banks to take more risks. Empirical evidence generally supports the latter claim. In 2013, megabank JP Morgan Chase, for example, agreed to pay \$13 billion in a settlement resulting from the bank’s questionable mortgage practices.

Deregulation encouraged a proliferation of new kinds of financial institutions and instruments. Finance turned away from its traditional role of lending for consumption and investment, and most of the money in the financial system was directed towards lending against existing assets such as housing, stocks and bonds—not creating new assets. From the 1940s to the 1970s, nonfinancial institutions received 15 to 20 percent of their funding for productive investment from the financial sector; this dropped to 7 to 10 percent after 1980. Most financial corporations started lending to each other, instead of lending to nonfinancial corporations. (Such within-sector lending increased from 10 percent before 1970s to over 30 percent after 1980).<sup>13</sup> The operation of the financial sector has also expanded through the rise of the shadow banking system (discussed in Chapter 26), which encouraged putting more money into high-yield financial schemes.

**Figure 30.6: Increasing Bank Size**

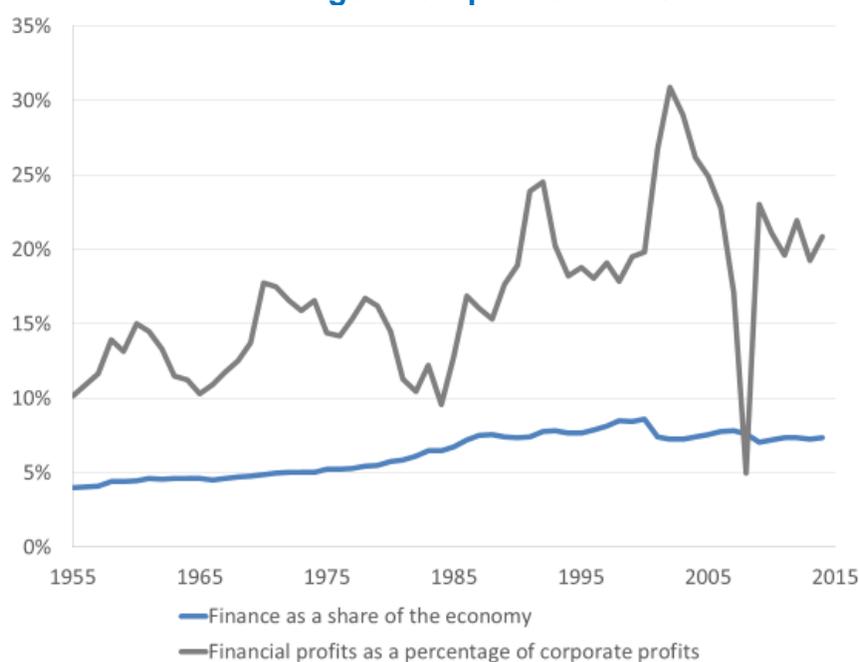


Source: Federal Deposit Insurance Corporation

The frequency of bank mergers has increased steadily since the 1980s. From 1984 to 2017, the number of banks with more than \$10 billion in assets increased from 28 to 125, with nine of these banks holding more than \$250 billion in assets. The share of banking

sector assets held by large banks (more than 10 billion in assets) increased from 28 to more than 82 percent (Figure 30.6). The consolidation continues to this day. In 2017, the nine largest financial institutions (with more than \$250 billion in assets) held more than half of the total financial assets. In addition, the top seven commercial banks held over half of the total deposits and almost 97 percent of derivatives trading was controlled by top five investment banks. From the 1980s to 2008, the financial sector took in a growing share of corporate profits. Their profit share collapsed during the 2008 crisis, but has subsequently recovered, although not to the previous highs (Figure 30.7). Although finance only constituted about 7 percent of the economy and employed 5 percent of the workforce, it took over 20 percent of the corporate profits in 2014.

**Figure 30.7: Finance as a Share of the Economy and Financial Profits as a Percentage of Corporate Profits**



*Source:* NIPA Tables 6.2A-6.2D, and Piketty, Saez, and Zucman's *Distributional National Accounts*, Appendix tables II: Distributional series.

As mentioned in Chapters 22 and 26, this process of increasing size and importance of the financial markets in the operation of the economy—with the financial sector accounting for a greater share of GDP and acquiring an increased ability to generate and circulate profits—is known as “financialization”.<sup>14</sup> Even nonfinancial corporations have become increasingly involved in investing in financial instruments, rather than funding new investments to expand production of goods and services (see Box 30.3). For example, automobile manufacturer General Motors established its financial arm General Motors Acceptance Corporation (GMAC) in 1919. Until the 1980s, the main function of GMAC was to provide credit to their customers to increase car sales. GMAC entered mortgage lending in 1985 and further expanded its services to include insurance, banking and commercial finance in the 1990s. In 2004, GM reported that 66 percent of its \$1.3 billion quarterly profits came from GMAC.<sup>15</sup>

### BOX 30.3 FINANCIALIZATION OF THE ECONOMY

Since the 1980s, firms in the real sector have increasingly invested, not in production of goods and services, but in financial instruments. In her book *Makers and Takers: The Rise of Finance and the Fall of American Business*, Rana Foroohar argues that “the ascendance of finance has induced a decline in American business, as large nonfinancial corporations have increasingly come to mimic banks in order to seek profits in financial engineering activities divorced from their core services.” For example, in 2000 Ford generated more income from selling loans than from selling cars, and GE Capital generated approximately half of GE’s total earnings.<sup>16</sup> Today American companies in every sector earn five times more revenue from financial activities, such as investing, hedging and offering financial services, than they did before 1980.<sup>17</sup>

Even though the primary function of the financial sector is to support growth in the real sector, excessive financialization could actually hurt this growth. Economist Costas Lapavistas claims that financialization of the economy fosters growth in countries that are at early or intermediate stages of development, but could hurt growth in developed countries. For example, countries like Brazil and Turkey saw significant real economic growth along with financialization over the past decade (though in 2018 Turkey suffered a financial crisis arising from excessive debt).<sup>18</sup> In the U.S., however, the financial sector has grown tremendously without comparable growth in the real sector, as financialization has motivated profit-making through financial innovation rather than through investment and innovation in the real sector. A 2014 study from Harvard Business School, for example, points out that the massive technical problems during Boeing’s launch of the 787 Dreamliner (battery failures, faulty fire extinguishers etc.) can be attributed to the shift in company culture from being driven by engineering to being focused on maximizing returns on assets, increasing profits by outsourcing, and reducing funding on research.

Sources: Foroohar, 2016; Mukund, 2014.

Households have also become increasingly dependent on the financial markets, relying more on loans to meet their expenses due to the stagnation of real wages. In 1980, for example, U.S. households held an average debt equal to about 60 percent of disposable income; this figure exceeded 130 percent in 2007. The financial crisis forced households to reduce debt to just below 100 percent of disposable income by 2017, still considerably higher than 1980 levels. In addition, the proliferation of mutual funds and their increased availability in employee accounts has caused a higher percentage of the population than ever before to have a stake in the financial market. Today, the financial sector has expanded far beyond the provision of the financial intermediation services demanded by the economy; what has grown is not only the demand for credit but the overall volume of trading of financial securities, including speculative and risk-taking activities. This suggests a need for economic theory to account better for the role of finance in macroeconomics.

## 2.2 THEORIES OF FINANCIAL INSTABILITY

The conventional theory of the financial market is based on the “efficient market hypothesis.” This theory argues that the price of a financial asset at any moment reflects all the information available about its true value. As new information becomes available, market participants revalue the asset. The theory portrays the economy as consisting of rational individuals who live in a world of perfectly competitive markets and possess complete information about the price of assets. A careful logical and mathematical analysis, built on this assumption, concludes that markets are always self-correcting, and that they always move to a stable equilibrium state in the absence of external interference. Based on these assumptions, the theory suggests that economic crises are caused by external shocks such as technological change, government action, or some unknowable force; hence, it is not possible to predict or foresee crises.

