ECONOMIC REPORT OF THE PRESIDENT

TRANSMITTED TO THE CONGRESS FEBRUARY 2010

TOGETHER WITH THE ANNUAL REPORT
OF THE COUNCIL OF ECONOMIC ADVISERS

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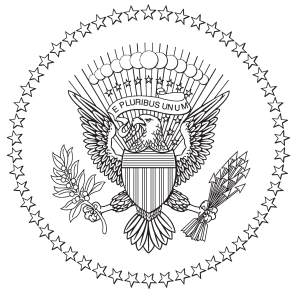

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CHAPTER 1

TO RESCUE, REBALANCE, AND REBUILD

President Obama took office at a time of economic crisis. The recession that began in December 2007 had accelerated following the financial crisis in September 2008. By January 2009, 11.9 million people were unemployed and real gross domestic product (GDP) was falling at a breakneck pace. The possibility of a second Great Depression was frighteningly real.

In the first months of the Administration, the President and Congress took unprecedented actions to restore demand, stabilize financial markets, and put people back to work. Just 28 days after his inauguration, the President signed the American Recovery and Reinvestment Act of 2009, the boldest countercyclical fiscal stimulus in American history. The Financial Stability Plan, announced in February, included wide-ranging measures to strengthen the banking system, increase consumer and business lending, and stem foreclosures and support the housing market. These and a host of other actions stabilized the financial system, supported those most directly affected by the recession, and walked the economy back from the brink.

But the Administration always knew that stabilizing the economy would not be enough. The problems that led to the crisis were years in the making. Continued action will be necessary to return the economy to full employment. In the process, an important rebalancing will need to occur. For too many years, America's growth and prosperity were fed by a boom in consumer spending stemming from rising asset prices and easy credit. The Federal Government had likewise been living beyond its means, resulting in large and growing budget deficits. And our regulatory system had failed to keep up with financial innovation, allowing risky practices to endanger the system and the economy. For this reason, the Administration has sought to help restore the economy to health on a foundation of greater investment, fiscal responsibility, and a well-functioning and secure financial system.

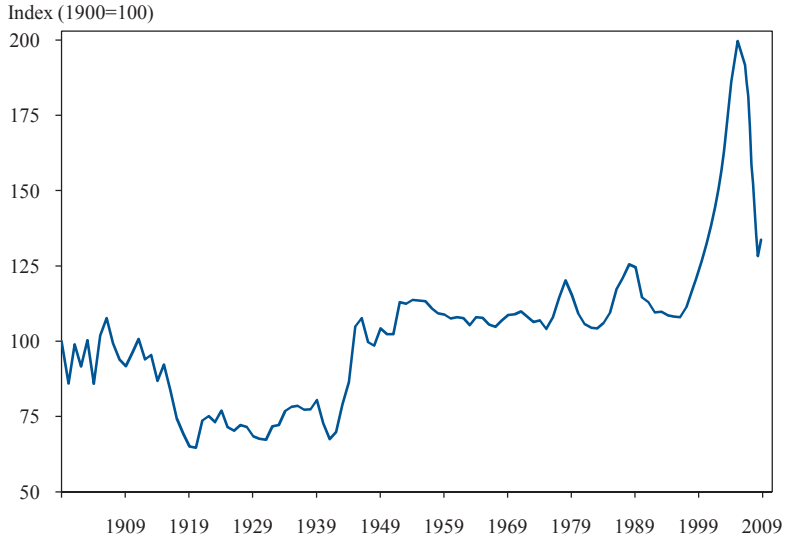
Even this important rebalancing would not be sufficient. In addition to the problems that had set the stage for the crisis, long-term challenges had been ignored and the U.S. economy was failing at some of its central tasks. Our health care system was beset by steadily rising costs, and millions of Americans either had no health insurance at all or were unsure whether their coverage would be there when they needed it. Middle-class families had seen their real incomes stagnate during the previous eight years, while those at the top of the income distribution had seen their incomes soar. A failure to slow the consumption of fossil fuels had contributed to global warming and continued dependence on foreign oil. And a country built on its record of innovation was failing to invest enough in research and development.

The President has dedicated his Administration to dealing with these long-run problems as well. As the new decade opens, Congress has come closer than ever before to passing landmark legislation reforming the health insurance system. This legislation would make health insurance more secure for those who have it and affordable for those who do not, and it would slow the growth rate of health care costs. Over the past year, the Administration has also worked with Congress to make important new investments to sustain and improve K-12 education and community colleges, jump-start the transition to a clean energy economy, and spur innovation through increased research and development. These and numerous other initiatives will help to rebuild the American economy stronger than before and put us on the path to sustained growth and prosperity. Enacting these policies will help to ensure that our children and grandchildren inherit a country as full of promise and as economically secure as ever in our history.

Rescuing an Economy in Freefall

In December 2007, the American economy entered what at first seemed likely to be a mild recession. As Figure 1-1 shows, real house prices (that is, house prices adjusted for inflation) had risen to unprecedented levels, almost doubling between 1997 and 2006. The rapid run-up in prices was accompanied by a residential construction boom and the proliferation of complex mortgages and mortgage-related financial assets. The fall of national house prices starting in early 2007, and the associated declines in the values of mortgage-backed and other related assets, led to a slowdown in the growth of consumer spending, increases in mortgage defaults and home foreclosures, significant strains on financial institutions, and reduced credit availability.

Figure 1-1
House Prices Adjusted for Inflation

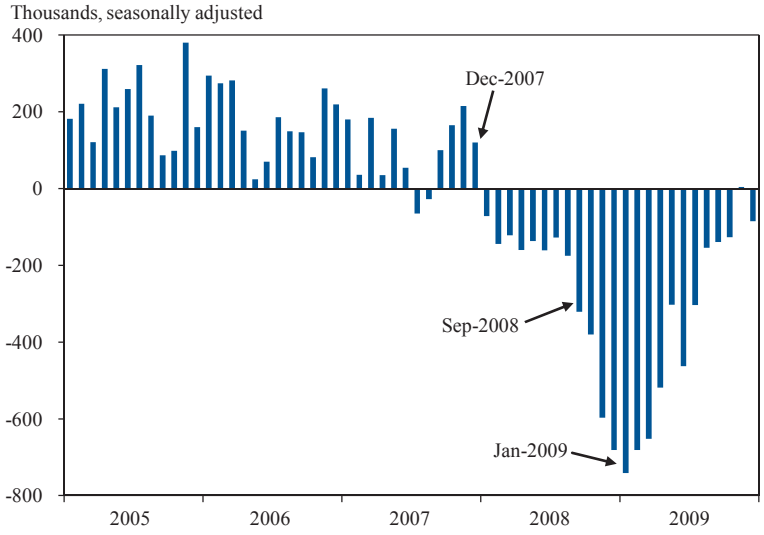


Sources: Shiller (2005); recent data from http://www.econ.yale.edu/~shiller/data/Fig2-1.xls.

By early 2008, the economy was contracting. Employment fell by an average of 137,000 jobs per month over the first eight months of 2008. Real GDP rose only anemically from the third quarter of 2007 to the second quarter of 2008.

Then in September 2008, the character of the downturn worsened dramatically. The collapse of Lehman Brothers and the near-collapse of American International Group (AIG) led to a seizing up of financial markets and plummeting consumer and business confidence. Parts of the financial system froze, and assets once assumed to be completely safe, such as money-market mutual funds, became unstable and subject to runs. Credit spreads, a common indicator of credit market stress, spiked to unprecedented levels in the fall of 2008. The value of the stock market plunged 24 percent in September and October, and another 15 percent by the end of January. As Figure 1-2 shows, over the final four months of 2008 and the first month of 2009, the economy lost, on average, a staggering 544,000 jobs per month, the highest level of job loss since the demobilization at the end of World War II. Real GDP fell at an increasingly rapid pace: an annual rate of 2.7 percent in the third quarter of 2008, 5.4 percent in the fourth quarter of 2008, and 6.4 percent in the first quarter of 2009.

Figure 1-2
Monthly Change in Payroll Employment



Source: Department of Labor (Bureau of Labor Statistics), Current Employment Statistics survey Series CES0000000001.

Rescuing the Economy from the Great Recession

Thus, the first imperative of the new Administration upon taking office had to be to turn around an economy in freefall. Chapter 2 describes the unprecedented policy actions the Administration has taken, together with Congress and the Federal Reserve, to address the immediate crisis. The large fiscal stimulus in the American Recovery and Reinvestment Act, the programs to stabilize financial markets and restart lending, and the policies to assist small businesses and distressed homeowners have all played a role in generating one of the sharpest economic turnarounds in post–World War II history. Real GDP is growing again, job loss has moderated greatly, house prices appear to have stabilized, and credit spreads have almost returned to normal levels. A wide range of evidence indicates that in the absence of the aggressive policy actions, the recession and the attendant suffering of ordinary Americans would have been far more severe and could have led to catastrophe.

Yet, because the economy's downward momentum was so great and the barriers to robust growth from the weakened financial conditions of households and financial institutions are so strong, the economy remains distressed and many families continue to struggle. A change from freefall to growing GDP and moderating job losses is a dramatic improvement, but it is not nearly enough. Chapter 2 therefore also examines the challenges that

remain in achieving a full recovery. It discusses some possible additional measures to spur private sector job creation.

Crisis and Recovery in the World Economy

In the early fall of 2008, there was hope that the impact of the crisis on the rest of the world would be limited. Those hopes were dashed during the months that followed. In the fourth quarter of 2008 and the first quarter of 2009, real GDP fell sharply—often at double-digit rates—in the United Kingdom, Germany, Japan, Taiwan, and elsewhere. The surprisingly rapid spread of the downturn to the rest of the world reduced the demand for U.S. exports sharply, and so magnified our economic contraction.

The worldwide crisis required a worldwide response. Chapter 3 describes both the actions taken by individual countries and those taken through international institutions and cooperation. As described in the leaders' statement from the September summit of the Group of Twenty (G-20) nations, the result was "the largest and most coordinated fiscal and monetary stimulus ever undertaken" (Group of Twenty 2009). Just as the actions in the United States have begun to turn the domestic economy around, these international actions appear to have put the worst of the global crisis behind us. But the firmness of the budding recovery varies considerably across countries, and significant challenges still remain.

Rebalancing the Economy on the Path to Full Employment

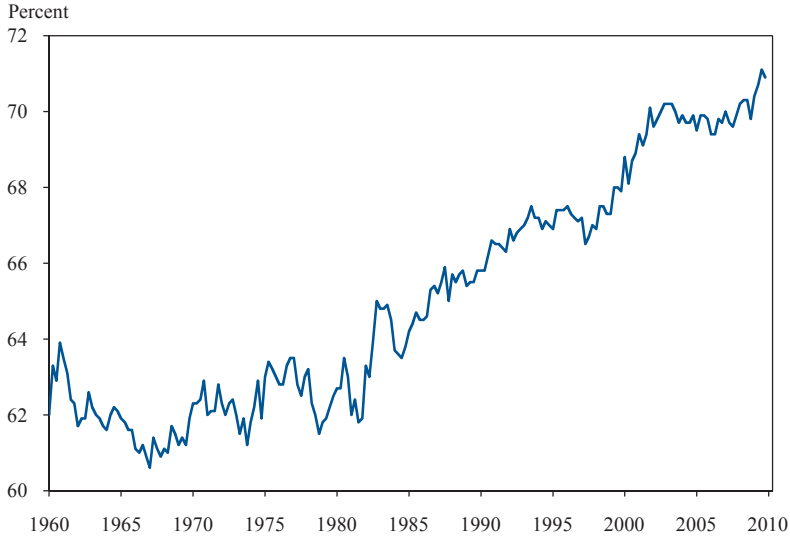
The path from budding recovery to full employment will surely be a difficult one. The problems that sowed the seeds of the financial crisis need to be dealt with so that the economy emerges from the recession with a stronger, more durable prosperity. There needs to be a rebalancing of the economy away from low personal saving and large government budget deficits and toward investment. Our financial system must be strengthened both to provide the lending needed to support the recovery and to reduce the risk of future crises.

Saving and Investment

The expansion of the 2000s was fueled in part by high consumption. As Figure 1-3 shows, the share of GDP that takes the form of consumption has been on a generally upward trend for decades and reached unprecedented heights in the 2000s. The personal saving rate fell to exceptionally low levels, and trade deficits were large and persistent. A substantial amount

of the remainder of GDP took the form of housing construction, which may have crowded out other kinds of investment. Such an expansion is not just unstable, as we have learned painfully over the past two years. It also contributes too little to increases in standards of living. Low investment in equipment and factories slows the growth of productivity and wages.

Figure 1-3
Personal Consumption Expenditures as a Share of GDP



Source: Department of Commerce (Bureau of Economic Analysis), National Income and Product Accounts Table 1.1.10.

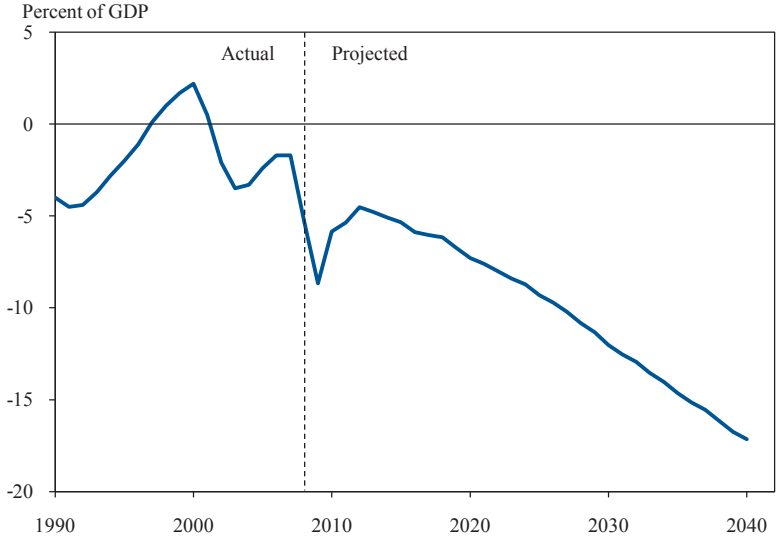
Chapter 4 examines the transition from consumption-driven growth to a greater emphasis on investment and exports. It discusses the likelihood that consumers will return to saving rates closer to the postwar average than to the very low rates of the early 2000s. It also describes the Administration's initiatives to encourage household saving. Greater personal saving will tend to encourage investment by helping to maintain low real interest rates. The increased investment will help to fill some of the gap in demand left by reduced consumption. Chapter 4 discusses additional Administration policies, such as investment tax incentives, designed to promote private investment. Higher saving relative to investment will reduce net international capital flows to the United States. Because net foreign borrowing must equal the current account deficit, lower net capital inflows imply a closer balance of exports and imports, which will help create further demand for American products. The Administration also supports aggressive export promotion measures to further increase demand for our exports. The end

result of this rebalancing will be an economy that is more stable, more investment-oriented, and more export-oriented, and thus better for our future standards of living.

Addressing the Long-Run Fiscal Challenge

A key part of the rebalancing that must occur as the economy returns to full employment and beyond involves taming the Federal budget deficit. Figure 1-4 shows the actual and projected path of the budget surplus based on estimates released by the Congressional Budget Office (CBO) in January 2009, just before President Obama took office. As the figure makes clear, the budget surpluses of the late 1990s turned to substantial deficits in the 2000s, and the deficits were projected to grow even more sharply over the next three decades. As discussed in Chapter 5, the change to deficits in the 2000s largely reflects policy actions that were not paid for, such as the 2001 and 2003 tax cuts and the introduction of the Medicare prescription drug benefit. The projection of steadily increasing future deficits is largely due to the continuation of the decades-long trend of rising health care costs.

Figure 1-4
Actual and Projected Budget Surpluses in January 2009 under Previous Policy



Note: CBO baseline surplus projection adjusted for CBO's estimates of costs of continued war spending, continuation of the 2001 and 2003 tax cuts, preventing scheduled cuts in Medicare's physician payment rates, and holding other discretionary outlays constant as a share of GDP.
Sources: Congressional Budget Office (2009a, 2009b).

Chapter 5 describes the likely consequences of these projected deficits over time and the importance of restoring fiscal discipline. It also discusses the President's plan for facing this challenge. A period of severe economic weakness is no time for a large fiscal contraction. Instead, the Nation must tackle the long-run deficit problem through actions that address the underlying sources of the problem over time. The single most important step that can be taken to reduce future deficits is to adopt health care reform that slows the growth rate of costs without compromising the quality of care. In addition, the President's fiscal 2011 budget includes other significant measures, such as allowing President Bush's tax cuts for the highest-income earners to expire, reforming international tax rules to discourage tax avoidance and encourage investment in the United States, and imposing a three-year freeze in nonsecurity discretionary spending; alongside a proposal for a bipartisan commission process to address the long-run gap between revenues and expenditures.