The key problem with this theory is that it ignores how uncertainty and the expectations of market participants influence the value of assets. For example, if market participants expect the price of a certain asset to rise in the future, more people will buy it now, causing an increase in current prices. As current prices increase, many people expect prices to rise even further; thus fueling current demand, inflating prices and creating a bubble. In such cases, the underlying value of an asset could be much lower than its market price. Theories of efficient markets lack an explanation for the creation of such bubbles, and of their eventual collapse.

An alternative to efficient market theory, which gained prominence in the aftermath of the 2008 crisis, is the “financial instability hypothesis” proposed by Hyman P. Minsky. Minsky’s key argument is that unregulated markets will always produce instability and crisis. When an economy is just recovering from a crisis, investors will be cautious since many of them will have been clobbered by the just-ended recession. Hence, they will keep large margins of safety, holding cash reserves as a cushion to protect against future crisis. However, as the economy emerges from its slump and profits start rising, investors become more confident and willing to pursue risky ideas, and they let their safety margins and cash reserves dwindle.

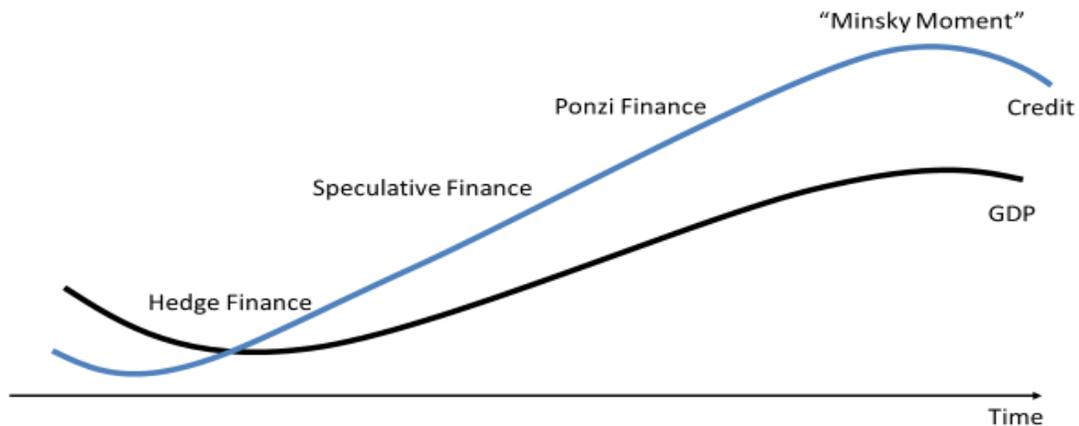
Minsky created a distinction between three financial profiles to account for different margins of safety: hedge, speculative, and Ponzi. Hedge is the safest form of financing, where the borrowers have enough cash flow to cover both interest and principal payment. Speculative finance is riskier, in that borrowers are only able to cover interest payments—not principal—with near-term income flows, but future financial flows are expected to cover principal. Ponzi is the riskiest profile, where near term income flows are insufficient to cover even the interest payments; hence interest on current debts will have to be rolled over such that new loans are taken to pay the older ones.<sup>†</sup> During an economic expansion, the stance of financial firms tends to move from the safer hedge financing to speculative and then to Ponzi financing, as they seek to more opportunities to make profits. As a result, their financial strength—which is determined by the way they finance their debt—weakens. This makes the economy overall more credit-dependent, fragile, and vulnerable to any interruption in growth.

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<sup>†</sup> The term “Ponzi finance” is based on a fraudulent investment scheme promoted by Charles Ponzi in the 1920s, where current investors are paid out of funds raised from new investors; when the flow of new funds runs out, the scheme collapses.

Minsky states that it is not just investors who seek to profit from the booming economy; bankers and financiers are equally motivated to do the same. They invent and reinvent new forms of money, substitutes for money, and innovative financing instruments that expand investment opportunities for capital gains and increased profit. Eventually this expansion will cause the economy to go beyond a period of steady growth to one of speculative boom. When some event triggers a fall in investment, the entire system falls apart. The complex structure of interlinked and overlapping cash commitments built during the boom era spreads the crisis widely, leading to a rapid collapse not only in finance but in the real economy.

**Figure 30.8: Minsky’s Financial Instability Hypothesis**



In recovering from this state of disaster, firms de-leverage (i.e. reduce their debt burden), improve their liquidity positions, reduce their risk-taking behavior, and maintain large safety margins. The financial system regains some strength and becomes less vulnerable. As economic conditions slowly start to improve, confidence builds up, investment gradually increases, aggregate demand rises, and firms start narrowing their safety margins and taking more debt, thus eventually reentering the phase of speculative boom. Hence, the seeds of instability are sowed while the economy is booming and firms are taking on expanded financial commitments.

Minsky argued that stability is in effect destabilizing, since it is when market conditions are stable that changes in policymaking, behavior and business opportunities move towards more risk-taking and deregulation. For example, financial markets were regulated in the wake of the Great Depression, when banks were reeling from huge losses, investors were more cautious about taking risks, and the general market sentiment was focused on preventing future crisis. By the 1970s, much of the pain of the Great Depression was forgotten, allowing a movement towards relaxing regulations to gain momentum.

Minsky’s theory is derived from Keynes’ notion of “fundamental uncertainty”, which argues that, since it is impossible to know the future, our actions are guided by our expectations, and these expectations are based on conventions that have been socially and historically created. Unlike the classical world, where things are in equilibrium until affected by some external event, expectations about the future, confidence levels, and risk-taking behavior are all endogenous to the economic system in the Keynesian world

(“endogenous,” as used by economists, means originating within the system, as opposed to arising from an external force). During booms, expectations lead to satisfactory outcomes and agents place higher confidence in the continuation of the boom. These optimistic expectations encourage agents to take more risks by borrowing and investing more, which drives the boom forward, increases leverage (borrowing for investment), and brings capital gains. The process is self-perpetuating but it cannot continue forever. As the economy expands and agents take higher risks, their financial status becomes more and more fragile. Under these conditions, a fall in profit rates and a failure to meet expectations will have devastating effects on the economy, since investors rapidly go from being optimistic to being pessimistic, resulting in a “rush for the exits” as firms and individuals try to investments that are no longer profitable, and in many cases are unable to cover their debts.

The Keynes-Minsky theory helps explain the occurrence of crisis as being inherent to the economic system. The numerous crises of the past few decades, including the stock market crash in 1987, savings and loans crisis in 1989, dotcom bubble of 2001, and the Great Recession of 2008, can be explained by the increasing risk-taking behavior in the financial industry during periods of boom. In fact, the 2008 crisis was referred to as a ‘Minsky moment’ because Minsky’s theory predicted such a crisis. Though Minsky died in 1996, more than a decade before the crisis hit, the deregulation and financialization of the economy since the 1970s had led him to believe that a major crisis was likely. Both Keynes and Minsky argued that it is impossible to avoid wide fluctuations in a capitalist economy, because of the uncertain nature of market psychology based on expectations. They both advocated for government to play a larger role in creating regulations that can minimize fluctuations in investment and create a more stable financial system.

Although Minsky’s theory is very helpful in understanding the roots of financial instability and the need for regulation, it only locates the roots of instability in the financial sector. The theory does not shed much light on instability in the real sector, or on the role of inequality in fueling a crisis. Rising inequality since the 1970s is of increasing concern to economists today, as it lies at the center of many current economic problems. Some of the factors contributing to the rise in inequality along with its consequences are discussed next.