Building a Safer Financial System

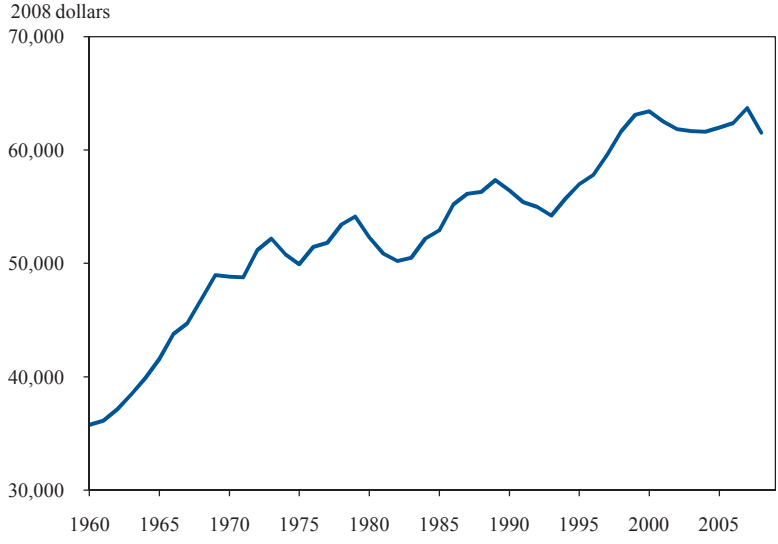
Risky credit practices both encouraged some of the imprudent rise in consumption and homebuilding in the previous decade and set the stage for the financial crisis. Chapter 6 analyzes the role that financial intermediaries play in the economy and diagnoses what went wrong during the meltdown of financial markets. The crisis showed that the Nation's financial regulatory structure, much of which had not been fundamentally changed since the 1930s, failed to keep up with the evolution of financial markets. The current system provided too little protection for the economy from actions that could threaten financial stability and too little protection for ordinary Americans in their dealings with sophisticated and powerful financial institutions and other providers of credit. Strengthening our financial system is thus a key element of the rebalancing needed to assure stable, robust growth.

Chapter 6 discusses financial regulatory modernization. What is needed is a system where capital requirements and sensible rules are set in a way to control excessive risk-taking; where regulators can consider risks to the system as a whole and not just to individual institutions; where institutions cannot choose their regulators; where regulators no longer face the unacceptable choice between the disorganized, catastrophic failure of a financial institution and a taxpayer-funded bailout; and where a dedicated agency has consumer protection as its central mandate. For this reason, the President put forward a comprehensive plan for financial regulatory reform last June and is working with Congress to ensure passage of these critical reforms this year.

Rebuilding a Stronger Economy

Even before the crisis, the economy faced significant long-term challenges. As a result, it was doing poorly at providing rising standards of living for the vast majority of Americans. Figure 1-5 shows the evolution of before-tax real median family income since 1960. Beginning around 1970, slower productivity growth and rising income inequality caused incomes for most families to grow only slowly. After a half-decade of higher growth in the 1990s, the real income of the typical American family actually fell between 2000 and 2006.

Figure 1-5
Real Median Family Income



Notes: Income measure is total money income excluding capital gains and before taxes. Annual income deflated using CPI-U-RS.
Source: Department of Commerce (Census Bureau), Current Population Survey, Annual Social and Economic Supplement, Historical Income Table F-12.

A central focus of Administration policy both over the past year and for the years to come is to build a firmer foundation for the economy. The President is committed to policies that will raise living standards for all Americans.

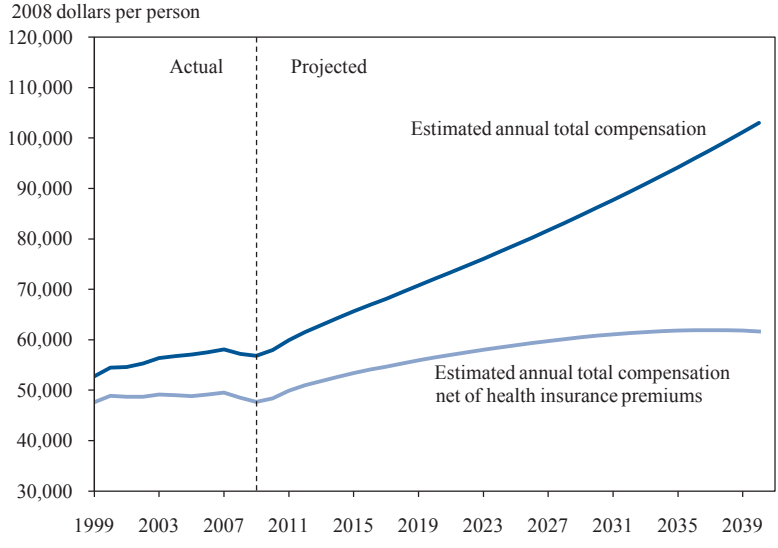
Reforming Health Care

Health care is a key challenge that long predates the current economic crisis. The existing system has left many Americans who have health insurance inadequately covered, poorly protected against insurance industry

abuses, and fearful of losing the insurance they have. And it has left tens of millions of Americans with no insurance coverage at all. The system also delivers too little benefit at too high a cost. Comparisons across countries and, especially, across regions of the United States reveal large differences in health care spending that are not associated with differences in health outcomes and that cannot be fully explained by factors such as differences in demographics, health status, income, or medical care prices. These large differences in spending suggest that up to nearly 30 percent of health care spending could be saved without adverse health consequences. The unnecessary growth of health care costs is eroding the growth of take-home pay and is central to our long-run fiscal challenges. These adverse effects will only become more severe if cost growth is not slowed.

To illustrate what could happen to workers' earnings in the absence of reform, Figure 1-6 shows the historical and projected paths of real total compensation per worker (which includes nonwage benefits such as health insurance) and total compensation net of health insurance premiums. As health insurance premiums absorb a growing fraction of workers' compensation, the remaining portion of compensation levels off and then starts to decline.

Figure 1-6
Total Compensation Including and Excluding Health Insurance



Note: Health insurance premiums include the employee- and employer-paid portions.
Sources: Actual data from Department of Labor (Bureau of Labor Statistics); Kaiser Family Foundation and Health Research and Educational Trust (2009); Department of Health and Human Services (Agency for Healthcare Research and Quality, Center for Financing, Access, and Cost Trends), 2008 Medical Expenditure Panel Survey-Insurance Component. Projections based on CEA calculations.

Chapter 7 describes the actions the Administration and Congress took in 2009 to begin the process of improvement, including an expansion of the Children's Health Insurance Program to provide access to health care for millions of children and important investments in the modernization of the health care system through the Recovery Act. It also describes the key elements of successful health insurance reform and discusses the progress that has been made on reform legislation. Successful reform involves making insurance more secure for those who have it and expanding coverage to those who lack it. It must include delivery system reforms, reductions in waste and improper payments in the Medicare system, and changes in consumer and firm incentives that will slow the growth rate of costs substantially, while maintaining and even improving quality. Slowing the growth rate of health care costs will have benefits throughout the economy: it will raise standards of living for families, help reduce the Federal budget deficit relative to what it otherwise would be, benefit state and local governments, and encourage job growth and improved macroeconomic performance.

Strengthening the American Labor Force

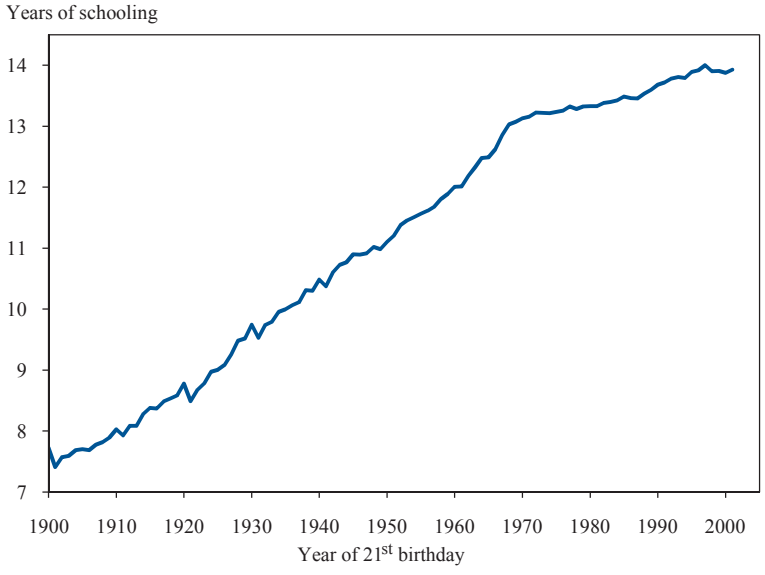
American workers have suffered greatly in the current recession. As described in Chapter 8, long-term unemployment is at record levels. The unemployment rate, which was 10 percent for the country as a whole in December, is far higher for blacks, Hispanics, and other demographic groups. The decline in house prices has eroded the nest eggs that many Americans had been counting on for their retirement. The Administration has initiated many actions to help support workers and their families through the recession and beyond. These actions range from extended and expanded unemployment insurance, to measures to make health insurance more affordable, to initiatives to promote retirement saving.

American workers also face the persistent problem of stagnating incomes. A key determinant of growth in standards of living is the rate of increase in the education and skills of our workforce. More and more jobs require education and training beyond the high school level, along with the ability to complete tasks that are open-ended and interactive. But, as Figure 1-7 shows, the years of education U.S. workers have brought to the labor market have risen little in the past four decades. And, as is well known, U.S. students lag behind those from many other countries in their performance on standardized tests.

Chapter 8 describes the Administration's initiatives to improve the skills of our workers. The Administration is pursuing reform to eliminate wasteful subsidies to student loan providers, the savings from which will fund

new investments in education. The Administration has proposed a major initiative to support and improve community colleges, which are a neglected but critical link in our education system. It has also proposed increasing Pell Grants, and is taking steps to simplify the student aid application process so that eligible students are no longer discouraged by a complicated process from even applying for aid. All of these actions will help to achieve one of the President's key educational goals for the country—that the proportion of adults with a college degree be the largest in the world by 2020.

Figure 1-7
Mean Years of Schooling by Birth Cohort



Notes: Years of schooling at 30 years of age. Methodology described in Goldin and Katz (2007).
Sources: Department of Commerce (Bureau of the Census), 1940-2000 Census IPUMS, 2005 CPS MORG; Goldin and Katz (2007).

Transforming the Energy Sector and Addressing Climate Change

Climate change and energy independence present a very different long-run challenge. Continued reliance on fossil fuels is leading to the buildup of greenhouse gases in the atmosphere and is changing our climate. Left unaddressed, these trends will have increasingly severe consequences over time. What is more, the United States imports the majority of the oil it uses, much of it from sources that are potentially subject to disruption.

Chapter 9 analyzes how economic policy can play a critical role in moving the United States toward a clean energy economy that is less dependent on fossil fuels and fossil fuel imports. Slowing climate change requires

slowing the emission of greenhouse gases. A market-based approach, such as that supported by the Administration and currently working its way through Congress, can provide the signals needed to accomplish this slowing of emissions efficiently and with minimal disruptions.

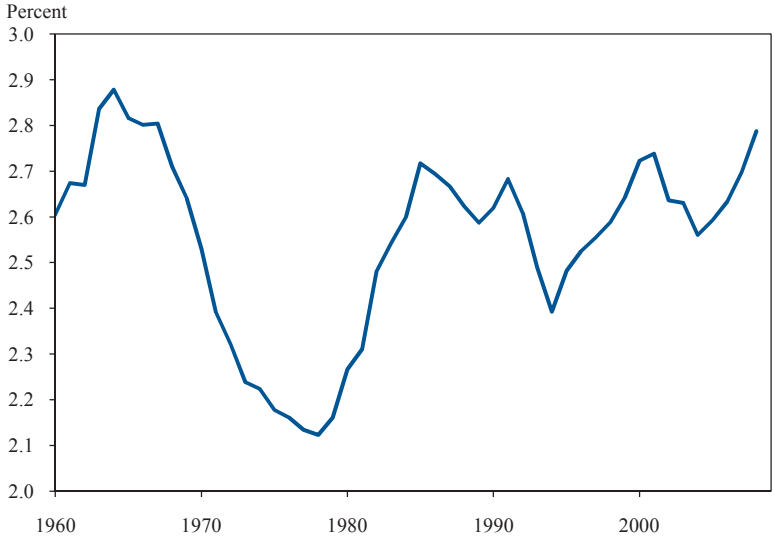
The support for research and development (R&D) and incentives for investment in clean energy technologies and energy efficiency in the Recovery Act and the President's budget, as well as in the energy and climate legislation, can help foster the transition to a clean energy economy and spur growth in vital new industries. These new industries have the potential to reinvigorate the American manufacturing sector and generate secure, high-quality jobs.

Fostering Productivity Growth Through Innovation and Trade

The ultimate driver of growth in average standards of living is productivity growth. Increased investment in capital and in the skills of our workforce are two important sources of that growth. Chapter 10 examines two other sources of productivity gains: innovation and international trade.

Innovation comes from many sources. But a central one is investment in R&D. Figure 1-8 shows the share of GDP devoted to R&D over the past 50 years. In the mid-1960s, R&D constituted a larger share of total spending

Figure 1-8
R&D Spending as a Percent of GDP



Note: Data for 2008 are preliminary.
Sources: National Science Foundation, Science and Engineering Indicators 2010 Tables 4-1 and 4-7.

than it has in the past decade. And in some other countries, such as Korea, Sweden, and Japan, R&D spending is a larger fraction of GDP than in the United States. The President is committed to raising the share of output devoted to R&D to 3 percent, so that America can continue to be a leader in new technologies and American workers and businesses can benefit from more rapid economic growth.

Through the Recovery Act and other measures, the Administration is investing both directly in basic scientific research and development and in the infrastructure to support that research. Most innovation, however, comes from the private sector. Here, the Administration is providing critical incentives for R&D both in general and in such vital areas as clean energy technologies. The Administration is also pursuing a wide range of policies to support the small businesses that contribute so much to technological progress—policies ranging from programs to maintain the flow of credit to small businesses to health insurance reform that will help level the playing field between small and large businesses.

Finally, international trade can be an important source of productivity growth and incentives for innovation. Trade has the potential to allow the U.S. economy to expand output in areas where it is more productive and to enable higher-productivity firms to expand. Access to a world market encourages American firms to invest in the research needed to become technological leaders. Through these routes, a free and fair trade regime can play an important part in lifting living standards in the long run. But for trade to play this role, it is essential to enforce existing trade rules and pursue policies that ensure that the benefits of trade are widely shared.

Conclusion

The past year has been one of great challenge for all Americans. Nearly every family has been touched in some way by the fallout from the crisis in financial markets, the drying up of credit, and the rise in unemployment. These challenges, moreover, have come after a decade in which ordinary Americans have seen their living standards stagnate, their health insurance become less secure, and their environment deteriorate.

The rest of this *Report* describes in more detail the actions the President has taken to end the recession, foster stable growth by rebalancing production and demand, and rebuild the foundation of the American economy. More fundamentally, it describes the work that remains to be done to create the prosperous, dynamic economy the American people need and deserve.

CHAPTER 2

RESCUING THE ECONOMY FROM THE GREAT RECESSION

The first and most fundamental task the Administration faced when President Obama took office was to rescue an economy in freefall. In November 2008, employment was declining at a rate of more than half a million jobs per month, and credit markets were stretched almost to the breaking point. As the economy entered 2009, the decline accelerated, with job loss in January reaching almost three-quarters of a million. The President responded by working with Congress to take unprecedented actions. These steps, together with measures taken by the Federal Reserve and other financial regulators, have succeeded in stabilizing the economy and beginning the process of healing a severely shaken economic and financial system. But much work remains. With high unemployment and continued job losses, it is clear that recovery must remain the key focus of 2010.

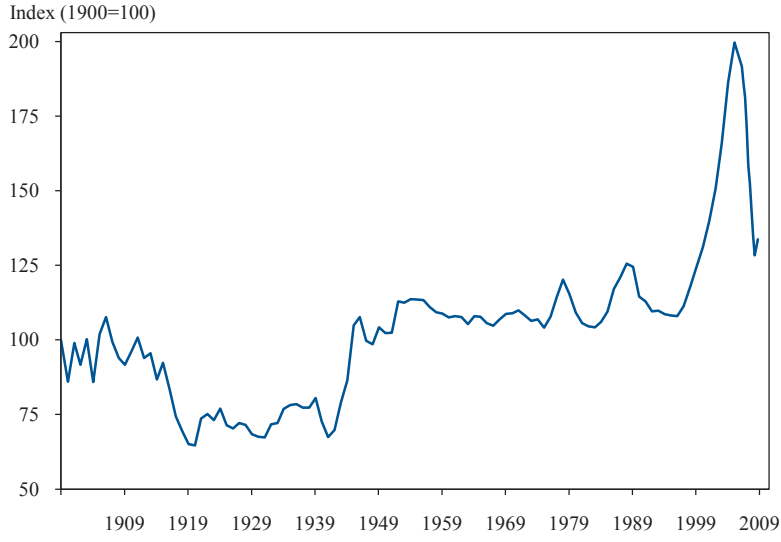
An Economy in Freefall

According to the National Bureau of Economic Research, the United States entered a recession in December 2007. Unlike most postwar recessions, this downturn was not caused by tight monetary policy aimed at curbing inflation. Although economists will surely analyze this downturn extensively in the years to come, there is widespread consensus that its central precipitating factor was a boom and bust in asset prices, especially house prices. The boom was fueled in part by irresponsible and in some cases predatory lending practices, risky investment strategies, faulty credit ratings, and lax regulation. When the boom ended, the result was widespread defaults and crippling blows to key financial institutions, magnifying the decline in house prices and causing enormous spillovers to the remainder of the economy.

The Run-Up to the Recession

The rise in house prices during the boom was remarkable. As Figure 2-1 shows, real house prices almost doubled between 1997 and 2006. By 2006, they were more than 50 percent above the highest level they had reached in the 20th century.

Figure 2-1
House Prices Adjusted for Inflation



Sources: Shiller (2005); recent data from http://www.econ.yale.edu/~shiller/data/Fig2-1.xls.

Stock prices also rose rapidly. The Standard and Poor's (S&P) 500, for example, rose 101 percent between its low in 2002 and its high in 2007. That rise, though dramatic, was not unprecedented. Indeed, in the five years before its peak in March 2000, during the "tech bubble," the S&P 500 rose 205 percent, while the more technology-focused NASDAQ index rose 506 percent.