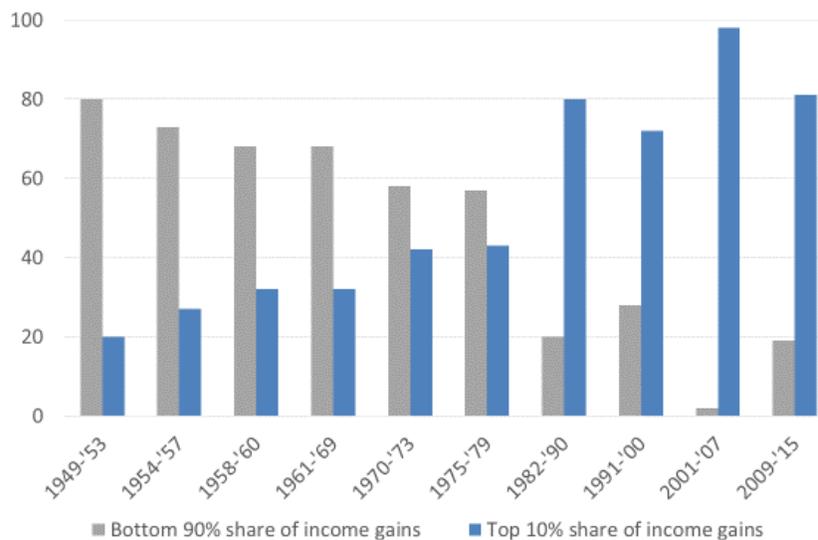
### **Discussion Questions**

1. Do you think changes in the value of “paper assets” such as stocks and bonds, or even homes, should have real economic effects? Why? Why do you think that employment suffered from the disappearance of so much financial wealth following the financial crisis?
2. Think about the ways in which uncertainty and expectations about the future may affect your current economic decisions and give two examples of such decisions. What role does expectation about the future play in Minsky’s theory of financial instability?

### 3. THE CREATION OF AN UNEQUAL SOCIETY

Over the last century economists have for the most part converged on a consensus that overall economic growth is the most effective way to promote increased incomes and improve quality of life. This appeared to be true throughout much of the post-World War II period, as fairly steady growth “lifted all boats” and led to improved living standards. In recent decades, however, rising inequality has meant that overall economic growth does not necessarily leave the majority of people better off. As illustrated by Figure 30.9, income gains during economic expansions had mostly gone to people in the bottom 90 percent of income distribution until the 1970s. Since then, a much larger share of income gains has gone to the richest 10 percent.

**Figure 30.9: Income Gains during U.S. Expansions for the Richest 10% and the Bottom 90%**



Source: Tcherneva, 2017, based on data from Thomas Piketty, Emmanuel Saez, and the National Bureau of Economic Research (NBER).

In the three decades before the 2007 crisis, the income gap between the rich and poor widened to levels not seen since the 1920s. During the last two decades of the twentieth century, rising income inequality was mostly due not to real income declines for the poor and middle classes but to relative gains for the wealthy. The low and middle-income groups were gaining in absolute terms; the problem was merely to keep pace with the rich. But starting around 1999, things changed. The median U.S. household income began a real decline, signifying that the low and middle classes were now losing in absolute terms as well.

In 1980, the bottom 50 percent of wage-earners in the U.S. took home about 21 percent of the total income in the country—compared to 11 percent of the income being taken by the top 1 percent. These numbers have reversed today as the bottom 50 percent only take home about 13 percent of the total income, while over 20 percent goes to the top 1 percent. Hence, since the 1980s the U.S. economy has transferred 8 points of national income from the bottom 50 percent to the top 1 percent. Factors contributing to

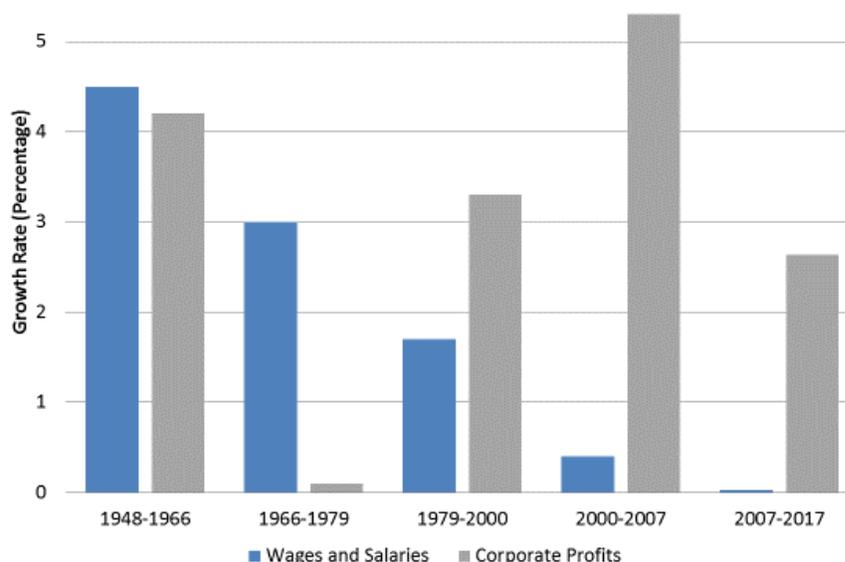
this shift include: the deregulation and privatization of business and finance; financialization of the economy; reduction in social spending; tax cuts primarily benefiting the rich and major corporations; a decline in the power of trade unions; and a gradual shift in employment patterns away from long-term employment to part-time and temporary positions.

### 3.1 CAUSES OF RISING WAGE INEQUALITY

An important macroeconomic issue, introduced in Chapter 11, is the share of total income received by labor as compared to the share accruing to the owners of capital. Data that track the national income received by workers as wages indicate that this share has declined in recent years. In the nonfarm business sector (which accounts for roughly 74 percent of the output produced in the U.S. economy), labor's share of total income tended, before 1980, to fluctuate around a long-run value of approximately 65 percent. By 2016 it had decreased to 57.5 percent.

As shown in Figure 30.10, between 1948 and 1966 the increase in wages was slightly higher than the increase in corporate profits. Between 1966 and 1979 wages grew much faster than corporate profits. Since the 1980s, however, this trend has reversed, with annual growth in wages declining over time while corporate profits increased rapidly. Between 2000 and 2007, corporate profits grew at over 5 percent annually, while growth in wages remained below 1 percent. Between 2007 and 2017, as the economy recovered from the financial crisis, profits grew at around 2.5 percent, while wages hardly increased at all.

**Figure 30.10: Growth Rates of Wages and Salaries and Corporate Profit**



Source: U.S. Bureau of Economic Analysis (2017), NIPA Table 1.14, 1.1.4; Bureau of Labor Statistics (2017).

One explanation for this could be a reduction in the growth of labor productivity—but statistics on average output per hour worked indicate that wages have in fact not been

keeping up with growing labor productivity. As noted in Chapter 22, the formal definition of labor productivity is the market value of the output of a given amount of labor, normally one hour. Productivity growth in the nonfarm business sector averaged 2.7 percent annually before 1973, then averaged 1.4 percent during a slowdown in productivity growth over 1974–1995, and rose again to 2.3 percent from 1996 to 2012.

As labor becomes more productive, one would expect that wages would rise accordingly. In the U.S., this was approximately true from 1947 up to about 1970. Over this period, wages and productivity both increased by a real factor of about two. But since then, a gap between productivity growth and real wage growth became evident. This **wage-productivity gap** has increased over time (as shown in Chapter 23, Figure 23.7). With wage increases not keeping up with productivity growth, a growing share of the gains from productivity growth has been going into expanding profits rather than raising wages.

**wage-productivity gap:** the gap between the growth of labor productivity and the growth of hourly labor compensation

Some explanations for why wages have not kept up with productivity include the following.