The run-up in asset prices was associated with a surge in construction and consumer spending. Residential construction rose sharply as developers responded to the increase in housing demand. From the fourth quarter of 2001 to the fourth quarter of 2005, the residential investment component of real GDP rose at an average annual rate of nearly 8 percent. Similarly, consumers responded to the increases in the value of their assets by continuing to spend freely. Saving rates, which had been declining since the early 1980s, fell to about 2 percent during the two years before the recession. This spending was facilitated by low interest rates and easy credit, with household borrowing rising faster than incomes.

The Downturn

House prices began to drop in some markets in 2006, and then nationally beginning in 2007. This process was gradual at first, with prices measured using the LoanPerformance house price index declining just 3½ percent nationally between January and June 2007. Lenders had lent aggressively during the boom, often providing mortgages whose soundness hinged on continued house price appreciation. As a result, the comparatively modest decline in house prices threatened large losses on subprime residential mortgages (the riskiest class of mortgages), as well as on the slightly higher-quality "Alt-A" mortgages. As the availability of mortgage credit tightened, the downward pressure on real estate prices intensified. National house prices declined 6 percent between June and December 2007.

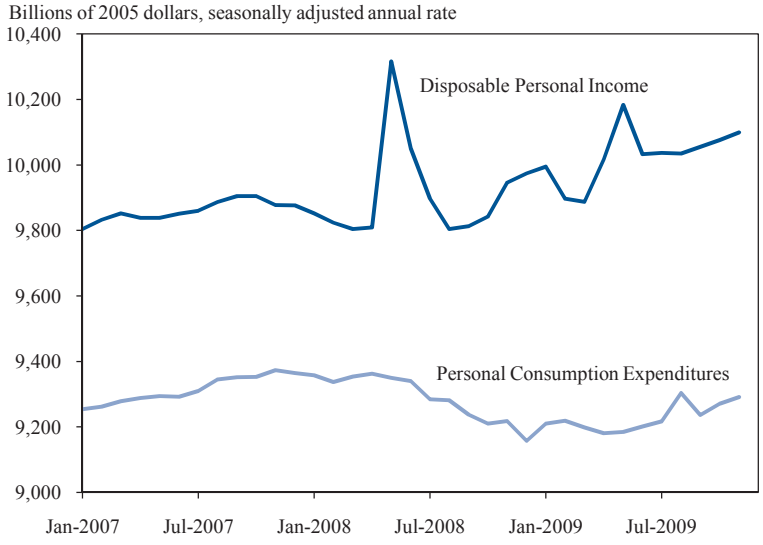
The negative feedback between credit availability and the housing market weighed on household and business confidence, restraining consumer spending and business investment. Although residential construction led the slowdown in real activity through 2007, by early 2008 outlays for consumer goods and services and business equipment and software had decelerated sharply, and total employment was beginning to decline. Real gross domestic product (GDP) fell slightly in the first quarter of 2008.

In February 2008, Congress passed a temporary tax cut. Figure 2-2 shows real after-tax (or disposable) income and consumer spending before and after rebate checks were issued. Consumption was maintained despite a tremendous decline in household wealth over the same period. Total household and nonprofit net worth declined 9.1 percent between June 2007 and June 2008. Microeconomic studies of consumer behavior in this episode confirm the role of the tax rebate in maintaining spending (Broda and Parker 2008; Sahm, Shapiro, and Slemrod 2009). The fact that real GDP reversed course and grew in the second quarter of 2008 is further tribute to the helpfulness of the policy. But, in part because of the lack of robust, sustained stimulus, growth did not continue.

Financial institutions had invested heavily in assets whose values were tied to the value of mortgages. For many reasons—the opacity of the instruments, the complexity of financial institutions' balance sheets and their "off-balance-sheet" exposures, the failure of credit-rating agencies to accurately identify the riskiness of the assets, and poor regulatory oversight—the extent of the institutions' exposure to mortgage default risk was obscured. When mortgage defaults rose, the result was unexpectedly large losses to many financial institutions.

In the fall of 2008, the nature of the downturn changed dramatically. More rapid declines in asset prices generated further loss of confidence in the ability of some of the world's largest financial institutions to honor

Figure 2-2
Income and Consumption Around the 2008 Tax Rebate



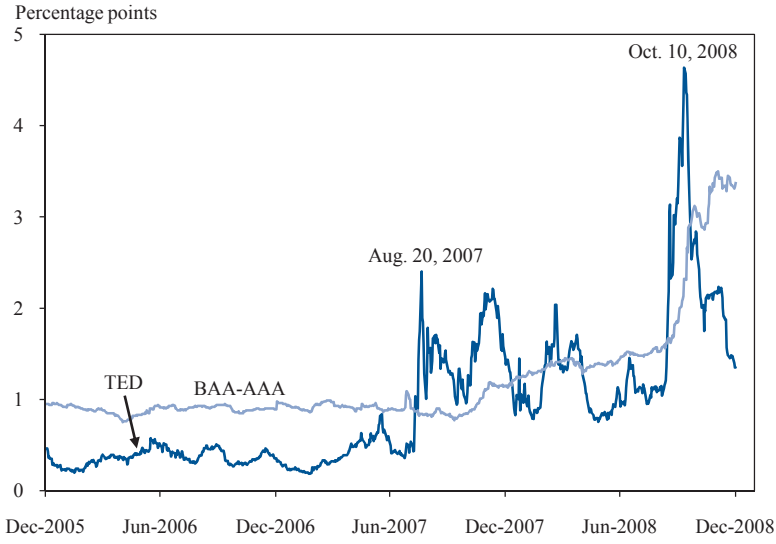
Sources: Department of Commerce (Bureau of Economic Analysis), National Income and Product Accounts Table 2.6, line 30, and Table 2.8.6, line 1.

their obligations. In September, the Lehman Brothers investment bank declared bankruptcy, and other large financial firms (including American International Group, Washington Mutual, and Merrill Lynch) were forced to seek government aid or to merge with stronger institutions. What followed was a rush to liquidity and a cascading of retrenchment that had many of the features of a classic financial panic.

Risk spreads shot up to extraordinary levels. Figure 2-3 shows both the TED spread and Moody's BAA-AAA spread. The TED spread is the difference between the rate on short-term loans among banks and a safe short-term Treasury interest rate. The BAA-AAA spread is the difference between the interest rates on high-grade and medium-grade corporate bonds. Both spreads rose dramatically during the heart of the panic. Indeed, one way to put the spike in the BAA-AAA spread in perspective is to note that the same spread barely moved during the Great Crash of the stock market in 1929, and rose by only about half as much during the first wave of banking panics in 1930 as it did in the fall of 2008.

The same loss of confidence shown by the rise in credit spreads translated into declining asset prices of all sorts. The S&P 500 declined 29 percent in the second half of 2008. Real house prices tumbled another 11 percent over the same period (see Figure 2-1). All told, household and

Figure 2-3
TED Spread and Moody's BAA-AAA Spread Through December 2008



Notes: The TED spread is defined as the three-month London Interbank Offered Rate (Libor) less the yield on the three-month U.S. Treasury security. Moody's BAA-AAA spread is the difference between Moody's indexes of yields on AAA and BAA rated corporate bonds.
Source: Bloomberg.

nonprofit net worth declined 20 percent between December 2007 and December 2008, or by about $13 trillion. Again, a useful way to calibrate the size of this shock is to note that in 1929, household wealth declined only 3 percent—about one-seventh as much as in 2008. This is another indication that the shocks hitting the U.S. economy in 2008 were enormous.

The decline in wealth had a severe impact on consumer spending. This key component of aggregate demand, which accounts for roughly 70 percent of GDP and is traditionally quite stable, declined at an annual rate of 3.5 percent in the third quarter of 2008 and 3.1 percent in the fourth quarter. Some of this large decline may have also reflected the surge in uncertainty about future incomes. Not only did asset prices fall sharply, leading to the decline in wealth; they also became dramatically more volatile. The standard deviation of daily stock returns in the fourth quarter, for example, was 4.3 percentage points, even larger than in the first months of the Great Depression.

The financial panic led to a precipitous decline in lending. Bank credit continued to rise over the latter portion of 2008, as households and firms that had lost access to other forms of credit turned to banks. However, bank loans declined sharply in the first and second quarters of 2009 as banks tightened their terms and standards. Other sources of credit showed even

more substantial declines. One particularly important market is that for commercial paper (short-term notes issued by firms to finance key operating costs such as payroll and inventory). The market for lower-tier nonfinancial (A2/P2) commercial paper collapsed in the fall of 2008, with the average daily value of new issues falling from $8.0 billion in the second quarter of 2008 to $4.3 billion in the fourth quarter. In addition, securitization of automobile loans, credit card receivables, student loans, and commercial mortgages ground to a halt.

This freezing of credit markets, together with the decline in wealth and confidence, caused consumer spending and residential investment to fall sharply. Real GDP declined at an annual rate of 2.7 percent in the third quarter of 2008, 5.4 percent in the fourth quarter, and 6.4 percent in the first quarter of 2009. Industrial production, which had been falling steadily over the first eight months of 2008, plummeted in the final four months—dropping at an annual rate of 18 percent.

Many industries were battered by the financial crisis and the resulting economic downturn. The American automobile industry was hit particularly hard. Sales of light motor vehicles, which had exceeded 16 million units every year from 1999 to 2007, fell to an annual rate of only 9.5 million in the first quarter of 2009. Employment in the motor vehicle and parts industry declined by 240,000 over the 12 months through January 2009. Two domestic manufacturers, General Motors (GM) and Chrysler, required emergency loans in late December 2008 and early January 2009 to avoid disorderly bankruptcy.

The most disturbing manifestation of the rapid slowdown in the economy was the dramatic increase in job loss. Over the first months of 2008, job losses were typically between 100,000 and 200,000 per month. In October, the economy lost 380,000 jobs; in November, 597,000 jobs. By January, the economy was losing jobs at a rate of 741,000 per month. Commensurate with this terrible rate of job loss, the unemployment rate rose rapidly—from 6.2 percent in September 2008 to 7.7 percent in January 2009. It then continued to rise by roughly one-half of a percentage point per month through the winter and spring; it reached 9.4 percent in May, and ended the year at 10.0 percent.

Wall Street and Main Street

As described in more detail later, policymakers have focused much of their response to the crisis on stabilizing the financial system. Many Americans are troubled by these policies. Because to a large extent it was the actions of credit market participants that led to the crisis, people ask why policymakers should take actions focused on restoring credit markets.

The basic reason for these policies is that the health of credit markets is critically important to the functioning of our economy. Large firms use commercial paper to finance their biweekly payrolls and pay suppliers for materials to keep production lines going. Small firms rely on bank loans to meet their payrolls and pay for supplies while they wait for payment of their accounts receivable. Home purchases depend on mortgages; automobile purchases depend on car loans; college educations depend on student loans; and purchases of everyday items depend on credit cards.

The events of the past two years provide a dramatic demonstration of the importance of credit in the modern economy. As the President said in his inaugural address, "Our workers are no less productive than when this crisis began. Our minds are no less inventive, our goods and services no less needed." Yet developments in financial markets—rises and falls in home and equity prices and in the availability of credit—have led to a collapse of spending, and hence to a precipitous decline in output and to unemployment for millions.

Numerous academic studies before the crisis had also shown that the availability of credit is critical to investment, hiring, and production. One study, for example, found that when a parent company earns high profits and so has less need to rely on credit, the additional funds lead to higher investment by subsidiaries in completely unrelated lines of business (Lamont 1997). Another found that when a small change in a firm's circumstances frees up a large amount of funds that would otherwise have to go to pension contributions, the result is a large change in spending on capital goods (Rauh 2006). Other studies have shown that when the Federal Reserve tightens monetary policy, small firms, which typically have more difficulty obtaining financing, are hit especially hard (Gertler and Gilchrist 1994), and firms without access to public debt markets cut their inventories much more sharply than firms that have such access (Kashyap, Lamont, and Stein 1994).

Research before the crisis had also found that financial market disruptions could affect the real economy. Ben Bernanke, who is now Chairman of the Federal Reserve, demonstrated a link between the disruption of lending caused by bank failures and the worsening of the Great Depression (Bernanke 1983). A smaller but more modern example is provided by the impact of Japan's financial crisis in the 1990s on the United States: construction lending, new construction, and construction employment were more adversely affected in U.S. states where subsidiaries of Japanese banks had a larger role, and thus where credit availability was more affected by the collapse of Japan's bubble (Peek and Rosengren 2000). That a financial disruption in a trading partner can have a detectable adverse impact on our economy through its impact on credit availability suggests that the effect of

a full-fledged financial crisis at home would be enormous—an implication that, sadly, has proven to be correct.

Finally, microeconomic evidence from the recent crisis also shows the importance of the financial system to the real economy. For example, firms that happened to have long-term debt coming due after the crisis began, and thus faced high costs of refinancing, cut their investment much more than firms that did not (Almeida et al. 2009). Another study found that a majority of corporate chief financial officers surveyed reported that their firms faced financing constraints during the crisis, and that the constrained firms on average planned to reduce investment spending, research and development, and employment sharply compared with the unconstrained firms (Campello, Graham, and Harvey 2009).

In short, the goal of the policies to stabilize the financial system was not to help financial institutions. The goal was to help ordinary Americans. When the financial system is not working, individuals and businesses cannot get credit, demand and production plummet, and job losses skyrocket. Thus, an essential step in healing the real economy is to heal the financial system. The alternative of letting financial institutions suffer the consequences of their mistakes would have led to a collapse of credit markets and vastly greater suffering for millions and millions of Americans.

The policies to rescue the financial sector were, however, costly, and often had the side effect of benefiting the very institutions whose irresponsible actions contributed to the crisis. That is one reason that the President has endorsed a Financial Crisis Responsibility Fee on the largest financial firms to repay the Federal Government for its extraordinary actions. As discussed in Chapter 6, the Administration has also proposed a comprehensive plan for financial regulatory reform that will help ensure that Wall Street does not return to the risky practices that were a central cause of the recent crisis.

The Unprecedented Policy Response

Given the magnitude of the shocks that hit the economy in the fall of 2008 and the winter of 2009, the downturn could have turned into a second Great Depression. That it has not is a tribute to the aggressive and effective policy response. This response involved the Federal Reserve and other financial regulators, the Administration, and Congress. The policy tools were similarly multifaceted, including monetary policy, financial market interventions, fiscal policy, and policies targeted specifically at housing.

Monetary Policy

The first line of defense against a weak economy is the interest rate policy of the independent Federal Reserve. By increasing or decreasing the quantity of reserves it supplies to the banking system, the Federal Reserve can lower or raise the Federal funds rate, which is the interest rate at which banks lend to one another. The funds rate influences other interest rates in the economy and so has important effects on economic activity. Using changes in the target level of the funds rate as their main tool of countercyclical policy, monetary policymakers had kept inflation low and the real economy remarkably stable for more than two decades.

The Federal Reserve has used interest rate policy aggressively in the recent episode. The target level of the funds rate at the beginning of 2007 was 5¼ percent. The Federal Reserve cut the target by 1 percentage point over the last four months of 2007 and by an additional 2¼ percentage points over the first four months of 2008. After the events of September, it cut the target in three additional steps in October and December, bringing it to its current level of 0 to ¼ percent.

Conventional interest rate policy, however, could do little to deal with the enormous disruptions to credit markets. As a result, the Federal Reserve has used a range of unconventional tools to address those disruptions directly. For example, in March 2008, it created the Primary Dealer Credit Facility and the Term Securities Lending Facility to provide liquidity support for primary dealers (that is, financial institutions that trade directly with the Federal Reserve) and the key financial markets in which they operate. In October 2008, when the critical market for commercial paper threatened to stop functioning, the Federal Reserve responded by setting up the Commercial Paper Funding Facility to backstop the market.

Once the Federal Reserve's target for the funds rate was effectively lowered to zero in December 2008, there was another reason to use unconventional tools. Nominal interest rates generally cannot fall below zero: because holding currency guarantees a nominal return of zero, no one is willing to make loans at a negative nominal interest rate. As a result, when the Federal funds rate is zero, supplying more reserves does not drive it lower. Statistical estimates suggest that based on the Federal Reserve's usual response to inflation and unemployment, the subdued level of inflation and the weak state of the economy would have led the central bank to reduce its target for the funds rate by about an additional 5 percentage points if it could have (Rudebusch 2009).

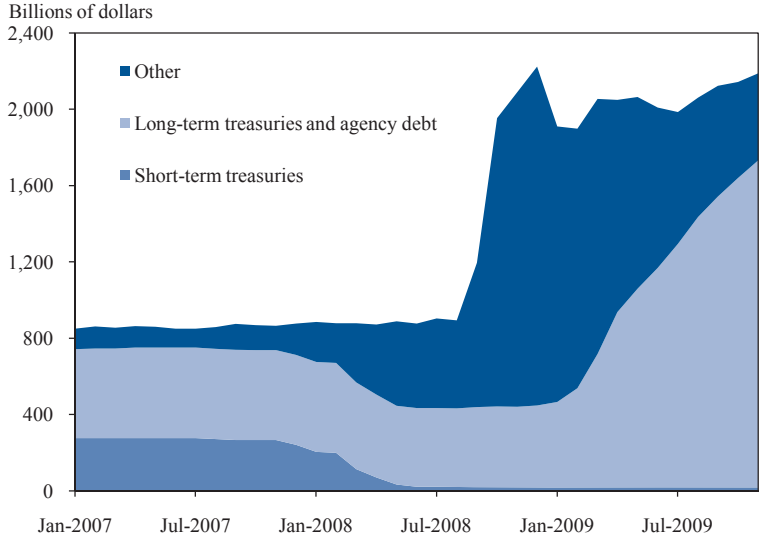
This desire to provide further stimulus, coupled with the inability to use conventional interest rate policy, led the Federal Reserve to undertake large-scale asset purchases to reduce long-term interest rates. In March

2009, the Federal Reserve announced plans to purchase up to $300 billion of long-term Treasury debt; it also announced plans to increase its purchases of the debt of Fannie Mae, Freddie Mac, and the Federal Home Loan Banks (the government-sponsored enterprises, or GSEs, that support the mortgage market) to up to $200 billion, and its purchases of agency (that is, Fannie Mae, Freddie Mac, and Ginnie Mae) mortgage-backed securities to up to $1.25 trillion.