### *The decline of unions*

The decline in the bargaining power of unions in the United States is one obvious explanation for the widening wage-productivity gap. Workers have not had the power to insist that their wages keep up with the increasing value of their output. Union membership has declined from a high of about 35 percent of the work force in the 1950s to about 11 percent today.<sup>19</sup> Over the period in question—approximately 1970 to the present—government policy has become decidedly less supportive of unions and low-wage workers, and the rate of union participation has declined markedly.

**Figure 30.11 Union Membership Rate and Income Inequality, 1917 - 2017**

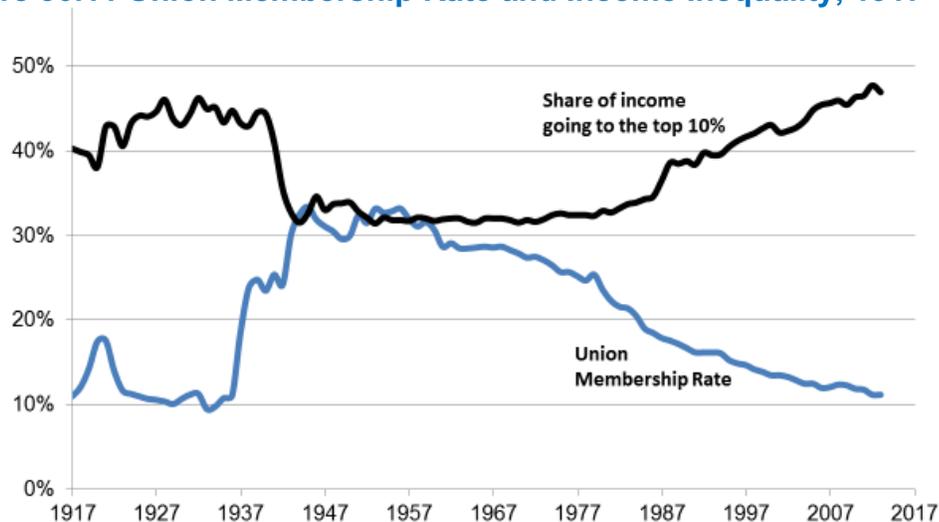


Figure 30.11 illustrates that during periods with strong unions and high union membership the share of income going to the rich was lower. Although the relation between union strength and income distribution is not simple, in general it is likely that workers can push for higher wages when unions are stronger. It is also likely to be true that when inequality is high the rich can have more influence over the political process, and may be able to promote policies that weaken unions.

### Globalization and trade

As discussed in Chapter 11, another common explanation for why workers have lost bargaining power is globalization, including globalization-related trade. As employers have become accustomed to looking around the world for the lowest-cost workers, transnational corporations have shifted production facilities to developing countries resulting in a loss of many middle-income jobs. Competition from cheaper imports from developing countries has compelled producers in developed countries to either lower their prices and wages, or to simply leave the business. For example, many industrial jobs—in textiles and automobiles—that formerly fell in the middle of the U.S. wage distribution have been eliminated by competition from imports. Such impacts of increased trade and globalization have affected middle-income wages and eliminated middle-income jobs. When people who had worked in these middle-income jobs move to lower-income service and retail jobs the “hollowing out of the middle” contributes to the increase in inequality.

### Technology

A major reason for the upward trend in labor productivity over time is an improvement in technology. Technological progress includes automation; we discussed the potential for businesses to replace human labor with various mechanical substitutes in Chapter 23. Technology can also affect wages and the distribution of wages across different types of workers. One theory, referred to as **skill-biased technical change**, proposes that workers who possess the education and skills needed to use modern technologies will see relative increases in employment and wages. For example, workers who are able to use computers and other digital technologies may gain an advantage over workers who lack such skills. If these skilled workers are a minority of the work force, they could obtain wage gains while most workers’ wages stagnate. Note that *average* wages may increase while the *median* wage stays relatively constant if most of the gains accrue to those in the top half of the wage distribution.<sup>‡</sup>

**skill-biased technical change:** the theory that relative wage gains will be the greatest for those workers who possess the education and skills to use modern technologies

Skill-biased technical change has been hypothesized to be one of the reasons for an overall increase in inequality in the United States, as the income of skilled workers who understand and use the new techniques and equipment has risen, leaving behind the less-skilled workers who remain in low-technology occupations. In 1979 those with a

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<sup>‡</sup> The median wage is the wage received by workers at the exact middle of the wage distribution. Thus the median wage can remain constant or decline while wages in the top half of the distribution increase.

college degree in the U.S. earned 35 percent more than those with just a high school degree. But by 2012 this differential had risen to 50 percent. This difference in wage-gains is partly because skilled workers are relatively scarce. The less-skilled workers are, in contrast, relatively abundant, all the more so as technological change has allowed machines to replace human workers at the low-skill end of the spectrum, depressing their average wage.

As technological unemployment creeps up the skill ladder, evidence suggests that fewer workers are experiencing a net benefit from technology in recent years. A 2012 paper notes:

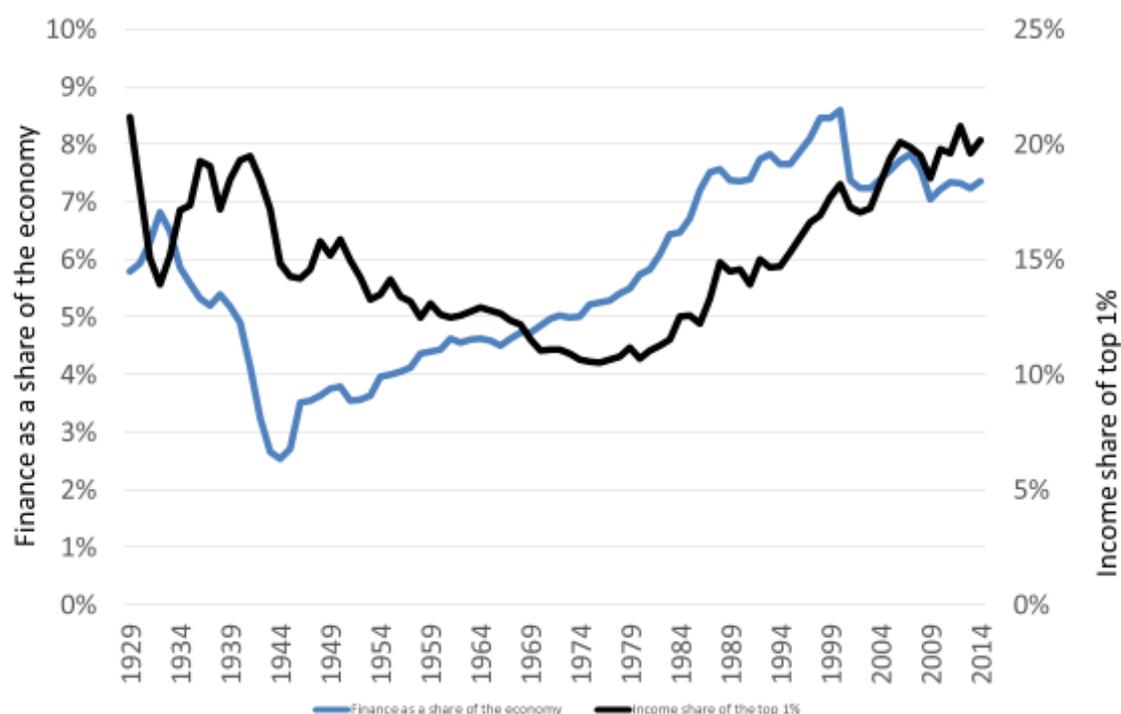
It is hard ... to find the winners from technical change in the last ten years, as the wages of the bottom 70 per cent of college graduates have been flat or in decline. That would leave just 30 per cent of college graduates (6.6 percent of the workforce) and the 11 per cent of workers with advanced degrees as the winners of technical change. It also seems unlikely that technical change has generated the upward trajectory of the top 1 per cent of wage earners.<sup>20</sup>

### **3.2 FINANCIALIZATION AND INEQUALITY**

The increase in inequality in the past few decades in the United States has occurred concurrently with the rise in finance. This is not mere coincidence. Scholars studying the relation between the two mostly find that financialization has contributed to a rise in inequality. For example, a 2012 study on the impacts of financialization on growth, unemployment and inequality in OECD countries finds that financialization has a negative impact on all three variables, with each percentage increase in financialization being associated with 0.49 to 0.81 percent rise in inequality.<sup>21</sup> A recent ILO report examining the causes of inequality finds that about 46 percent of the rise in inequality can be attributed to financialization—much greater than the impacts of globalization (19 percent), technological change (10 percent) and other institutional factors (25 percent).<sup>22</sup> So how does financialization contribute to inequality?