Finally, the Federal Reserve has attempted to manage expectations by providing information about its goals and the likely path of policy. Officials have consistently stressed their commitment to ensuring that inflation neither falls substantially below nor rises substantially above its usual level. In addition, the Federal Reserve has repeatedly stated that economic conditions "are likely to warrant exceptionally low levels of the Federal funds rate for an extended period." To the extent this statement provides market participants with information they did not already have, it is likely to keep longer-term interest rates lower than they otherwise would be.

One effect of the Federal Reserve's unconventional policies has been an enormous expansion of the quantity of assets on the Federal Reserve's balance sheet. Figure 2-4 shows the evolution of Federal Reserve asset holdings since the beginning of 2007. One can see both that asset holdings nearly tripled between January and December 2008 and that there was a dramatic move away from short-term Treasury securities.

Figure 2-4
Assets on the Federal Reserve's Balance Sheet



Notes: Agency debt refers to obligations of Fannie Mae, Freddie Mac, and the Federal Home Loan Banks. Agency mortgage-backed securities are also included in this category.
Source: Federal Reserve Board, H.4.1 Table 1.

The flip side of the large increase in the Federal Reserve's asset holdings is a large increase in the quantity of reserves it has supplied to the financial system. Some observers have expressed concern that the large expansion in reserves could lead to inflation. In this regard, two key points should be kept in mind. First, as already described, most statistical models suggest that the Federal Reserve's target interest rate would be substantially lower than it is today if it were not constrained by the fact that the Federal funds rate cannot fall below zero. As a result, monetary policy is in fact unusually tight given the state of the economy, not unusually loose. Second, the Federal Reserve has the tools it needs to prevent the reserves from leading to inflation. It can drain the reserves from the financial system through sales of the assets it has acquired or other actions. Indeed, despite the weak state of the economy, the return of credit market conditions toward normal is leading to the natural unwinding of some of the exceptional credit market programs. Another reliable way the Federal Reserve can keep the reserves from creating inflationary pressure is by using its relatively new ability to raise the interest rate it pays on reserves: banks will be unwilling to lend the reserves at low interest rates if they can obtain a higher return on their balances held at the Federal Reserve.

Financial Rescue

Efforts to stabilize the financial system have been a central part of the policy response. As just discussed, even before the financial crisis in September 2008, the Federal Reserve was taking steps to ease pressures on credit markets. The events of the fall led to even stronger actions. On September 7, Fannie Mae and Freddie Mac were placed in conservatorship under the Federal Housing Finance Agency to prevent a potentially severe disruption of mortgage lending. On September 16, concern about the potentially catastrophic effects of a disorderly failure of American International Group (AIG) caused the Federal Reserve to extend the firm an $85 billion line of credit. On September 19, concerns about the possibility of runs on money-market mutual funds led the Treasury to announce a temporary guarantee program for these funds.

On October 3, Congress passed and President Bush signed the Emergency Economic Stabilization Act of 2008. This Act provided up to $700 billion for the Troubled Asset Relief Program (TARP) for the purchase of distressed assets and for capital injections into financial institutions, although the second $350 billion required presidential notification to Congress and could be disallowed by a vote of both houses. The initial $350 billion was used mainly to purchase preferred equity shares in financial institutions, thereby providing the institutions with more capital to help them withstand the crisis.

At President-Elect Obama's request, President Bush notified Congress on January 12, 2009 of his plan to release the second $350 billion of TARP funds. With strong support from the incoming Administration, the Senate defeated a resolution disapproving the release. These funds provided policymakers with critical resources needed to ensure financial stability.

On February 10, 2009, Secretary of the Treasury Timothy Geithner announced the Administration's Financial Stability Plan. The plan represented a new, comprehensive approach to the financial rescue that sought to tackle the interlocking sources of instability and increase credit flows. An overarching theme was a focus on transparency and accountability to rebuild confidence in financial markets and protect taxpayer resources.

A key element of the plan was the Supervisory Capital Assessment Program (or "stress test"). The purpose was to assess the capital needs of the country's 19 largest financial institutions should economic and financial conditions deteriorate further. Institutions that were found to need an additional capital buffer would be encouraged to raise private capital and would be provided with temporary government capital if those efforts did not succeed. This program was intended not just to examine the capital positions of the institutions and ensure that they obtained more capital if needed, but also to strengthen private investors' confidence in the soundness of the institutions' balance sheets, and so strengthen the institutions' ability to obtain private capital.

Another element of the plan was the Consumer and Business Lending Initiative, which was aimed at maintaining the flow of credit. In November 2008, the Federal Reserve had created the Term Asset-Backed Securities Loan Facility to help counteract the dramatic decline in securitized lending. In the February announcement of the Financial Stability Plan, the Treasury greatly expanded the resources of the not-yet-implemented facility. The Treasury increased its commitment to $100 billion to leverage up to $1 trillion of lending for businesses and households. By facilitating securitization, the program was designed to help unfreeze credit and lower interest rates for auto loans, credit card loans, student loans, and small business loans guaranteed by the Small Business Administration (SBA).

A third element of the plan was a Treasury partnership with the Federal Deposit Insurance Corporation and the Federal Reserve to create the Public-Private Investment Program. A central purpose was to remove troubled assets from the balance sheets of financial institutions, thereby reducing uncertainty about their financial strength and increasing their ability to raise capital and hence their willingness to lend. Partnership with the private sector served two important objectives: it leveraged scarce public funds, and it used private competition and incentives to ensure that the government did not overpay for assets.

There were two other key components of the Financial Stability Plan. One was a wide-ranging program to reduce mortgage interest rates and help responsible homeowners stay in their homes. These policies are described later in the section on housing policy. The other component was a range of measures to help small businesses. Many of these were included in the American Recovery and Reinvestment Act and are discussed in the section on fiscal stimulus.

Failure of the two troubled domestic automakers (GM and Chrysler) threatened economy-wide repercussions that would have been magnified by related problems at the automakers' associated financial institutions (GMAC and Chrysler Financial). To avoid these consequences, the Bush Administration set up the Auto Industry Financing Program within the TARP. This program extended $17.4 billion in funding to the two companies in late December 2008 and early January 2009. The program also extended $7.5 billion in funding to the two auto finance companies around the same time. Upon taking office, the Obama Administration required the automakers to submit plans for restructuring and a return to viability before additional funds were committed. To sustain the industry during this planning process, the Treasury established the Warranty Commitment Program to reassure consumers that warranties of the troubled firms would be honored. It also initiated the Auto Supplier Support Program to maintain stability in the auto supply base.

Over the spring of 2009, the Administration's Auto Task Force worked with GM and Chrysler to produce plans for viability. In the case of Chrysler, the task force determined that viability could be achieved by merging with the Italian automaker Fiat. For GM, the task force determined that substantial reductions in costs were necessary and charged the company with producing a more aggressive restructuring plan. For both companies, a quick, targeted bankruptcy was judged to be the most efficient and successful way to restructure. Chrysler filed for bankruptcy on April 30, 2009; GM, on June 1. In addition to concessions by all stakeholders, including workers, retirees, creditors, and suppliers, the U.S. Government invested substantial funds to bring about the orderly restructuring. In all, more than $80 billion of TARP funds had been authorized for the motor vehicle industry as of September 20, 2009.

Fiscal Stimulus

The signature element of the Administration's policy response to the crisis was the American Recovery and Reinvestment Act of 2009 (ARRA). The President signed the Recovery Act in Denver on February 17, just 28 days after taking office. At an estimated cost of $787 billion, the Act is

the largest countercyclical fiscal action in American history. It provides tax cuts and increases in government spending equivalent to roughly 2 percent of GDP in 2009 and 2¼ percent of GDP in 2010. To put those figures in perspective, the largest expansionary swing in the budget during Franklin Roosevelt's New Deal was an increase in the deficit of about 1½ percent of GDP in fiscal 1936. That expansion, however, was counteracted the very next fiscal year by a contraction that was even larger.

The fiscal stimulus was designed to fill part of the shortfall in aggregate demand caused by the collapse of private demand and the Federal Reserve's inability to lower short-term interest rates further. It was part of a comprehensive package that included stabilizing the financial system, helping responsible homeowners avoid foreclosure, and aiding small businesses through tax relief and increased lending. The President set as a goal for the fiscal stimulus that it raise employment by 3½ million relative to what it otherwise would have been.

Several principles guided the design of the stimulus. One was that it be spread over two years, reflecting the Administration's view that the economy would need substantial support for more than one year. At the same time, the Administration also strongly supported keeping the stimulus explicitly temporary. It was not to be an excuse to permanently expand the size of government.

A second key principle was that the stimulus be well diversified. Different types of stimulus affect the economy in different ways. Individual tax cuts, for example, affect production and employment in a wide range of industries by encouraging households to spend more on consumer goods, while government investments in infrastructure directly increase construction activity and employment. In addition, underlying economic conditions affect the efficacy of fiscal policy in ways that can be quantitatively important and sometimes difficult to forecast. Likewise, different types of stimulus affect the economy with different speeds. For instance, aid to individuals directly affected by the recession tends to be spent relatively quickly, while new investment projects require more time. Because of the need to provide broad support to the economy over an extended period, the Administration supported a stimulus plan that included a broad range of fiscal actions.

A third principle was that emergency spending should aim to address long-term needs. Some spending, such as unemployment insurance, is aimed at helping those directly affected by the recession maintain a decent standard of living. But government investment spending should aim to create enduring capital investments that increase productivity and growth.

The Recovery Act reflected those guiding principles. The Congressional Budget Office (CBO) estimated that almost one-quarter of the stimulus

would be spent by the end of the third quarter of 2009, and an additional half would be spent over the next four quarters (Congressional Budget Office 2009b). So far, the pace of the spending and tax cuts has largely matched CBO's estimates.

The final package was very well diversified. Roughly one-third took the form of tax cuts. The most significant of these was the Making Work Pay tax credit, which cut taxes for 95 percent of working families. Taxes for a typical family were reduced by $800 per couple for each of 2009 and 2010. Another provision of the bill provided roughly $14 billion for one-time payments of $250 to seniors, veterans, and people with disabilities. The macroeconomic effects of these payments are likely to be similar to those of tax cuts.

Businesses received important tax cuts as well. The most important of these was an extension of bonus depreciation, which reduced taxes on new investments by allowing firms to immediately deduct half the cost of property and equipment purchases. One advantage of such temporary investment incentives is that they can affect the timing of investment, moving some investment from future years when the economy does not have a deficiency of aggregate demand to the present, when it does.

In addition, because the financial market disruptions had a particularly paralyzing effect on the financial plans of small businesses, the Act included additional measures targeted specifically at those businesses. Tax cuts for small businesses included an expansion of provisions allowing for the carryback of net operating losses, a temporary 75 percent exclusion from capital gains taxes on small business stock, and the ability to immediately expense up to $250,000 of qualified investment purchases. In addition to reducing taxes, these provisions improve cash flow at firms facing credit constraints and provide extra incentives for individuals to invest in small businesses. The Act also included measures to help increase small business lending through the SBA. In particular, it raised to 90 percent the maximum guarantee on SBA general purpose and working capital loans (the 7(a) program) and eliminated fees on both 7(a) loans and loans for fixed-asset capital and real estate investment projects (the 504 program).

Another important part of the stimulus consisted of fiscal relief to state governments. Because almost every state has a balanced-budget requirement, the declines in revenues caused by the recession forced states to cut spending or raise taxes, thereby further contracting demand and magnifying the downturn. Federal fiscal relief can help prevent these contractionary responses, helping to maintain critical state services and state employment, prevent tax increases on families already suffering from the recession, and

cushion the fall in demand. And because many states were already raising taxes and cutting spending when the ARRA was passed, the effects were likely to occur relatively quickly. The Act therefore included roughly $140 billion of state fiscal relief.

The Recovery Act also included approximately $90 billion of support for individuals directly affected by the recession. This support serves two critical purposes. First, it provides relief from the recession's devastating impact on families and individuals. Second, because the recipients typically spend this support quickly, it provides an immediate boost to the broader economy. Among the major components of this relief were an extension and expansion of unemployment insurance benefits, subsidies to help the unemployed continue to obtain health insurance, and additional funding for the Supplemental Nutritional Assistance Program. The Act also reduced taxes on unemployment insurance benefits, the effect of which is similar to an expansion of benefits.

Finally, the Recovery Act included direct government investment spending. Because government investment raises output in the short run both through its direct effects and by increasing the incomes and spending of the workers employed on the projects, its output effects are particularly large. In addition, because this type of stimulus is spent less quickly than other types, it will play a vital role in providing support to the economy after 2009. And by funding critical investments, this spending will raise the economy's output even in the long run.

The Act included funding both for traditional government investment projects, such as transportation infrastructure and basic scientific research, and for initial investments to jump-start private investment in emerging new areas, such as health information technology, a smart electrical grid, and clean energy technologies. The Act also included tax credits for specific types of private spending, such as home weatherization and advanced energy manufacturing, which are likely to have effects similar to direct government investment spending. Altogether, roughly one-third of the budget impact of the Recovery Act will take the form of these investments and tax credits.

Fiscal stimulus actions did not end with the passage and implementation of the Recovery Act. In June 2009, the Administration worked with Congress to set up the Car Allowance Rebate System (CARS). Commonly known as the "Cash for Clunkers" program, CARS gave rebates of up to $4,500 to consumers who replaced older cars and trucks with newer, more fuel-efficient models. The program was in effect for July and most of August. After the program's popularity led to quick exhaustion of the original funding of $1 billion, the funding was increased to $3 billion to allow more consumers to participate.

In November, the Worker, Homeownership, and Business Assistance Act of 2009 cut taxes for struggling businesses and strengthened the safety net for workers. In particular, the Act extended the net operating loss provisions of the Recovery Act that allowed small businesses to count their losses this year against taxes paid in previous years for an additional year, and expanded the benefit to medium and large businesses. The Act also provided up to 20 additional weeks of unemployment insurance benefits for workers who were reaching the end of their emergency unemployment benefits. In December, an amendment to the Department of Defense Appropriations Act of 2010 continued through the end of February 2010 the unemployment insurance provisions of the Recovery Act, the November extension of emergency benefits, and the COBRA subsidy program that helps unemployed workers maintain their health insurance. It also expanded the COBRA premium subsidy period from 9 to 15 months and extended the increased guarantees and fee waivers for SBA loans.

Housing Policy

The economic and financial crisis began in the housing market, and an important part of the policy response has been directed at that market. The Administration initiated the Making Home Affordable program (MHA) in March 2009. This program was designed to support low mortgage rates, keep millions of homeowners in their homes, and stabilize the housing market.

As described earlier, the Federal Reserve undertook large-scale purchases of GSE debt and mortgage-backed securities in an effort to reduce mortgage interest rates. At the same time, the Treasury Department made an increased funding commitment to the GSEs. This increased government support for the agencies also reduced their borrowing costs and so helped lower mortgage interest rates.

Importantly, MHA also included a program to help households take advantage of lower interest rates. The Home Affordable Refinance Program helps families whose homes have lost value and whose mortgage payments can be reduced by refinancing at historically low interest rates. This program expanded the opportunity to refinance to borrowers with loans owned or guaranteed by the GSEs who had a mortgage balance up to 125 percent of their home's current value.

Another key component of MHA is the Home Affordable Modification Program (HAMP), which is providing up to $75 billion to encourage loan modifications. It offers incentives to investors, lenders, servicers, and homeowners to encourage mortgage modifications in which all stakeholders share in the cost of ensuring that responsible homeowners can afford their

monthly mortgage payments. To protect taxpayers, HAMP focuses on sound modifications. No payments are made by the government unless the modification lasts for at least three months, and all the payments are designed around the principle of "pay for success." All parties have aligned incentives under the program to achieve successful modifications at an affordable and sustainable level.

The Administration has supported additional programs to help the housing sector. The Recovery Act included an $8,000 first-time homebuyer's credit for home purchases made before December 1, 2009. As with temporary investment incentives, this credit can help the economy by changing the timing of decisions, bringing buyers into the housing market who were not planning on becoming homeowners until after 2009 or were postponing their purchases in light of the distress in the market. In November, this credit was expanded and extended by the Workers, Homeownership, and Business Assistance Act of 2009.

The Recovery Act also gave considerable resources to the Neighborhood Stabilization Program, a program administered by the Department of Housing and Urban Development to stabilize communities that have suffered from foreclosures and abandoned homes. The Administration also provided assistance to state and local housing finance agencies and their efforts to aid distressed homeowners, stimulate first-time home buying, and provide affordable rental homes. These agencies had faced a significant liquidity crisis resulting from disruptions in financial markets.

The Effects of the Policies

The condition of the American economy has changed dramatically in the past year. At the beginning of 2009, financial markets were functioning poorly, house prices were plummeting, and output and employment were in freefall. Today, financial markets have stabilized and credit is starting to flow again, house prices have leveled off, output is growing, and the employment situation is stabilizing. Because of the depth of the economy's fall, we are a long way from full recovery, and significant challenges remain. But the trajectory of the economy is vastly improved.

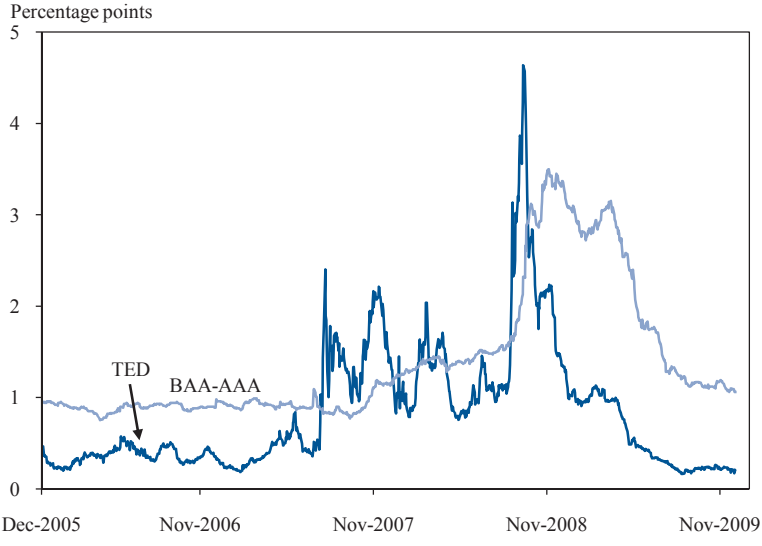
There is strong evidence that the policy response has been central to this turnaround. The actions to stabilize credit markets have prevented further destructive failures of major financial institutions and helped maintain lending in key areas. The housing and mortgage policies have kept hundreds of thousands of homeowners in their homes and brought mortgage rates to historic lows. The speed of the economy's change in direction has been remarkable and matches up well with the timing of the fiscal

stimulus. And both direct estimates as well as the assessments of expert observers underscore the crucial role played by the stimulus.

The Financial Sector

Given the powerful impact of the financial sector on the real economy, a necessary first step to recovery of the real economy was recovery of the financial sector. And the financial sector has unquestionably begun to recover. Figure 2-5 extends the graph of the TED spread and the BAA-AAA spread shown in Figure 2-3 through December 2009. After spiking to unprecedented levels in October 2008, the TED spread fell rapidly over the next two months but remained substantially elevated at the beginning of 2009. It then declined gradually through August and is now at normal levels. This key indicator of the basic functioning of credit markets suggests substantial financial recovery. The BAA-AAA spread remained very high through April but then fell rapidly from April to September. This spread, which normally rises when the economy is weak because of higher corporate default risks, is now at levels comparable to those at the beginning of the recession and below its levels in much of 1990–91 and 2002–03. Thus, the current level of the spread appears to reflect mainly the weak state of the economy rather than any specific difficulties in credit markets.

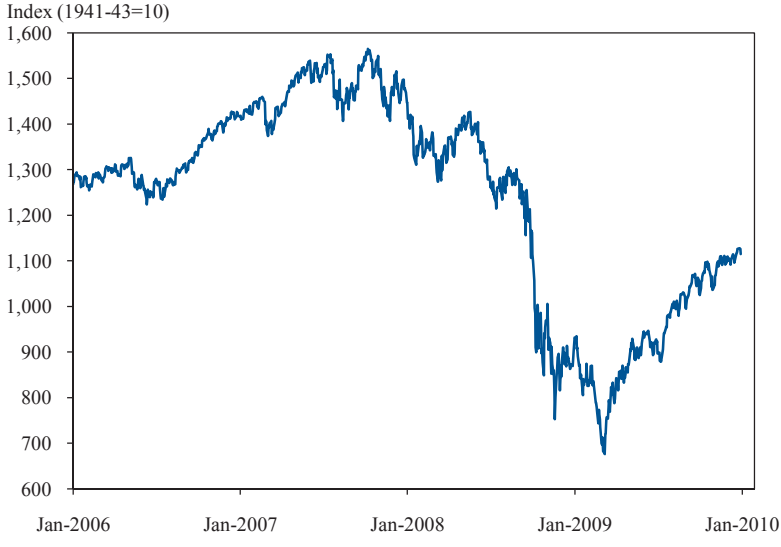
Figure 2-5
TED Spread and Moody's BAA-AAA Spread Through December 2009



Notes: The TED spread is defined as the three-month London Interbank Offer Rate (LIBOR) less the yield on the three-month U.S. Treasury security. Moody's BAA-AAA spread is the difference between Moody's indexes of yields on AAA and BAA rated corporate bonds.
Source: Bloomberg.

Another broad indicator of the health of the financial system is the level of stock prices, which depend both on investors' expectations of future earnings and on their willingness to bear risk. Figure 2-6 shows the behavior of the S&P 500 stock price index since January 2006. This series declined by 18 percent from its peak in October 2007 through the end of August 2008, fell precipitously in September, and continued to fall through March 2009 as the economy deteriorated sharply and investors became extremely fearful. The stabilization of the economy and the restoration of more normal workings of financial markets have led to a sharp turnaround in stock prices. As of December 31, 2009, the S&P 500 was 65 percent above its low in March. As with the BAA-AAA spread, the current level of stock prices relative to their pre-recession level appears to reflect the weaker situation of the real economy rather than any specific problems with financial markets or investors' willingness to bear risk.

Figure 2-6
S&P 500 Stock Price Index



Source: Bloomberg.

These indicators show that financial markets have evolved toward normalcy, which was a necessary step in stopping the economic freefall. But for the economy to recover fully, that is not enough: credit must be available to sound borrowers. On this front, the results are more mixed. Some sources of credit are coming back strongly, but others remain weak.

As described in more detail later, one critical market where policies have succeeded in lowering interest rates and maintaining credit flows is

the mortgage market. Another market that has recovered substantially is the market for commercial paper. In late 2008 and early 2009, this market was functioning in large part because of the direct intervention of the Federal Reserve. By mid-January, the Federal Reserve's Commercial Paper Funding Facility (CPFF) was holding $350 billion of commercial paper. As credit conditions have stabilized, however, firms have been able to place their commercial paper privately on better terms than through the CPFF, and levels of commercial paper outstanding have remained stable even as the Federal Reserve has reduced its holdings to less than $15 billion. Nonetheless, quantities of commercial paper outstanding remain well below their pre-crisis levels.

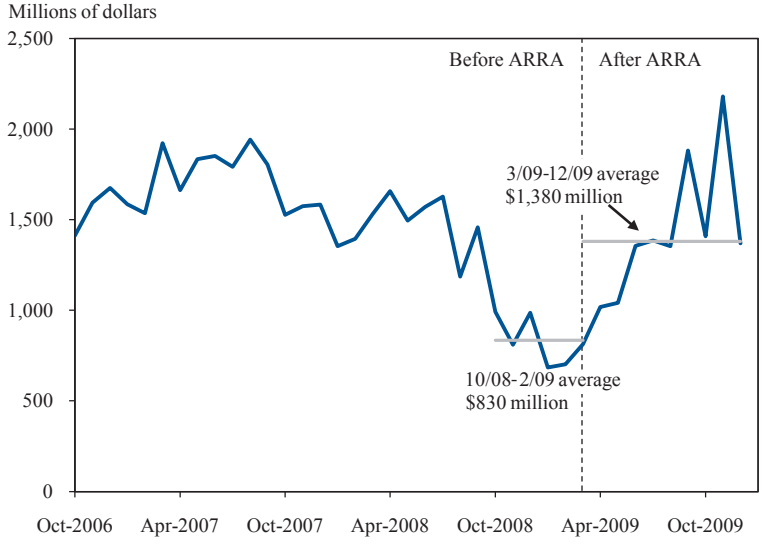
Another crucial source of credit that has stabilized is the market for corporate bonds. As risk spreads have fallen, corporations have found it easier to obtain funding by issuing longer-term bonds than by issuing such instruments as commercial paper. As a result, corporate bond issuance, which fell sharply in the second half of 2008, is now running above pre-crisis levels.

An important financial market development occurred in response to the stress test conducted in the spring. This comprehensive review of the soundness of the Nation's 19 largest financial institutions, together with the public release of this information, strengthened private investors' confidence in the institutions. Partly as a result, the institutions were able to raise $55 billion in private common equity, improving their capital positions and their ability to lend.

The fact that financial institutions are increasingly able to raise private capital is reducing their need to rely on public capital. Only $7 billion of TARP funds have been extended to banks since January 20, 2009. Many financial institutions have repaid their TARP funds, and the expected cost of the program to the government has been revised down by approximately $200 billion since August 2009.

Policy initiatives have also had a clear impact on small business lending. Figure 2-7 shows the amount of SBA-guaranteed loans that have been made since October 2006. SBA loan volume experienced its first significant decrease in September and October 2007; following the failure of Lehman Brothers in September 2008, it fell by more than half. The recovery in small business lending coincided with the passage of the Recovery Act in February 2009. In the months between Lehman's fall and passage of the Recovery Act, average monthly loan volume was $830 million; immediately after passage, loan volume began to steadily recover and averaged $1.3 billion per month through September 2009. In September, loan volume reached $1.9 billion, which was the highest level since August 2007; this has since been exceeded by November 2009's monthly loan volume of

Figure 2-7
Monthly Gross SBA 7(a) and 504 Loan Approvals



Source: Unpublished monthly data provided by the Small Business Administration.

$2.2 billion. In total, between February and December 2009 the SBA guaranteed nearly $15 billion in small business lending.

Nonetheless, overall credit conditions have not returned to normal. Many small business owners report continued difficulties in obtaining credit. In addition, the severity of the downturn is leading to elevated rates of failure of small banks, potentially disrupting their lending to small businesses and households. The market for asset-backed securities is also far from fully recovered. As a result, it is often hard for banks and other lenders to package and sell their loans, which forces them to hold a greater fraction of the loans they originate and thus limits their ability to lend.

One important source of data on credit availability is the Federal Reserve's Senior Loan Officer Opinion Survey on Bank Lending Practices. The survey, conducted every three months, examines whether banks are tightening lending standards, loosening them, or keeping them basically unchanged. The October 2008 survey found that the overwhelming majority of banks were tightening standards. This fraction has declined steadily, and by October 2009 less than 20 percent were reporting that they were tightening standards for commercial and industrial loans, though none reported loosening standards. Thus, credit conditions remain tight.

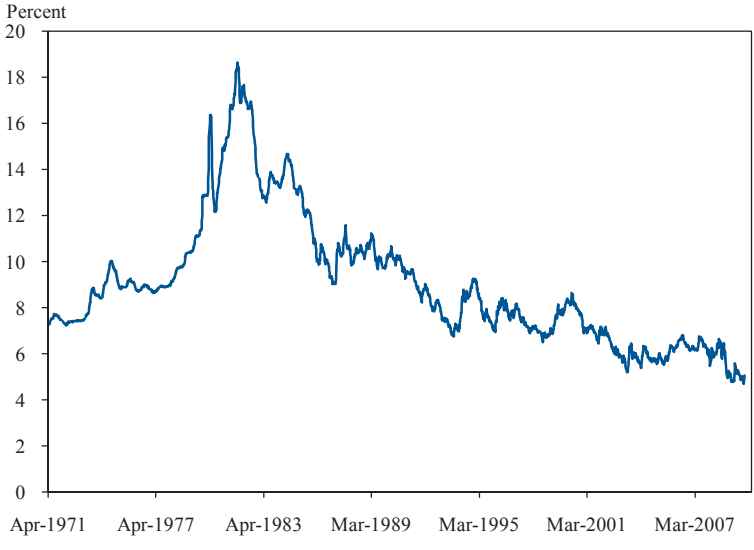
Housing

As described earlier, policymakers have taken unprecedented actions to maintain mortgage lending. One result has been a major shift in the

composition of mortgage finance. In 2006, private institutions provided 60 percent of liquidity while the GSEs, the Federal Housing Agency (FHA), and the Veterans Administration (VA) provided the remaining 40 percent. As home prices began to decline nationally in 2007, private financing for mortgages began to dry up. As of November 2009, the mortgages guaranteed by the GSEs, FHA, and the VA accounted for nearly all mortgage originations. About 22 percent of mortgage originations are guaranteed by FHA or VA, up from less than 3 percent in 2006. About 75 percent of mortgage originations are guaranteed by the GSEs, up from less than 40 percent in 2006.

As Figure 2-8 shows, mortgage rates fell to historic lows in 2009—consistent with the government's increased funding commitment to Fannie Mae and Freddie Mac and the Federal Reserve's purchases of mortgage-backed securities. These low mortgage rates support home prices and thus benefit all homeowners. More directly, households that have refinanced their mortgages at the lower rates have obtained considerable savings. These savings have effects similar to tax cuts, improving households' financial positions and encouraging spending on other goods. With the help of the Home Affordable Refinance Program, approximately 3 million borrowers have refinanced, putting more than $6 billion of purchasing power at an annual rate into the hands of households.

Figure 2-8
30-Year Fixed Rate Mortgage Rate



Note: Contract interest rate for first mortgages.
Source: Freddie Mac, Primary Mortgage Market Survey.

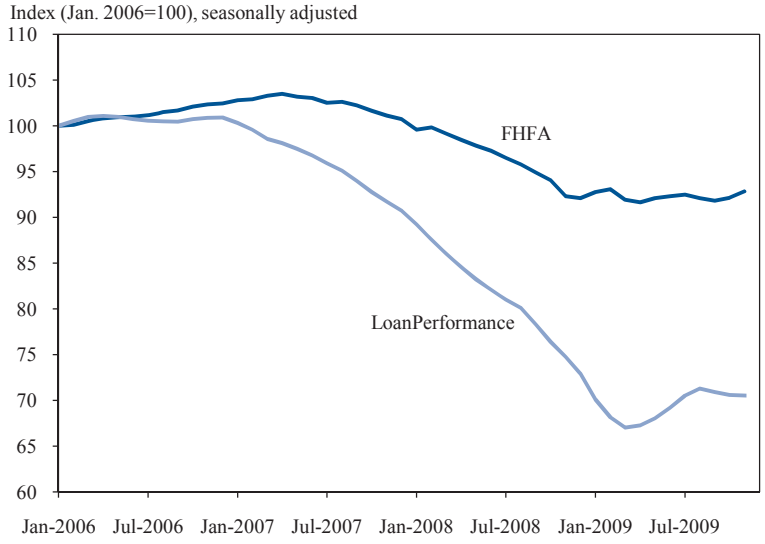
In addition, the Home Affordable Modification Program has been successful in encouraging mortgage modifications. When the program was launched, the Administration estimated that it could offer help to as many as 3 million to 4 million borrowers through the end of 2012. On October 8, 2009, the Administration announced that servicers had begun more than 500,000 trial modifications, nearly a month ahead of the original goal. As of November, the monthly pace of trial modifications exceeded the monthly pace of completed foreclosures. Of course, not all trial modifications will become permanent, but the Administration is making every effort to ensure that as many sound modifications as possible do.

One important result of the policies aimed at the housing market and of the broader policies to support the economy is that the housing market appears to have stabilized. National home price indexes have been relatively steady for the past several months, as shown in Figure 2-9. The Federal Housing Finance Agency purchase-only house price index, which is constructed using only conforming mortgages (that is, mortgages eligible for purchase by the GSEs), has changed little since late 2008. The LoanPerformance house price index, another closely watched measure that uses conforming and nonconforming mortgages with coverage of repeat sales transactions for more than 85 percent of the population, rose 6 percent between March and August 2009 before declining slightly in recent months. In addition, the pace of sales of existing single-family homes has increased substantially. Sales in the fourth quarter of 2009 were 29 percent above their low in the first quarter of 2009 and comparable to levels in the first half of 2007.

Finally, there are signs of renewed building activity. After falling 81 percent from their peak in September 2005 to their low in January 2009, single-family housing permits (a leading indicator of housing construction) rose 49 percent through December 2009. Similarly, after falling for 14 consecutive quarters, the residential investment component of real GDP rose in the third and fourth quarters of 2009.

Inventories of vacant homes for sale remain at high levels, and many vacant homes are being held off the market and will likely be put up for sale as home prices increase. This overhang may lead to some additional price declines, although prices are unlikely to fall at the same rate as they did during the crisis. Thus, the recovery of the housing sector is likely to be slow. Of course, we should neither expect nor want the housing market to return to its pre-crisis condition. In the long run, as discussed in more detail in Chapter 4, neither the extraordinarily high levels of housing construction and price appreciation before the crisis nor the extraordinarily low levels of construction and the rapid price declines during the crisis are sustainable.

Figure 2-9
FHFA and LoanPerformance National House Price Indexes



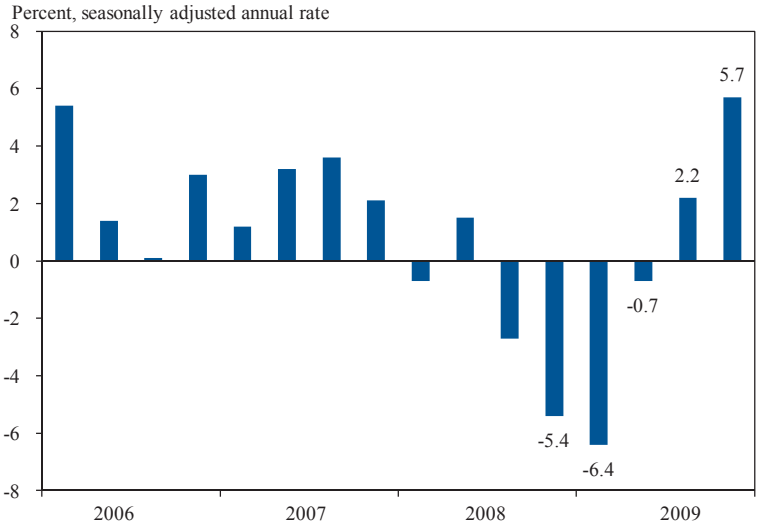
Sources: Federal Housing Finance Agency, purchase-only index; First American Core Logic LoanPerformance.