According to economist Gerald Epstein, as economies become more financialized a greater share of income generated goes to the owners of financial assets, who tend to be in the upper income brackets in most countries (see Figure 30.12). For instance, stock market indices are generally seen as a barometer for the economy, and gains in stock markets often generate consumer spending and job growth. But direct gains from rising stock prices goes to those who own stocks—more than three-quarters of which in the U.S. are held by the wealthiest 10 percent.<sup>23</sup>

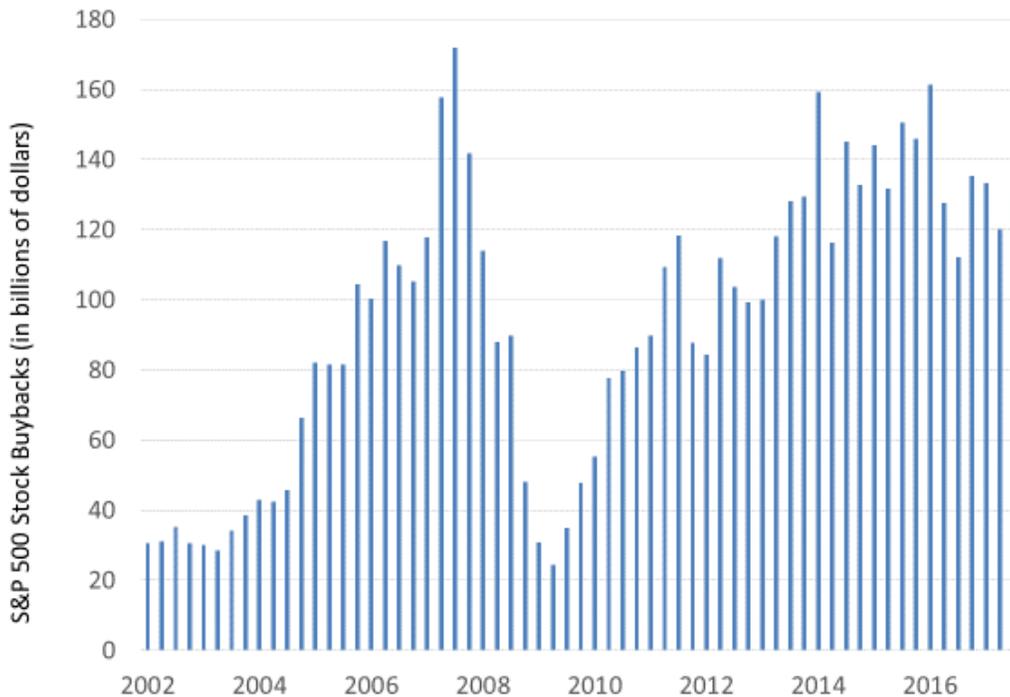
Although higher stock prices also increase the value of retirement accounts, only about half of the country have retirement accounts. Access to stocks and bonds has increased in the last few decades, with about 51 percent of American families now owning stocks directly or through retirement accounts; but stock ownership is much lower among less-affluent families. In 2016, about 93.6 percent of the top 10 percent of the income group owned stocks, while less than one-third of the families in the bottom 50 percent of income earners held stocks.<sup>24</sup>

**Figure 30.12: Financialization and Inequality, 1929-2014**

Source: NIPA Tables 6.2A-6.2D, BEA; Piketty, Saez and Zucman, 2016.

The disparity in ownership of financial assets also explains why the economic gains during the recovery from the 2008 recession went mostly to the rich. A Pew Research study finds that during the first two years of recovery from the 2008 crisis, the mean net worth of households in the upper 7 percent of wealth distribution increased by 28 percent, while the mean net worth in the lower 93 percent dropped by 4 percent. This change was mainly driven by the increase in prices of stocks and bonds between 2009 and 2011—while the housing market remained flat—as wealthier households have more of their wealth concentrated in stocks and other financial holdings, while less affluent households have their wealth concentrated in the value of their homes. Households with a net worth above \$500,000 have 65 percent of their wealth in financial holdings. Lower income households, on the other hand, on average have half of their wealth in their home, and just a third of it in the stock market.<sup>25</sup>

One of the other major aspects of financialization that has affected inequality is the shift in focus of corporations from creating wealth by making productive investments to “maximizing shareholder value” by increasing stock prices, often by buying back their own stock, as shown in Figure 30.13. Between 2003 and 2012, S&P 500 firms spent 54 percent of their profits on stock buybacks.<sup>26</sup> Companies like Coca Cola, Pfizer and Cisco Systems have indicated that most of the gains they received from corporate tax cuts in the 2017 tax bill will go to shareholders, not to job creation.<sup>27</sup>

**Figure 30.13: S&P 500 Stock Buybacks, 2002-2017 (Quarterly data)**

Source: Quarterly Press Releases of the S&P 500 Dow Jones

This focus on raising stock prices through buyback is partly motivated by the change in pay structure in large corporations. Until the 1990s, chief executive officers (CEOs) were generally paid a salary that would grow at a rate comparable to other employees. Since then, a larger proportion of executive pay has come in the form of stock options and bonuses, based on the idea that executive compensation should include performance incentives. But getting their pay as stock options also means that the executives benefit personally from raising stock prices. This was a significant factor in the development of the financial crisis. From 2000 to 2007, Lehman Brothers and Bear Stearns paid their CEOs \$61 million and \$87 million respectively in bonuses, with both citing the rise in stock prices. These CEOs also earned \$461 million and \$289 million respectively from exercising their stock options during that time. By the time the game was up in 2007, and the share prices had plummeted, the CEOs had already become immensely wealthy and were under no obligation to return the funds.

It may not be self-evident why shareholders would allow such a skewed incentive structure if it threatened their share values in the long term. However, shareholders in many companies do not possess much influence over CEOs. Even the board of directors, who historically acted on behalf of shareholders (at least in theory), have become more aligned with CEO interests, as CEOs often hold influence over board members' compensation and re-election prospects. Additionally, many CEOs sit on boards of other corporations, providing ample opportunity for board members to cater to CEO interests, and vice versa.

One study finds that financialization could account for over half of the decline in workers' income and about 10 percent of the growth in share of compensation of top executives. Corporations' increasing reliance on earnings through financial channels has excluded the general workforce from the revenue-generating and compensation-setting process, and reduced labor's share of income while increasing the top executives' share of income.<sup>28</sup>

Another aspect of financialization that has contributed to inequality is the difference between wages in the financial sector and the rest of the economy. The compensation of workers in the financial sector is usually higher than that of an average worker in other sectors, and about 14 percent of the top 1 percent of income earners are employed in finance. The average compensation in the financial sector has increased from about \$20,000 per year per employee in 1980 to over \$100,000 today.<sup>29</sup>

### **3.3 MACROECONOMIC POLICIES AND INEQUALITY**

The increase in inequality has also been explained in terms of macroeconomic policies that, intentionally or unintentionally, have widened the gap between workers and those who receive their income from ownership of various forms of capital, including production facilities such as factories, banks, or Web-based systems, or ownership of stock in these companies.