Overall Economic Activity

The direction of overall economic activity changed dramatically over the course of 2009. Figure 2-10 shows the quarterly growth rate of real GDP, the broadest indicator of national production. After falling at an annual rate of 6.4 percent in the first quarter, real GDP declined at a rate of just 0.7 percent in the second quarter. It then grew at a 2.2 percent rate in the third quarter and a 5.7 percent rate in the fourth. Such a rapid turnaround in growth is remarkable. The improvement in growth of 8.6 percentage points from the first quarter to the third quarter (that is, the swing from growth at a -6.4 percent rate to growth at a 2.2 percent rate) was the largest since 1983. Similarly, the three-quarter improvement from the first quarter to the fourth of 12.1 percentage points was the largest since 1981, and the second largest since 1958.

One limitation of these simple statistics is that they do not account for the usual dynamics of the economy. A more sophisticated way to gauge the extent of the change in the economy's direction is to compare the path the economy has followed with the predictions of a statistical model. There are many ways to construct a baseline statistical forecast. The particular one used here is a vector autoregression (or VAR) that includes the logarithms of real GDP (in billions of chained 2005 dollars) and payroll employment (in thousands, in the final month of the quarter), using four lags of each variable

Figure 2-10
Real GDP Growth



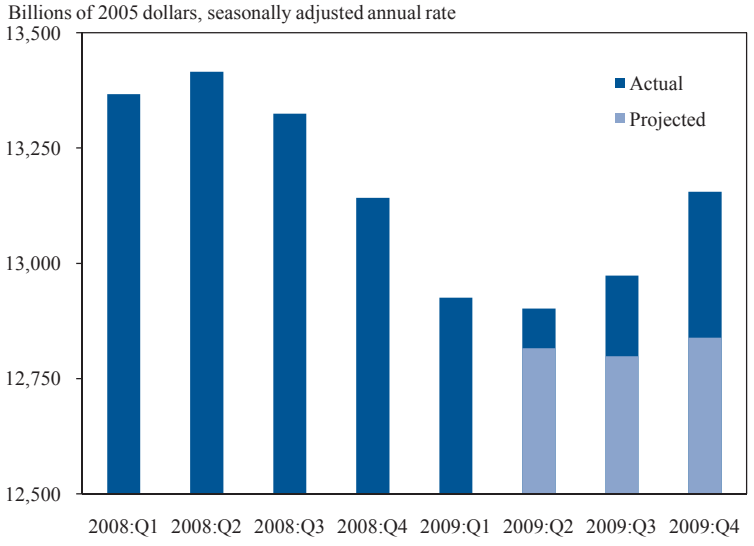
Source: Department of Commerce (Bureau of Economic Analysis), National Income and Product Accounts Table 1.1.1, line 1.

and estimated over the period 1990:Q1–2007:Q4. Because the sample period ends in the fourth quarter of 2007, the coefficient estimates used to construct the forecast are not influenced by the current recession. Rather, they show the normal joint short-run dynamics of real GDP and employment over an extended period. GDP and employment are then forecast for the final three quarters of 2009 using the estimated VAR and actual data through the first quarter of the year. The resulting comparison of the actual and projected paths of the economy shows the differences between the economy's actual performance and what one would have expected given the situation as of the first quarter and the economy's usual dynamics.[1] Although the results presented here are based on one specific approach to constructing the baseline projection, other reasonable approaches have similar implications.

This more sophisticated exercise also finds that the economy's turnaround has been impressive. The statistical forecast based on the economy's normal dynamics projects growth at a -3.3 percent rate in the second quarter of 2009, -0.5 percent in the third, and 1.3 percent in the fourth. In all three quarters, actual growth was substantially higher than the projection. Figure 2-11 shows that as a result, the *level* of GDP exceeded the projected level by an increasing margin: 0.7 percent in the second quarter, 1.4 percent in the third quarter, and 2.5 percent in the fourth.

[1] For more details on this approach and the model-based approach discussed later, see Council of Economic Advisers (2010).

Figure 2-11
Real GDP: Actual and Statistical Baseline Projection



Sources: Department of Commerce (Bureau of Economic Analysis), National Income and Product Accounts Table 1.1.6, line 1; CEA calculations. See Council of Economic Advisers (2010).

The gap between the actual and projected paths of GDP provides a rough way to estimate the effect of economic policy. The most obvious sources of the differences are the unprecedented policy actions. However, the gap reflects all unusual influences on GDP. For example, the rescue actions taken in other countries (described in Chapter 3) could have played a role in better American performance. At the same time, the continuing stringency in credit markets is likely lowering output relative to its usual cyclical patterns. Thus, while some factors work in the direction of causing the comparison of the economy's actual performance with its normal behavior to overstate the contribution of economic policy actions, others work in the opposite direction.

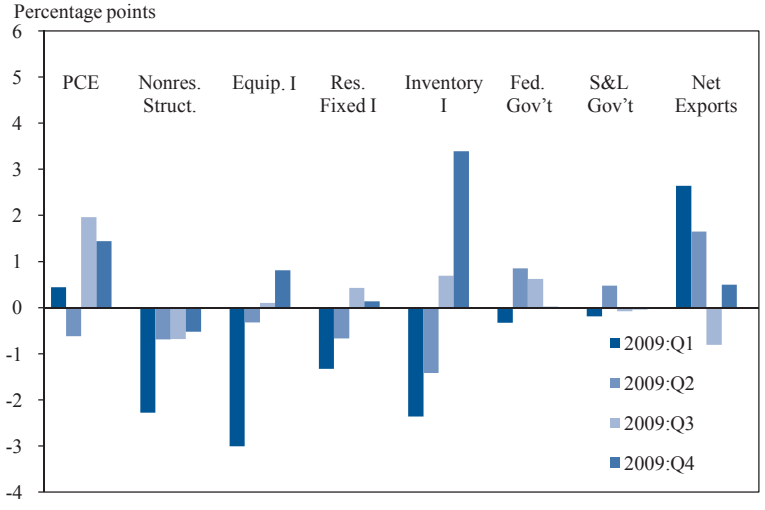
One way to estimate the specific impact of the Recovery Act is to use estimates from economic models. Mainstream estimates of economic multipliers for the effects of fiscal policy can be combined with figures on the stimulus to date to estimate how much the stimulus has contributed to growth. (For the financial and housing policies, this approach is not feasible, because the policies are so unprecedented that no estimates of their effects are readily available.) When this exercise is performed using the multipliers employed by the Council of Economic Advisers (CEA), which are based on mainstream economic models, the results suggest a critical role for the fiscal stimulus. They suggest that the Recovery Act contributed approximately 2.8

percentage points to *growth* in the second quarter, 3.9 percentage points in the third, and 1.8 percentage points in the fourth. As a result, this approach suggests that the *level* of GDP in the fourth quarter was slightly more than 2 percent higher than it would have been in the absence of the stimulus.

Knowledgeable outside observers agree that the Recovery Act has increased output substantially relative to what it otherwise would have been. For example, in November 2009, CBO estimated that the Act had raised the level of output in the third quarter by between 1.2 and 3.2 percent relative to the no-stimulus baseline (Congressional Budget Office 2009a). Private forecasters also generally estimate that the Act has raised output substantially.

A final way to look for the effects of the rescue policies on GDP is in the behavior of the components of GDP. Figure 2-12 shows the contribution of various components of GDP to overall GDP growth in each of the four quarters of 2009. One area where policy's role seems clear is in business investment in equipment and software. A key source of the turnaround in GDP is the change in this type of investment from a devastating 36 percent annual rate of decline in the first quarter to a 13 percent rate of increase by the fourth quarter. Two likely contributors to this change were the investment incentives in the Recovery Act and the many measures to stabilize the financial system and maintain lending. Similarly, the housing and financial

Figure 2-12
Contributions to Real GDP Growth



Notes: Bars sum to quarterly change in GDP growth (-6.4% in Q1; -0.7% in Q2; 2.2% in Q3; 5.7% in Q4). PCE is personal consumption expenditures; Nonres. Struct. is nonresidential fixed investment in structures; Equip I. is nonresidential fixed investment in equipment and software; Res. Fixed I is residential fixed investment; Inventory I is inventory investment; Federal Gov't is Federal Government purchases; S&L Gov't is state and local government purchases; Net Exports is net exports.
Source: Department of Commerce (Bureau of Economic Analysis), National Income and Product Accounts Table 1.1.2.

market policies were surely important to the swing in the growth of residential investment from a 38 percent annual rate of decline in the first quarter to increases in the third and fourth quarters.

Two other components showing evidence of the policies' effects are personal consumption expenditures and state and local government purchases. The Making Work Pay tax credit and the aid to individuals directly affected by the recession meant that households did not have to cut their consumption spending as much as they otherwise would have, and the Cash for Clunkers program provided important incentives for motor vehicle purchases in the third quarter. Consumption was little changed in the first two quarters of 2009 and then rose at a healthy 2.8 percent annual rate in the third quarter—driven in considerable part by a 44 percent rate of increase in purchases of motor vehicles and parts—and at a 2.0 percent rate in the fourth quarter. And, despite the dire budgetary situations of state and local governments, their purchases rose at the fastest pace in more than five years in the second quarter and were basically stable in the third and fourth quarters. This stability almost surely could not have occurred in the absence of the fiscal relief to the states.

The figure also shows the large role of inventory investment in magnifying macroeconomic fluctuations. When the economy goes into a recession, firms want to cut their inventories. As a result, inventory investment moves from its usual slightly positive level to sharply negative, contributing to the fall in output. Then, as firms moderate their inventory reductions, inventory investment rises—that is, becomes less negative—contributing to the recovery of output.

Finally, the turnaround in the automobile industry has been substantial. The Cash for Clunkers program appears to have generated a sharp increase in demand for automobiles in July and August 2009 (Council of Economic Advisers 2009). Sales of light motor vehicles averaged 12.6 million units at an annual rate during these two months, up from an annual rate of 9.6 million units in the second quarter. Although some observers had hypothesized that the July and August sales boost would be offset by a corresponding loss of sales in the months immediately following, sales in September (9.2 million at an annual rate) roughly matched the pace of sales in the first half of 2009, and sales subsequently rebounded to a 10.8 million unit annual pace in the fourth quarter. Employment in motor vehicles and parts hit a low of 633,300 in June 2009 and has increased modestly since then. In December 2009, employment was 655,200.

Both GM and Chrysler proceeded through bankruptcy in an efficient manner, and the new companies emerged far more quickly than outside experts thought would be possible. The companies are performing in line

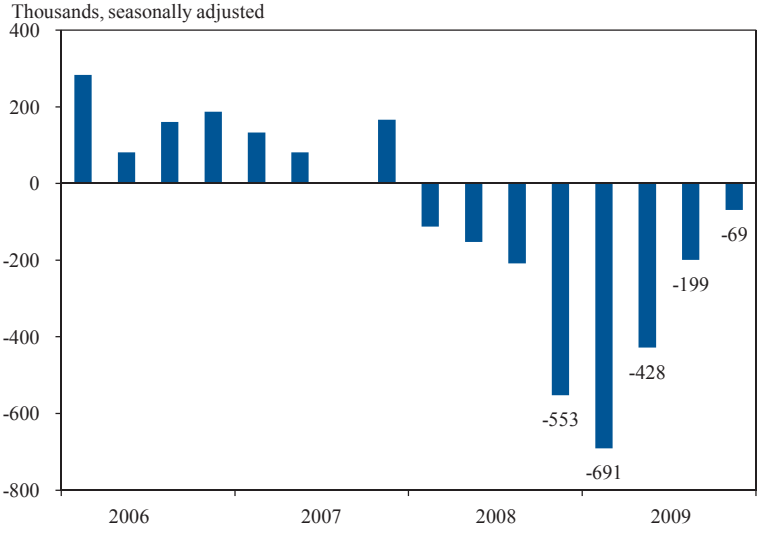
with their restructuring plans, and in November 2009, GM announced its intention to begin repaying the Federal Government earlier than originally expected. It made a first payment of $1 billion in December.

The Labor Market

The ultimate goal of the economic stabilization and recovery policies is to provide a job for every American who seeks one. The recession's impact on the labor market has been severe: employment in December 2009 was 7.2 million below its peak level two years earlier, and the unemployment rate was 10 percent. Moreover, although real GDP has begun to grow, employment losses are continuing.

Nonetheless, there is clear evidence that the labor market is stabilizing. Figure 2-13 shows the average monthly job loss by quarter since 2006. Average monthly job losses have moderated steadily, from a devastating 691,000 in the first quarter of 2009 to 428,000 in the second quarter, 199,000 in the third, and 69,000 in the fourth. The *change* in the average monthly change in employment from the first quarter to the third was the largest over any two-quarter period since 1980, and the change from the first to the fourth quarter was the largest three-quarter change since 1946. Given what we now know about the terrible rate of job loss over the winter, it would have been very difficult for the labor market to stabilize more rapidly than it has.

Figure 2-13
Average Monthly Change in Employment

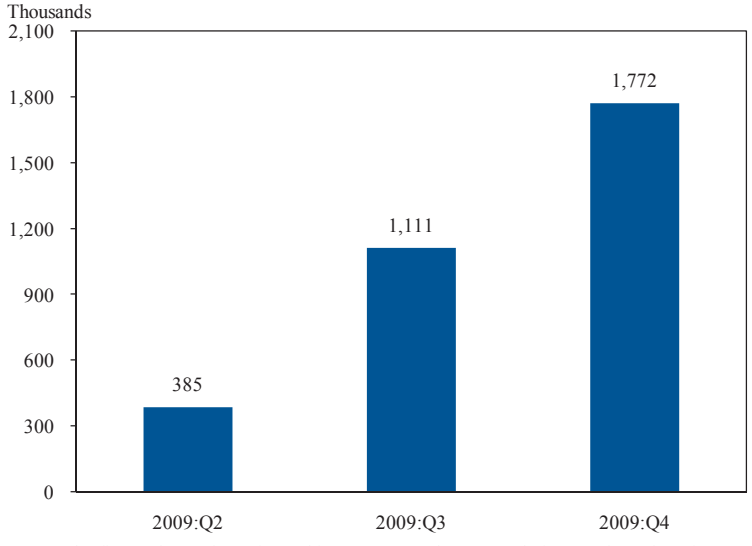


Source: Department of Labor (Bureau of Labor Statistics), Current Employment Statistics survey Series CES0000000001.

One can again use the VAR described earlier to obtain a more refined estimate of how the behavior of employment has differed from its usual pattern. This statistical procedure implies that given the economy's behavior through the first quarter of 2009 and its usual dynamics, one would have expected job losses of about 597,000 per month in the second quarter, 513,000 in the third quarter, and 379,000 in the fourth. Thus, actual employment as of the middle of the second quarter (May) was approximately 300,000 higher than one would have projected given the normal behavior of the economy; as of the middle of the third quarter (August), it was about 1.1 million higher; and as of the middle of the fourth quarter (November), it was about 2.1 million higher. As with the behavior of GDP, the portion of this difference that is attributable to the Recovery Act and other policies cannot be isolated from the portion resulting from other factors. But again, the difference could either understate or overstate the policies' contributions.

As with GDP, economic models can be used to focus specifically on the contributions of the Recovery Act. The results are shown in Figure 2-14. The CEA's multiplier estimates suggest that the Act raised employment relative to what it otherwise would have been by about 400,000 in the second quarter of 2009, 1.1 million in the third quarter, and 1.8 million in the fourth quarter. Again, these estimates are similar to other assessments. For example, CBO's November report estimated that the Act had raised

Figure 2-14
Estimated Effect of the Recovery Act on Employment



Note: The figure shows the estimated impact on employment relative to what otherwise would have happened.
Source: CEA calculations. See Council of Economic Advisers (2010).

employment in the third quarter by between 0.6 million and 1.6 million, relative to what otherwise would have happened.

A more complete picture of the process of labor market healing can be obtained by looking at labor market indicators beyond employment. Table 2-1 shows some of the main margins along which labor market recovery occurs. The margins are listed from left to right in the rough order in which they tend to adjust coming out of a recession. One of the first margins to respond is productivity—when demand begins to recover or moderates relative to the previous rate of decline, firms initially produce more with the same number of workers. Another early margin is initial claims for unemployment insurance—fewer workers are laid off. A somewhat later margin is the average workweek—firms start increasing production by increasing hours. The usual next step is temporary help employment—when firms decide to hire, they often begin with temporary help. Eventually total employment responds. The unemployment rate usually lags employment slightly because employment growth brings some discouraged workers back into the labor force and because the labor force naturally grows over time. The last item to adjust is usually the duration of unemployment spells, as workers who have been unemployed for extended periods finally find jobs.

The table shows that recovery from this recession is following the typical pattern, with labor market repair evident along the margins that typically respond early in a recovery. Productivity growth has surged as GDP has begun to increase and employment has continued to fall.