#### ***Fiscal Policy***

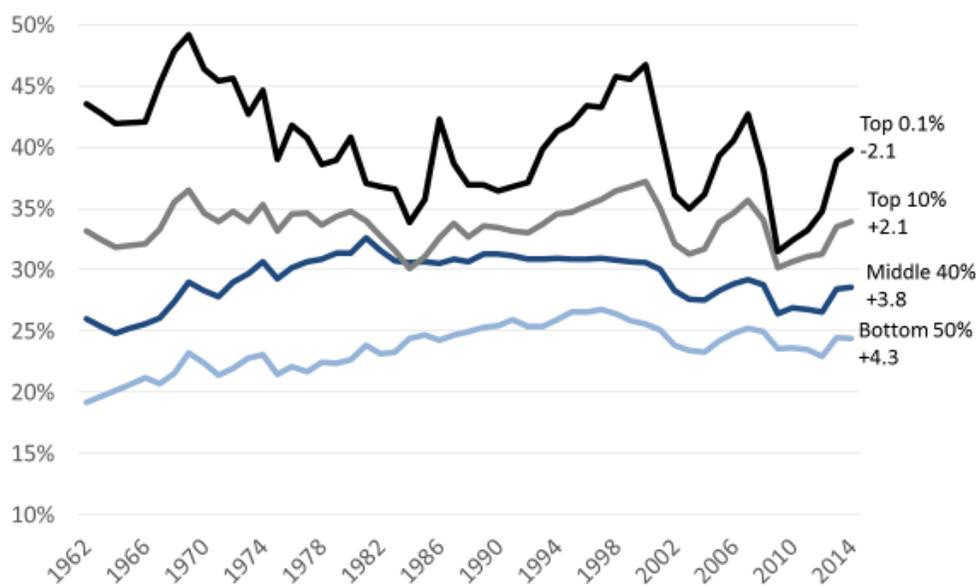
In recent years, tax policies in the United States have become much less progressive than they used to be. The difference in effective tax rates paid by the rich and the poor has narrowed, with reductions in federal income tax rates on the highest income earners and declines in corporate taxes as a percentage of GDP, at the same time payroll taxes on the working class have increased.<sup>30</sup> Since the 1980s, marginal tax rates for upper-income brackets, corporate tax rates, estate and inheritance taxes, capital gains tax rates have all declined. In 1986, for example, top marginal tax rates were reduced from 50 percent to 38.5 percent and corporate taxes fell from 46 percent to 34 percent. These changes have generally been justified by the supply-side argument that such tax cuts would result in investments that would expand job creation. Evidence on the impacts of these tax reforms, however, indicate that they have contributed more to inequality than to economic growth. A 2013 study by French economist, Thomas Piketty, looking at a set of industrialized countries from 1970s to the years preceding the financial crisis, finds that “big tax cutters like the United States did not grow faster than countries like Denmark, which kept taxes high, but inequality in U.S. grew much more sharply than in countries like France and Germany, where top tax rates changed little.”<sup>31</sup>

One round of tax cuts (the “Bush tax cuts”), implemented in 2001-2003, included reductions in income taxes for almost everyone, but with the largest share going to the rich. According to a report by the Economic Policy Institute, by 2010 more than half of the benefits of these tax cuts went to the top 10 percent of income earners, those making over \$170,000 a year, with 38 percent going to the top 1 percent of earners, making over \$645,000. Meanwhile the bottom 60 percent, making under \$70,000 annually, received less than 20 percent of the benefits of the tax cuts. Some of this increased inequality was

reversed during the Obama presidency, when tax cuts benefiting low-and-moderate-income workers were implemented, and some of the upper-income tax cuts were repealed. Together with expansion in healthcare and other programs benefiting the middle class, policies during the period 2009–2016 mitigated, but did not reverse, the increase in inequality.

Most tax cuts since the 1980s have focused on reducing income taxes, which only makes up about half of the total taxes received by the federal government. About a third of the taxes collected comes from payroll taxes—which fund Social Security and Medicare—and these taxes have increased from just 2 percent of wage income at the end of World War II to 6 percent in 1960 and to 15.3 percent in 1990. (Half of this 15.3 percent is nominally paid by the employer and half by the employee, but economic analyses indicate that the real burden falls mostly on the employee since employers can reduce wages to compensate for the tax.<sup>§</sup>) For 62 percent of households, payroll tax is the largest tax that they pay. The payroll tax is capped at income of \$128,400, meaning that anyone earning more than \$128,400 essentially pays the same amount as those earning \$128,400. This makes payroll taxes regressive, as middle-and-lower-income families pay a higher proportion of their income in payroll tax than do higher-income families.<sup>32</sup> As illustrated in Figure 30.14, since the 1960s the total tax rate, combining federal, state and local taxes, has declined for the top 0.1 percent by 2.1 points while it has increased for the middle 40 percent by 3.8 points and for the bottom 50 percent by 4.3 points.

**Figure 30.14: Change in Tax Rates by Income Group**



Source: Piketty, Saez and Zucman, 2016.

<sup>§</sup> See <http://www.cbo.gov/sites/default/files/EffectiveTaxRates2006.pdf>. “The Congressional Budget Office assumes—as do most economists—that employers’ share of payroll taxes is passed on to employees in the form of lower wages than would otherwise be paid.”

Another major tax-cutting bill in 2017 (the “Trump tax cuts”) included further tax reductions for upper-income earners, lowering the top marginal tax rate from 39.6 percent to 37 percent and reducing corporate taxes from 35 percent to 21 percent. The bill also cut income taxes for the middle class, but only modestly and temporarily, while the tax cuts benefiting the wealthy were much larger, and intended to be permanent. According to the Tax Policy Center, the 2017 tax cuts were projected to increase the income of the lowest-earning fifth by only 0.4 percent. Those in the next three quintiles would receive a 1.2 percent, 1.6 percent, and 1.9 percent boost, respectively, while the biggest increase of 2.9 percent would go to those in the top-earning fifth. The difference is more clearly seen in terms of absolute amounts: the lowest quintile receives an average tax benefit of \$60, the middle quintile receives \$930, and the top quintile receives \$7,640, while the top 1 percent receives an average \$51,140 and the top 0.1 percent receives \$193,380.<sup>33</sup>

Another policy change has been a reduction in welfare expenditures, starting in the 1990s, with the phasing out of programs such as Aid for Families with Dependent Children (AFDC). Government outlays on affordable housing and public infrastructure as a share of GDP have declined sharply. The federal minimum wage (\$7.25 as of 2017) has fallen significantly behind inflation, lowering the purchasing power of the lowest-income workers. In addition to directly reducing such support, the diminished generosity of the welfare state also adversely affects workers’ bargaining power, hence their wages. With less government benefits on which to rely, employees threatened with unemployment are more likely to accept a wage cut. Research has found that a strong public sector, particularly as a provider of public goods, can reduce income inequalities.<sup>34</sup>

### **Monetary policy**

The impact of monetary policies on the rise of inequality in the last two decades is less clear. This is because monetary policies affect household income and wealth levels through different channels. An expansionary policy, on the one hand, could reduce inequality by creating middle-income jobs and by generating more options for refinancing, which benefits those in lower quintiles of income distribution.<sup>35</sup> On the other hand, low interest rates tend to increase asset prices and thus benefit the rich, since most assets are owned by the rich. At the same time, the middle-income savers lose returns on their savings when interest rates are low. Additionally, expansionary monetary policy tends to increase business income faster than labor income, and since it is usually the wealthier households that receive business income, such policies could worsen inequality.

A recent report from the Fed argues that the evidence that unconventional monetary policies have led to increases in inequality is inconclusive, and that the impact of monetary policy on inequality is moderate at best.<sup>36</sup> Another study on the subject, however, asserts that the dis-equalizing effects of expansionary monetary policy (through rise in asset prices and loss in returns from saving) are greater than the equalizing effects (through refinancing and job creation).<sup>37</sup> The rise in wealth inequality since the financial crisis, with dramatic increases in equity prices primarily benefiting the rich, indicates that the overall impacts of expansionary monetary policy on inequality may in fact be negative.

### **Discussion Questions**

1. In a 1963 speech, President John F. Kennedy stated, “A rising tide lifts all boats,” implying that everyone benefits from economic growth. Is this statement still true? Have periods of economic growth been equally beneficial to people from different income groups?
2. If you could change one of the “causes” of inequality described above, which one would you focus on? Why?

## **4. POLICIES TO PROMOTE FINANCIAL STABILITY AND EQUITY**

Restoring the economy from the damages of the Great Depression involved strong government intervention, expanding aggregate demand to increase growth and employment. This process emphasized infrastructural development, creation of the welfare state, redistributive taxation, regulation of businesses and financial activities, increase in provision of public goods, and strong trade unions; it took place in an environment of oligopolistic markets and weak foreign competition. From the 1940s to the 1970s banks, insurance companies and other financial corporations were highly regulated. During that period financial crises were relatively rare and inequality levels declined. Deregulation since the 1970s, allowing the creation of an extensive shadow banking system, reversed the trend in inequality and made the financial sector much more vulnerable. What kind of reforms today might help create a more stable financial system and promote equality?

Some economists argue that appropriate regulation could help with many of the current problems. However, given the changed economic landscape in the last few decades, with rising foreign competition, globalization, technological advances, and financialization, regulation alone may not be sufficient to resolve issues such as the wage-productivity gap and the shifts in corporate culture described above. Structural changes as well as specific public policies to address such issues are essential to achieving a more equal distribution of income and wealth, and a more stable economic system.

Other economists—mostly those following the “free-market” ideology—argue that further deregulation and smaller government is the path to prosperity, as the market is supposed to guide the economy towards equilibrium. There has, however, been little empirical evidence to support this view, especially as the rise of finance and increasing deregulation have been associated with rising inequality and more frequent economic crises.

### ***Regulating the financial system***

In the aftermath of the 2008 crisis, better oversight of the financial system and a new set of rules to discourage excessive risk-taking were seen as essential to reforming the system. The Dodd-Frank legislation was a step in this direction, but it has been under constant attack from the financial sector and many of the problems it intended to address remain unresolved. Several suggestions have been made on regulating the financial system to make it more resilient, including:

- Giving the central bank greater oversight of the financial health of borrowing institutions. This could include requirements for large financial institutions to hold sufficient capital reserves to cover the risks associated with the financial instruments they create.
- Greater oversight and regulation of nonbank institutions in the shadow banking system.
- Reinstating a version of the Glass-Steagall Act, separating banking and investment functions, promoting the role of smaller and regional banks, and possibly breaking up financial institutions in the “too big to fail” category.
- Blocking the revolving door between finance and politics by instituting requirements that individuals must wait a significant number of years between the time they leave a government position in which they can affect legislation on industry sectors and when they can begin work in those sectors.

### ***Channeling financial resources to more socially useful investments***

One of the criticisms of the current financial system is that it directs too much effort and money towards short-term financial profit-making, while providing insufficient support for productive investment. Policies to reverse this bias might include:

- Promoting regional and community financial institutions, credit unions, and other smaller financial institutions whose main orientation is towards supporting local businesses and homebuyers.
- Instituting a small tax on financial transactions. Both Keynes and the Nobel laureate economist James Tobin supported such a tax as a way of discouraging short-term speculation. What has come to be known as a “Tobin tax” could be at a very low rate, but would still raise substantial revenues due to the very large volume of financial transactions. Speculators would end up paying much more than long-term investors because they buy and sell securities much more frequently. The European Commission has adopted a tax on all stock, bond, and derivative trading in the European Union beginning in 2014, and Canada has passed legislation that proposes to implement a Tobin tax if enough other countries agree to participate.
- Restricting companies from buying back their stock, and rewarding them through the tax system for investing in their employees; linking executive pay to productive performance of the company instead of share prices; adding worker representatives on corporate boards so their interests are represented when decisions are made.<sup>38</sup>
- Encouraging cooperative-based organizations, as discussed in Chapter 23, could also help create a stronger and more equitable economic system. Cooperatives have a motive to invest in the long-term viability of the company and improve the well-being of workers. Worker-owned companies, community development corporations, and credit unions tend to be locally oriented and resilient to economic fluctuations at the national level.

## **Policies to Reduce Inequality**

Fiscal policies aimed at reducing inequality could include more progressive tax policies, expansion of transfer systems, and more public investment in areas with wide social benefit. Increased investment in social programs, such as career skills training, housing assistance or healthcare that enhance the well-being and productivity of workers could mitigate inequality.

Specific policies to mitigate inequality could include:

- Increasing minimum wage rates. The federal minimum wage rate has not kept up with inflation, and is hardly sufficient to meet basic needs. Raising minimum wages would improve the well-being of most low-wage workers and reduce poverty.<sup>39</sup> While substantial increases in the minimum wage could result in increased unemployment, most evidence indicates that smaller phased increases have little negative impact on overall employment.<sup>40</sup>
- Investment in human capital through such programs as universal pre-kindergarten and more effective public schools systems, together with increased public financing to make public colleges more affordable and community colleges more accessible can reduce inequality by strengthening workers' skills and their bargaining power. Increased investment in workers through training programs could increase their productivity and wage-earning potential.
- Government policies that support the right to organize and the bargaining power of labor unions. Research by the IMF suggests that stronger labor unions may be able to reduce inequality.<sup>41</sup> Similarly, reducing the gap in job protection between regular and temporary workers contributes significantly to reducing inequality.<sup>42</sup>
- Investment in infrastructure, which can provide stable employment by hiring people to work on infrastructure projects such as roads, rail, water, and sewage systems, natural resource conservation, and other public projects. Such projects also provide general public benefits which improve the quality of life for all, including low-income workers.
- Direct income support for low-income workers. Expanding the current earned-income tax credit is one approach to providing direct income support. Another, more radical, proposal is to institute a guaranteed basic income, as discussed in Chapter 23 (Box 23.5). If set at a relatively low level, a guaranteed income for all workers could provide greater equity without undercutting the incentive to work. It could also increase flexibility as workers adjust to technological change in the workplace or attempt to make ends meet in the "gig economy."
- Fiscal and monetary policies that promote full employment. Low-income and minority workers suffer most when unemployment rises. As we saw in Chapter 28, there is often a tradeoff between unemployment and inflation, but so long as inflation is not a major threat, placing a priority on maintaining low unemployment will promote a more equitable labor market.<sup>43</sup>

The economy of the future will be different from the economy of the past. But we can learn lessons from past experiences, both in the Great Depression and the Great

Recession, about how to promote greater stability and equity, and to avoid catastrophic crises. The fiscal and monetary policy tools that we have learned about, together with other innovative approaches, will be required in the future in the effort to achieve the goal of an economy that works well for all.

### **Discussion Questions**

1. Have you seen anything in the news in recent weeks about the regulation of banking and finance or changes in tax or wage policies? What do you think about the effectiveness of these policies in achieving greater financial stability and economic equality?
2. What do you think about a proposal to tax financial transactions? Would you prefer it to an income or a sales tax? Why or why not?