Table 2-1
Cyclically Sensitive Elements of Labor Market Adjustment

First to move ⟶ Last to move

	Productivity growth, annual rate (percent)	Average monthly change					
		Initial UI claims (thousands/ week)	Workweek (hours)	Temporary help employment (thousands)	Total employment (thousands)	Unemployment rate (percent)	Average duration of unemployment (weeks)
2008:Q4	0.8	22	-0.10	-70	-553	0.39	0.3
2009:Q1	0.3	40	-0.07	-73	-691	0.42	0.4
2009:Q2	6.9	-15	-0.03	-28	-428	0.29	1.2
2009:Q3	8.1[p]	-22	0.03	5	-199	0.11	0.7
2009:Q4	7.5[e]	-30	0.03	49	-69	0.04	0.9

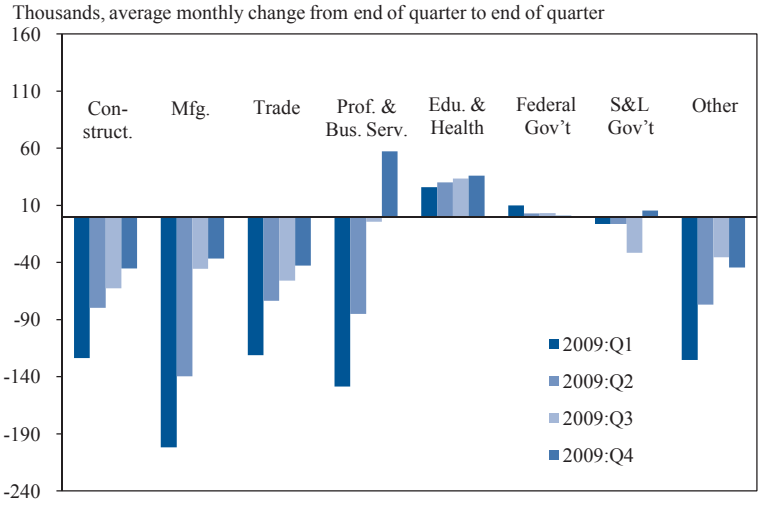
Notes: This table arranges the indicators according to the order in which they typically first move around business cycle turning points. Quarterly values for the average monthly change are measured from the last month in the previous quarter to the last month in the quarter. p is preliminary; e is estimate.
Sources: Department of Labor (Bureau of Labor Statistics), Series PRS85006092, and Employment Situation Tables A, A-9, and B-1; Department of Labor (Employment and Training Administration).

Initial unemployment insurance claims, which rose precipitously earlier in the recession, have begun to decline at an increasing rate. Likewise, the workweek has gone from shortening to lengthening, albeit slowly. Temporary help employment has changed from extreme declines to substantial increases. So far, total employment has shown a greatly moderating decline but has not yet risen. The pace of increase in the unemployment rate has slowed noticeably, but the unemployment rate has not yet fallen on a quarterly basis. Finally, increases in the duration of unemployment have not yet begun to moderate noticeably.

These data suggest that the labor market is beginning to move in the right direction, but much work remains to be done. The country is not yet seeing the substantial rises in total employment and declines in the unemployment rate that are the ultimate hallmark of robust labor market improvement. And, of course, even once all the indicators are moving solidly in the right direction, the labor market will still have a long way to go before it is fully recovered.

Signs of healing are also beginning to appear in the industrial composition of the stabilization of the labor market. Figure 2-15 shows the average monthly change in each of eight sectors in each of the four quarters of 2009. As one would expect of the beginnings of a recovery from a severe

Figure 2-15
Contributions to the Change in Employment



Notes: Bars sum to average monthly change in quarter (-691,000 in Q1; -428,000 in Q2; -199,000 in Q3; -69,000 in Q4). Construct. is construction; Mfg. is manufacturing; Trade is wholesale and retail trade, transportation, and utilities; Prof. & Bus. Serv. is professional and business services; Edu. & Health is education and health; Federal Gov't is Federal Government; S&L Gov't is state and local government.
Source: Department of Labor (Bureau of Labor Statistics), Employment Situation Table B-1.

recession, the moderation in job losses has been particularly pronounced in manufacturing and construction, two of the most cyclically sensitive sectors. There has also been a sharp turnaround in professional business services, driven largely by renewed employment growth in temporary help services.

One area where the Recovery Act appears to have had a direct impact on employment is in state and local government. Despite the enormous harm the recession has done to their budgets, employment in state and local governments has fallen relatively little. Indeed, employment in state and local government, particularly in public education, rose in the fourth quarter.

The Challenges Ahead

The financial and economic rescue policies have helped avert an economic calamity and brought about a sharp change in the economy's direction. Output has begun growing again, and employment appears poised to do so as well. But even when the country has returned to a path of steadily growing output and employment, the economy will be far from fully recovered. Since the recession began in December 2007, 7.2 million jobs have been lost. It will take many months of robust job creation to erase that employment deficit. For this reason, it is important to explore policies to speed recovery and spur job creation.

Deteriorating Forecasts

This jobs deficit is much larger than the vast majority of observers anticipated at the end of 2008. This is not the result of a slow economic turnaround. On the contrary, as described above, the change in the economy's direction has been remarkably rapid given the economy's condition in the first quarter of 2009. Rather, the jobs deficit reflects two developments.

The first development is the unanticipated severity of the downturn in the real economy in 2008 and early 2009. Table 2-2 shows consensus forecasts from November 2008 through February 2009, along with preliminary and actual estimates of real GDP growth. The table shows that the magnitude of the fall in GDP in the fourth quarter of 2008 and the first quarter of 2009—driven in part by the unexpectedly strong spread of the crisis to the rest of the world—surprised most observers. The Blue Chip Consensus released in mid-December 2008 projected fourth quarter growth would be -4.1 percent and first quarter growth would be -2.4 percent. The actual values turned out to be -5.4 percent and -6.4 percent. The Blue Chip forecast released in mid-January also projected a substantially smaller decline in first quarter real GDP than actually occurred.

Table 2-2
Forecast and Actual Macroeconomic Outcomes

Real GDP Growth					
	2008:Q4	2009:Q1	2009:Q2	2009:Q3	2009:Q4
Blue Chip (11/10/08)	-2.8	-1.5	0.2	1.5	2.1
SPF (11/17/08)	-2.9	-1.1	0.8	0.9	2.3
Blue Chip (12/10/08)	-4.1	-2.4	-0.4	1.2	1.9
Blue Chip (1/10/09)	-5.2	-3.3	-0.8	1.2	2.2
SPF (2/13/09)	--	-5.2	-1.8	1.0	1.8
BEA Advance Estimate	-3.8	-6.1	-1.0	3.5	**5.7**
BEA Preliminary (2nd) Estimate	-6.2	-5.7	-1.0	2.8	--
Actual	**-5.4**	**-6.4**	**-0.7**	**2.2**	--
Unemployment Rate					
	2008:Q4	2009:Q1	2009:Q2	2009:Q3	2009:Q4
Blue Chip (11/10/08)	6.5	6.9	7.3	7.6	7.7
SPF (11/17/08)	6.6	7.0	7.4	7.6	7.7
Blue Chip (12/10/08)	6.7	7.3	7.7	8.0	8.1
Blue Chip (1/10/09)	6.9	7.4	7.9	8.3	8.4
SPF (2/13/09)	--	7.8	8.3	8.7	8.9
Actual	**6.9**	**8.2**	**9.3**	**9.7**	**10.0**

Notes: In the GDP panel, all numbers are in percent and are seasonally adjusted annual rates. In the unemployment panel, all numbers are in percent and are seasonally adjusted. SPF is the Survey of Professional Forecasters. Dashes indicate data are not available.
Sources: Blue Chip Economic Indicators; Survey of Professional Forecasters; Department of Commerce (Bureau of Economic Analysis), GDP news releases on 1/30/2009, 2/27/2009, 4/29/2009, 5/29/2009, 7/31/2009, 8/27/2009, 10/29/2009, 11/24/2009, 1/29/2010, and National Income and Product Accounts Table 1.1.1, line 1; Department of Labor (Bureau of Labor Statistics), Current Population Survey Series LNS14000000.

Part of the difficulty in forecasting resulted from large data revisions. The official GDP figures available at the end of January 2009 indicated that real GDP had fallen by just 0.2 percent over the four quarters of 2008; revised data now put the decline at 1.9 percent.

The Administration's economic forecast made in January 2009 and released with the fiscal 2010 budget, like the private forecasts, underestimated the speed of GDP decline in the first quarter. It also underestimated average growth over the remaining three quarters of 2009. For the four quarters of 2009, the Administration forecast overall growth of 0.3 percent; the actual value, according to the latest available data, is 0.1 percent.

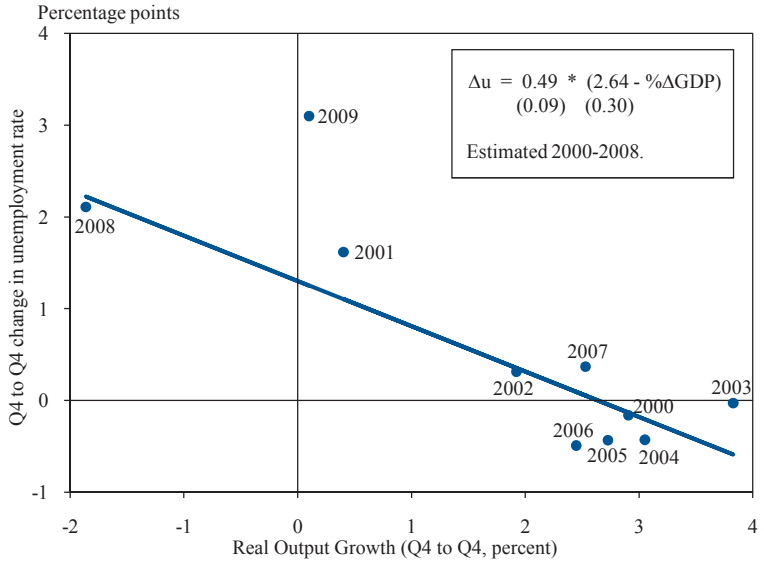
The second development accounting for the unexpectedly large jobs deficit involves the behavior of the labor market given the behavior of GDP. Table 2-2 also shows consensus forecasts for the unemployment rate. These data indicate that as of December 2008, unemployment in the fourth quarter of 2009 was forecast to be 8.1 percent, dramatically less than the actual value of 10.0 percent. As of mid-January 2009, unemployment was forecast to be 8.4 percent in the fourth quarter. In its forecast made in

January 2009, the Administration unemployment forecast was similar to the consensus forecast.

Some of the unanticipated rise in unemployment was the result of the worse-than-expected GDP growth in 2008 and the beginning of 2009. CEA analysis, however, also suggests that the normal relationship between GDP and unemployment has fit poorly in the current recession. This relationship, termed Okun's law after former CEA Chair Arthur Okun who first identified it, suggests that a fall in GDP of 1 percent relative to its normal trend path is associated with a rise in the unemployment rate of about 0.5 percentage point after four quarters. Figure 2-16 shows the scatter plot of the four-quarter change in real GDP and the four-quarter change in the unemployment rate. The figure shows that although the fit of Okun's law is usually good, the relationship has broken down somewhat during this recession. The error was concentrated in 2009, when the unemployment rate increased considerably faster than might have been expected given the change in real GDP. CEA calculations suggest that as of the fourth quarter of 2009, the unemployment rate was approximately 1.7 percentage points higher than would have been expected given the behavior of real GDP since the business cycle peak in the fourth quarter of 2007.

This unusual rise in the unemployment rate does not appear to result from unusual behavior of the labor force. If anything, the labor force

Figure 2-16
Okun's Law, 2000-2009



Sources: Department of Commerce (Bureau of Economic Analysis), National Income and Product Accounts Table 1.1.1, line 1; Department of Labor (Bureau of Labor Statistics), Current Population Survey Series LNS11000000 and LNS113000000; CEA calculations.

appears to have contracted somewhat more than usual given the path of the economy. Rather it reflects larger-than-typical falls in employment relative to the decline in GDP. This behavior is consistent with the tremendous increase in productivity during this episode, especially over the final three quarters of 2009. Indeed, labor productivity rose at a 6.9 percent annual rate in the second quarter and at an 8.1 percent rate in the third quarter; if productivity rose by a similar amount in the fourth quarter, as seems likely, the increase will have been one of the fastest over three quarters in postwar history.

The Administration Forecast

Looking forward, the Administration projects steady but moderate GDP growth over the near and medium term. Table 2-3 reports the Administration's forecast used in preparing the President's fiscal year 2011 budget. The table shows that GDP growth in 2010 is forecast to be 3 percent.

Table 2-3
Administration Economic Forecast

	Nominal GDP	Real GDP (chain-type)	GDP price index (chain-type)	Consumer price index (CPI-U)	Unemployment rate (percent)	Interest rate, 91-day Treasury bills (percent)	Interest rate, 10-year Treasury notes (percent)	Nonfarm payroll employment (average monthly change, Q4 to Q4, thousands)
	Percent change, Q4 to Q4				Level, calendar year			
2008 (actual)	0.1	-1.9	1.9	1.5	5.8	1.4	3.7	-189
2009	0.4	-0.5	0.9	1.4	9.3	0.2	3.3	-419
2010	4.0	3.0	1.0	1.3	10.0	0.4	3.9	95
2011	5.7	4.3	1.4	1.7	9.2	1.6	4.5	190
2012	6.1	4.3	1.7	2.0	8.2	3.0	5.0	251
2013	6.0	4.2	1.7	2.0	7.3	4.0	5.3	274
2014	5.7	3.9	1.7	2.0	6.5	4.1	5.3	267
2015	5.2	3.4	1.7	2.0	5.9	4.1	5.3	222
2016	5.0	3.1	1.8	2.1	5.5	4.1	5.3	181
2017	4.5	2.7	1.8	2.1	5.3	4.1	5.3	139
2018	4.5	2.6	1.8	2.1	5.2	4.1	5.3	113
2019	4.4	2.5	1.8	2.1	5.2	4.1	5.3	98
2020	4.3	2.5	1.8	2.1	5.2	4.1	5.3	93

Notes: Based on data available as of November 18, 2009. Interest rate on 91-day Treasury bills is measured on a secondary market discount basis. The figures do not reflect the upcoming BLS benchmark revision, which is expected to reduce 2008 and 2009 job growth by a cumulative 824,000 jobs.
Sources: CEA calculations; Department of Commerce (Bureau of Economic Analysis and Economics and Statistics Administration); Department of Labor (Bureau of Labor Statistics); Department of the Treasury; Office of Management and Budget.

The Administration estimates that normal or potential GDP growth will be roughly 2½ percent per year (see Box 2-1). Because projected GDP growth is only slightly stronger than potential growth, relatively little decline is projected in the unemployment rate during 2010. Indeed, it is possible that the rate will rise for a while as some discouraged workers return to the labor force, before starting to generally decline. Consistent with this, employment growth is projected to be roughly equal to normal trend growth of about 100,000 per month.

Box 2-1: Potential Real GDP Growth

The Administration forecast is based on the idea that real GDP fluctuates around a potential level that trends upward at a relatively steady rate. Over the budget window, potential real GDP is projected to grow at a 2.5 percent annual rate. Potential real GDP growth is a measure of the sustainable rate of growth of productive capacity.

The growth rate of the economy over the long run is determined by its supply side components, which include population, labor force participation, the ratio of nonfarm business employment to household employment, the length of the workweek, and labor productivity. The Administration's forecast for the contribution of the growth rates of these supply side factors to potential real GDP growth is shown in the accompanying table.

Components of Potential Real GDP Growth, 2009-2020

Component	Contribution (Percentage points)
Civilian noninstitutional population aged 16+	1.0
Labor force participation rate	-0.3
Employment rate	0.0
Ratio of nonfarm business employment to household employment	-0.0
Average weekly hours (nonfarm business)	-0.1
Output per hour (productivity, nonfarm business)	2.3
Ratio of real GDP to nonfarm business output	-0.4
SUM: Real GDP	2.5

Note: All contributions are in percentage points at an annual rate.
Sources: CEA calculations; Department of the Treasury; Office of Management and Budget.

Over the next 11 years, the working-age population is projected to grow 1.0 percent per year, the rate projected by the Census Bureau.

Continued on next page

Box 2-1, continued

The normal or potential labor force participation rate, which fell at a 0.3 percent annual rate during the past 8 years, is expected to continue declining at that pace. The continued projected decline results from the aging baby boom generation entering their retirement years. The potential employment rate (that is, 1 minus the normal or potential unemployment rate) is not expected to contribute to potential GDP growth because no change is anticipated in the unemployment rate consistent with stable inflation. The potential ratio of nonfarm business employment to household employment is also expected to be flat during the forecast horizon—consistent with its average behavior in the long run. This would be a change, however, from its puzzling 0.5 percent annual rate of decline during the past business cycle. The potential workweek is projected to edge down slightly (0.1 percent per year). This is a slightly shallower pace of decline than over the past 50 years, when it declined 0.3 percent per year. Over the 11-year projection interval, some firming of the workweek would be a natural labor market accommodation to the anticipated decline in labor force participation.

Potential growth of labor productivity is projected at 2.3 percent per year, a conservative forecast relative to its measured product-side growth rate (2.8 percent) between the past two business cycle peaks, but close to an alternative income-side measure of productivity growth (2.2 percent) during the same period. The ratio of real GDP to nonfarm business output is expected to continue to subtract from overall growth as it has over most long periods, because the nonfarm business sector generally grows faster than other sectors, such as government, households, and nonprofit institutions. Together, the sum of all of the components is the growth rate of potential real GDP, which is 2.5 percent per year.

As Table 2-3 shows, actual real GDP is projected to grow more rapidly than potential real GDP over most of the forecast horizon. The most important reason for the difference is that the actual employment rate is projected to rise as millions of workers who are currently unemployed return to employment and so contribute to GDP growth.