### **REVIEW QUESTIONS**

1. What is “subprime” lending? How did it contribute to the housing bubble and the subsequent financial crisis?
2. How can a collapse of the U.S housing market and weakness in the banking system cause an economic recession and unemployment?
3. What is securitization? How did it contribute to the problems leading to the financial crisis?
4. Explain “too big to fail” and why it is a potential economic problem in any economic setting. How is “too big to fail” related to moral hazard?
5. How did the 2008 financial crisis affect income and wealth inequalities?
6. What have been the principal fiscal and monetary responses to the recession to date? What have been the results thus far?
7. How is the recent economic downturn similar to the Great Depression? How is it different?
8. What was the purpose of the Dodd-Frank bill? What were its main provisions? Has it been favorably received?
9. What is financial deregulation? How important is it in explaining the financial crisis?
10. What do we mean by financialization? What are some of the ways in which it has supported or deterred growth in the real sector?
11. What is the main argument made by the “efficient market hypothesis”? What aspect of economic behavior in financial markets does it neglect?
12. What is Minsky’s theory of financial instability? How, according to Minsky, can we create a more stable financial system?
13. What is the difference between hedge, speculative and Ponzi financing profiles?
14. What are some of the factors that have contributed to a rise in wage inequality in the past few decades?
15. In what ways has globalization affected inequality?
16. How has the rise of financialization influenced the level of inequality in the economy?
17. What macroeconomic policies have contributed to the rise in inequality since the 1980s?

18. What are some of the ways in which we might address the problems of excessive risk-taking in the financial market?
19. What is the Tobin tax? What would be its effect on financial transactions?
20. What kind of policy measures might help reduce inequality levels?

## EXERCISES

1. For this exercise you need to locate housing price index data for specific states. To find the required data, go to [www.fhfa.gov/DataTools/Tools](http://www.fhfa.gov/DataTools/Tools) and select “HPI Motion chart”. Then check off the states to view (it is possible to view multiple states at the same time). Select the third tab at the top right (with graph symbol) to get a historical view of the rate of change in state housing prices from 1991 to the present. Select various states to get a better understanding of how the housing market in the U.S. has evolved over the past 20 years. (You may want to repeat the three state comparison multiple times to get a larger sense of the experiences of different states, but make sure that at some point you look at states like Nevada and/ or Florida and that you spend some time thinking about what the numbers mean). Now write a short summary of what you’ve learned. Make sure that you incorporate some specific data into your summary.
2. How does the Great Recession compare to recent economic downturns? To explore this question in further detail, begin at the National Bureau of Economic Research website ([www.nber.org](http://www.nber.org)).
  - a. Select “Business Cycle Dates” from the “Data” tab at the NBER site and then record the starting dates (peaks) and ending dates (troughs) for the last four recessions. Assemble these dates in a table.
  - b. Now gather some macroeconomic data. You can do this at the Federal Reserve Economic Database (<http://research.stlouisfed.org/fred2/>). Using the “National Income & Product Accounts” under the “National Accounts” tab within “Categories,” locate Real Gross Domestic Product data for each peak and each trough in your table. Record these numbers in a new table. Calculate the percentage change in real GDP from peak to trough for each of the last four recessions. Report these results in your new table.
  - c. Return to the categories page at the FRED website. Select the “Current Population Survey (Household Survey)” link under the “Population, Employment, & Labor Markets” category. Select the “unemployment rate” series and record the numbers for each peak and each trough for each of the last four recessions. Organize these data in a table.
  - d. Review your tables and calculations. Write a concise summary comparing the Great Recession to the previous three recessions. Make sure that you incorporate specific numbers into your summary.
3. The chapter identifies a series of contributing factors in its exploration of the underlying causes of the financial crisis. Identify the major factors and state which you think were most important.
4. What is the meaning of moral hazard? Give some examples of moral hazard, as discussed in the text, or others that you can think of.
5. Match each concept in Column A with a definition or example in Column B.

**Column A**

- a. Mortgage-backed security
- b. Securitization
- c. Financialization
- d. Subprime buyer
- e. Financial Instability Hypothesis
- f. Deregulation
- g. Hedge financing
- h. Too big to fail
- i. Moral hazard
- j. Ponzi financing

**Column B**

- 1. When a company grows so large that its failure would cause widespread economic harm in terms of lost jobs and diminished asset values
- 2. Unregulated markets will always produce instability and crisis
- 3. A would-be home buyer whose credit-worthiness is suspect because he or she already has a high level of debt, and/or a low income, and/or a poor credit record
- 4. Increasing size and importance of the financial markets in the operation of the economy
- 5. Safest form of financing where the borrowers have enough cash flow to cover both interest and principal payments
- 6. Riskiest form of financing where income flows are not sufficient to cover even the interest payments
- 7. Process of pooling various kinds of loans, and slicing, sorting and repackaging them
- 8. Increasing the amount of leverage permitted to banks and allowing them to measure the riskiness of their own products
- 9. A security composed of a bundle of many home mortgages issued by independent banks
- 10. The lack of any incentive to guard against a risk when you are protected against it

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## NOTES

<sup>1</sup> Gapper, 2008.

<sup>2</sup> Aughinbaugh, 2013.

<sup>3</sup> Based on BLS data on unemployment by sector.

<sup>4</sup> Pew Research Center, 2015.

<sup>5</sup> Based on data from World Development Indicators, World Bank.

<sup>6</sup> Li, Willett and Zhang, 2012.

<sup>7</sup> Villarreal, 2010. Note that almost 80 percent of Mexican exports are destined to the United States.

<sup>8</sup> Migration Policy Institute, 2009.

<sup>9</sup> Amadeo, 2017.

<sup>10</sup> Krugman, 2014.

<sup>11</sup> Oliff, Mai and Palacios, 2012.

<sup>12</sup> Montecino and Epstein, 2015a.

<sup>13</sup> Real World Macro, 2015.

- <sup>14</sup> Orhangazi, 2007.
- <sup>15</sup> Tomaskovic-Dewey and Lin, 2013.
- <sup>16</sup> Mukund, 2014.
- <sup>17</sup> Foroohar, 2016.
- <sup>18</sup> Lapavitsas, 2014.
- <sup>19</sup> U.S. Bureau of Labor Statistics, 2017.
- <sup>20</sup> Mishel and Gee, 2012.
- <sup>21</sup> Assa, 2012.
- <sup>22</sup> ILO, 2012.
- <sup>23</sup> Based on data from the Fed, Survey of Consumer Finances.
- <sup>24</sup> Egan, 2017.
- <sup>25</sup> Fry and Taylor, 2013.
- <sup>26</sup> Lazonick, 2014.
- <sup>27</sup> Olorunnipa, 2017.
- <sup>28</sup> Tomaskovi-Devey and Lin, 2013.
- <sup>29</sup> Gordon, 2014.
- <sup>30</sup> Piketty and Saez, 2007.
- <sup>31</sup> Porter 2017, based on findings from Piketty et al. 2013 NBER study.
- <sup>32</sup> Leonhart, 2017.
- <sup>33</sup> Tax Policy Center, 2017.
- <sup>34</sup> Obst, 2013.
- <sup>35</sup> Montecino and Epstein, 2015a.
- <sup>36</sup> Amaral, 2017.
- <sup>37</sup> Montecino and Epstein, 2015b.
- <sup>38</sup> Lazonick, 2012.
- <sup>39</sup> Dube, 2017.
- <sup>40</sup> Autor et al., 2015.
- <sup>41</sup> Jaumotte and Buitron, 2015.
- <sup>42</sup> OECD, 2012.
- <sup>43</sup> Matthews, 2012.