Traditionally, the large amount of slack would be expected to put substantial downward pressure on wage and price inflation. For this reason, inflation is projected to remain low in 2010. However, because inflationary expectations remain well anchored, inflation is not likely to slow dramatically or become negative (that is, turn into deflation).

In 2011, slightly higher GDP growth of approximately 4 percent is projected (again measured from fourth quarter to fourth quarter). Consistent with this, stronger employment growth and a more substantial decline in the unemployment rate are expected in 2011. However, because GDP growth is still not projected to be as robust as that following some other deep recessions, continued large output gaps are anticipated. This will limit the upward movement of the inflation rate toward a pace consistent with the Federal Reserve's long-term target inflation rate of about 2 percent. Moreover, employment growth is unlikely to be large enough to reduce the employment shortfall dramatically in 2011.

Responsible Policies to Spur Job Creation

This large employment gap and the prospects that it is likely to recede only slowly make a compelling case for additional measures to spur private sector job creation. The Administration is therefore exploring a range of possibilities and working with Congress to pass measures into law.

Several principles are guiding this process. First, at a time when the budget deficit is large and the country faces significant long-run fiscal challenges, measures must be cost-effective. Second, given that the employment consequences of the recession have been severe, measures must focus particularly on job creation. And third, measures must be tailored to the state of the economy: the policies that are appropriate when an economy is contracting rapidly may not be the same as those that are appropriate for an economy that is growing again but operating below capacity.

Guided by these principles, the Administration has identified three key priorities. One is a multifaceted program to jump-start job creation by small businesses, which are critical to growth and have been particularly harmed by the recession. Among the possible policies in this area are investment incentives, tax incentives for hiring, and additional steps to increase the availability of loans backed by the Small Business Administration. These policies may be particularly effective at a time when the economy is growing—so that the question for many firms is not whether to hire but when—and at a time when credit availability remains an important constraint.

Initiatives to encourage energy efficiency and clean energy are another priority. One proposal involves incentives for homeowners to retrofit their homes for energy efficiency. Because in many cases the effect of such incentives would be to lead homeowners to make cost-saving investments earlier than they otherwise would have, they might have an especially large impact. In addition, the employment effects would be concentrated in construction, an area that has been particularly hard-hit by the recession.

The Administration has also supported extending tax credits through the Department of Energy that promote the manufacture of advanced energy products and providing incentives to increase the energy efficiency of public and nonprofit buildings.

A third priority is infrastructure investment. The experience of the Recovery Act suggests that spending on infrastructure is an effective way to put people back to work while creating lasting investments that raise future productivity. For this reason, the Administration is supporting an additional investment of up to $50 billion in roads, bridges, airports, transit, rail, and water projects. Funneling some of these funds through programs such as the Transportation Investment Generating Economic Recovery (TIGER) program at the Department of Transportation, which is a competitive grant program, could offer a way to ensure that the projects with the highest returns receive top priority.

Finally, it is critical to maintain our support for the individuals and families most affected by the recession by extending the emergency funding for such programs as unemployment insurance and health insurance subsidies for the unemployed. This support not only cushions the worst effects of the downturn, but also boosts spending and so spurs job creation. Similarly, it is important to maintain support for state and local governments. The budgets of these governments remain under severe strain, and many are cutting back in anticipation of fiscal year 2011 deficits. Additional fiscal support could therefore have a rapid impact on spending, and would do so by maintaining crucial services and preventing harmful tax increases.

Conclusion

The recession that began at the end of 2007 became the "Great Recession" following the financial crisis in the fall of 2008. In the wake of the collapse of Lehman Brothers in September, American families faced devastating job losses, high unemployment, scarce credit, and lost wealth. Late 2008 and 2009 will be remembered as a time of great trial for American workers, businesses, and families.

But 2009 should also be remembered as a year when even more tragic losses and dislocation did not occur. As terrible as this recession has been, a second Great Depression would have been far worse. Had policymakers not responded as aggressively as they did to shore up the financial system, maintain demand, and provide relief to those directly harmed by the downturn, the outcome could have been much more dire.

As 2010 begins, there are strong signs that the American economy is starting to recover. Housing and financial markets appear to have stabilized

and real GDP is growing again. The labor market also appears to be healing, showing the expected early pattern of response to output expansion.

With millions of Americans still unemployed, much work remains to restore the American economy to health. It will take a prolonged and robust GDP expansion to eliminate the large jobs deficit that has opened up over the course of the recession. Only when the unemployment rate has returned to normal levels and families are once again secure in their jobs, homes, and savings will this terrible recession truly be over.

CHAPTER 3

CRISIS AND RECOVERY IN THE WORLD ECONOMY

The financial crisis and recession have affected economies around the globe. The impact on the U.S. economy has been severe, but many areas of the world have fared even worse. The average growth rate of real gross domestic product (GDP) around the world was -6.2 percent at an annual rate in the fourth quarter of 2008 and -7.5 percent in the first quarter of 2009. All told, the world economy is expected to have contracted 1.1 percent in 2009 from the year before—the first annual decline in world output in more than half a century.[1] Although economic dislocations have been severe in one region or another at various times over the past 50 years, never in that time span has the annual output of the entire global economy contracted. But, as bad as the outcome has been, the decline would likely have been far larger if policymakers in the world's key economies had not acted forcefully to limit the impact of the crisis.

The global economic crisis started as a financial crisis, generally beginning in housing-related asset markets, and accelerated in the fall of 2008. After September 2008, interbank interest rates spiked, exchange rates shifted quickly, and the flows of capital across borders slowed dramatically. Trade flows also plummeted, falling even more dramatically than GDP. As a result, trade flows became a key transmission mechanism in the crisis, spreading macroeconomic distress to countries that were not primarily exposed to the financial shocks.

Policymakers around the world responded quickly, sometimes taking coordinated action, sometimes acting independently. Many central banks

[1] Quarterly figures are calculations of the Council of Economic Advisers based on a 64-country sample that represents 93 percent of world GDP. Annual average projections are from the International Monetary Fund (2009a). These projections indicate that from the fourth quarter of 2007 to the fourth quarter of 2008, world GDP contracted 0.1 percent, and from the fourth quarter of 2008 to the fourth quarter of 2009, world GDP expanded 0.8 percent. The contraction was strongest from the middle of 2008 to the middle of 2009; hence the annual average growth from 2008 to 2009 (-1.1 percent) is lower than the fourth-quarter-to-fourth-quarter numbers.

cut interest rates nearly to zero and expanded their balance sheets to try to stimulate lending and keep their economies going. They also lent large sums to one another to prevent dislocations caused by a lack of foreign currency in some markets. Beyond the central bank actions, governments intervened more broadly in banks and financial markets as well. Governments also spent large sums in fiscal stimulus to avoid massive drop-offs in aggregate demand. In a welcome development, they did not, however, restrict trade in an attempt to turn away imports.

The global economy is now seeing the beginnings of recovery. Financial markets have rebounded, trade is recovering, and GDP growth rates are again positive. Recovery is far from complete or certain, and some risks remain: lending is still constrained, and unemployment is painfully high. But, at the start of 2010, the world economy is no longer at the edge of collapse, and the elements of a sound recovery seem to be coming into place.

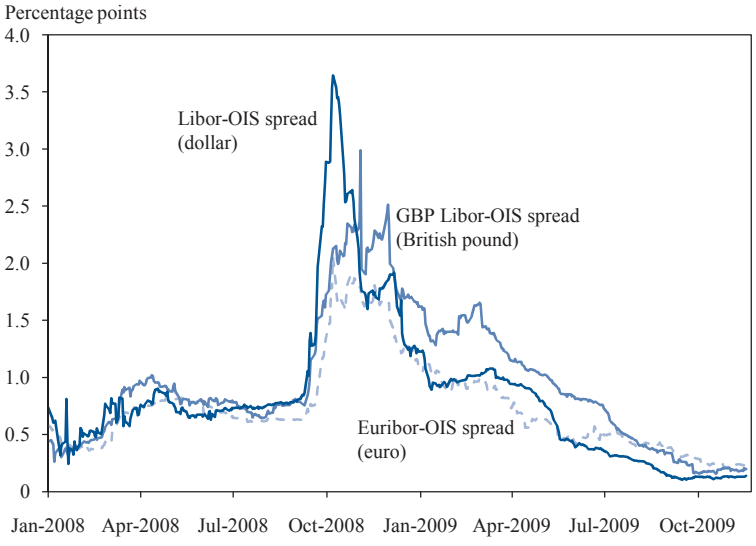
International Dimensions of the Crisis

The worldwide contraction had roots in many financial phenomena, and its rapid spread can be seen in a number of financial indicators. Borrowing costs increased, U.S. dollars were scarce in foreign markets, and exchange rates moved rapidly. Yet, despite problems in U.S. financial markets, there was no U.S. dollar crisis, and while currency markets moved rapidly, many of the emerging-market currency depreciations were temporary and not accompanied by cascading defaults. Thus, the world economy was better positioned for recovery than it might have been.

Spread of the Financial Shock

One of the early indicators of the crisis was the large spike in the interest rate banks charge one another that took place as the value of assets held on bank balance sheets came into question. After the investment bank Lehman Brothers declared bankruptcy in September 2008, banks grew even warier about lending to each other. This fear of lending to one another can be seen by comparing the interbank lending rate with the risk-free overnight interest rate. Similar to the TED spread, the Libor-OIS spread (the London interbank offered rate minus the overnight indexed swap) gives such a comparison for dollar loans, and comparable spreads are available for loans in other currencies. As Figure 3-1 shows, the spike in spreads for dollar loans was larger earlier, but the increase in interbank lending rates was sharp in dollars, pounds, and euros alike. Banks simply refused to lend to one another at low rates in these major financial systems. Furthermore, concerns about which firms might go bankrupt sent the cost of insuring

Figure 3-1
Interbank Market Rates



Source: Bloomberg.

against a default on a bond soaring. Thus, costs of borrowing increased for even creditworthy borrowers, putting a strain on the ability of firms to finance themselves.

The Dollar Shortage. Beyond the difficulties of evaluating counterparty risk were the acute shortages of dollar liquidity outside the United States, which were reflected in a steep rise in the cost of exchanging foreign currency for dollars for a fixed period of time (a foreign currency swap). The reasons for the dollar shortage are complex but can be understood by looking at foreign banks' behavior before the crisis. During the boom years, non-U.S. banks acquired large amounts of dollar-denominated assets, often paying for these acquisitions with borrowed dollars rather than with their own currency, thus avoiding the currency mismatch risk of borrowing in one currency and having assets in another. Much of the dollar borrowing was short term and came from U.S. money-market funds. After investors began to pull their money out of these funds in the fall of 2008, that source of lending dried up, and banks were left trying to obtain dollars in other ways. This put pressure on the currency swap market.

Before the crisis, moreover, some banks funded purchases of U.S. assets directly through swaps. In a simplified version of the transaction, foreign banks borrow in their own currency (euros, for example), exchange that currency for dollars through a swap, and then use the dollars to buy U.S. assets. By using a swap market rather than simply purchasing currency, they

even out the currency risk (McGuire and von Peter 2009),[2] but they are left with a funding risk. If no one will lend them dollars when their swap is due, they may have to sell their dollar assets (some of which may have fallen in value) to pay back the dollars they owe. When banks became very nervous about taking on risk, demand greatly increased the price of currency swaps.

Unwinding Carry Trades. As concerns about the stability of the financial markets heightened over the course of 2008, investors responded by trying to deleverage and reduce some of their exposed risky positions. The desire to undo risky positions coupled with the dollar shortage led to swift movements in currency markets, especially an unwinding of the "carry trade." In the carry trade, an investor borrows money in a low-interest-rate currency (for example, the Japanese yen), sells that currency for a higher-interest-rate currency (for example, the Australian dollar), and invests the money in that currency. If interest rates are 1 percent in Japan and 6 percent in Australia, the investor stands to collect a 5 percent profit if exchange rates do not move. Although economic theory suggests that currency movements should offset this expected profit, over short horizons, if the exchange rate does not move, investors can make a profit. This happened in the mid-2000s, and the carry trade became a favorite strategy for hedge funds and other investors.

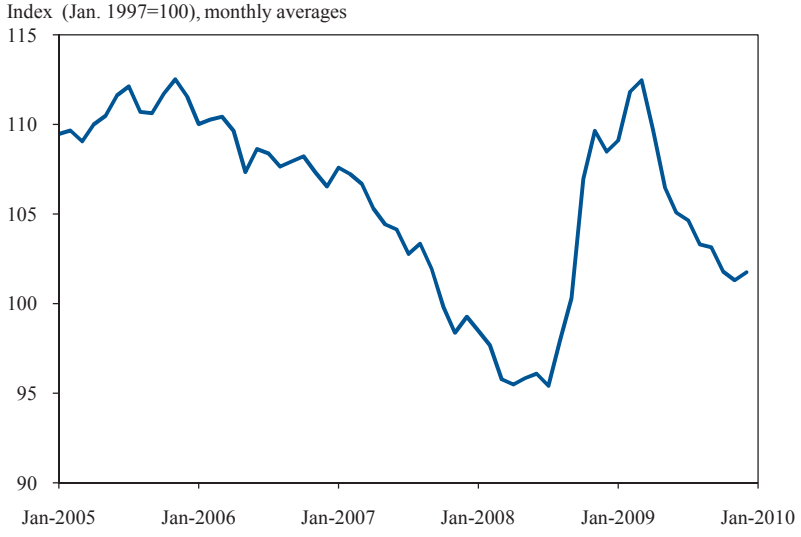
The popularity of the trade became self-fulfilling as the continued flows of money into higher-interest-rate currencies helped them appreciate and made the trade even more profitable. But, as the crisis hit, investors tried to reduce their risk and leverage. This unwinding process meant rapid sales of high-interest-rate currencies and rapid purchases of low-interest-rate currencies. Currencies that had low interest rates and had been known as funding currencies (such as the Japanese yen) rose rapidly in value, and the currencies of a number of popular carry-trade destinations (such as Australia, Brazil, and Iceland) depreciated swiftly. Thus, as the crisis hit, borrowing became more expensive and currency markets were increasingly volatile.

The Dollar During the Crisis. Although in many ways the crisis was triggered within U.S. asset markets, the response was not a run on the U.S. dollar; instead the dollar strengthened notably. Some observers had argued that the high U.S. current account deficit and problems in the U.S. housing and other asset markets might lead to an unwillingness to hold U.S. assets more broadly, which could have triggered a depreciation of the dollar. But both the need for foreign banks to cover their dollar borrowing and the need for other investors to repay loans borrowed in dollars (including for carry trades) generated strong demand for dollars. Further, the desire to

[2] The swap means they have borrowed dollars and lent euros. In this way, they borrowed euros at home and lent them in the swap, and they owe dollars in the swap but also own dollar assets. Thus, their foreign currency position is balanced.

avoid risky investments at the height of the crisis led to a "flight to safety," with many investors buying dollars and U.S. Treasury bills. As seen in Figure 3-2, the trade-weighted value of the dollar increased 18 percent from July 2008 to its peak in March 2009. The movement of the dollar was broad-based, with sharp appreciations against most major trade partners; the main exceptions were Japan, where the yen appreciated even more against the world as the carry trade unwound, and China, which had reestablished its peg to the dollar in July of 2008 and therefore had a stable exchange rate against the dollar.

Figure 3-2
Nominal Trade-Weighted Dollar Index



Note: The index is constructed such that an upward movement represents an appreciation of the dollar.
Source: Federal Reserve Board, G.5.

Currency Volatility in Emerging Markets. The deleveraging and fall in risk appetite contributed to large and in some cases sharp swings in the currencies of many emerging economies, but the impact of these large depreciations varied. Some of the sharpest depreciations, such as those in Brazil, Korea, and Mexico, were largely temporary. The currencies of all three countries depreciated more than 50 percent against the dollar between the end of July 2008 and February 2009, but by the end of November 2009 Korea's currency was down only 15 percent and Brazil's only 12 percent. Mexico was still 29 percent below its summer 2008 value.[3]

[3] The starting point for comparison is important. Korea had been depreciating in early 2008 as well, while Brazil and Mexico were appreciating. Thus, by the end of November 2009, Brazil had appreciated slightly from the start of 2008 while Korea had depreciated 24 percent and Mexico 18 percent.

Some countries with large current account deficits faced more pressure. The region with the sharpest declines in the value of its currencies against the dollar was Eastern Europe, where the currencies of Hungary, Poland, and Ukraine all depreciated more than 50 percent between July 2008 and February 2009, and others depreciated nearly as much. These large depreciations resulted in part from the strengthening of the dollar against the euro, as many of these countries are closely tied with Europe, but some of these currencies remained weak even when other countries started to strengthen against the dollar.

A large depreciation can especially lead to broad damage in an economy if there are negative balance-sheet effects. In this setting, a country may have few foreign assets but extensive liabilities denominated in foreign currency. As the exchange rate depreciates, the foreign currency loans become more expensive in local currency. This was particularly a concern in Eastern Europe, where many countries borrowed substantially in foreign currency leading up to the crisis. In Hungary, for example, many individuals took out mortgages in foreign currency. The depreciation of the Hungarian *forint* thus put pressure on both individuals and bank balance sheets. There was widespread concern that the Western European banks, such as those in Austria, that had made loans in Eastern Europe would face substantial losses. Both the Organisation for Economic Co-operation and Development (OECD) and the International Monetary Fund (IMF) warned of potentially serious bank problems in Austria because of these concerns. By the end of 2009, however, those concerns had not materialized. Austria has had to shore up its banks, but there has not been widespread contagion from Eastern Europe.

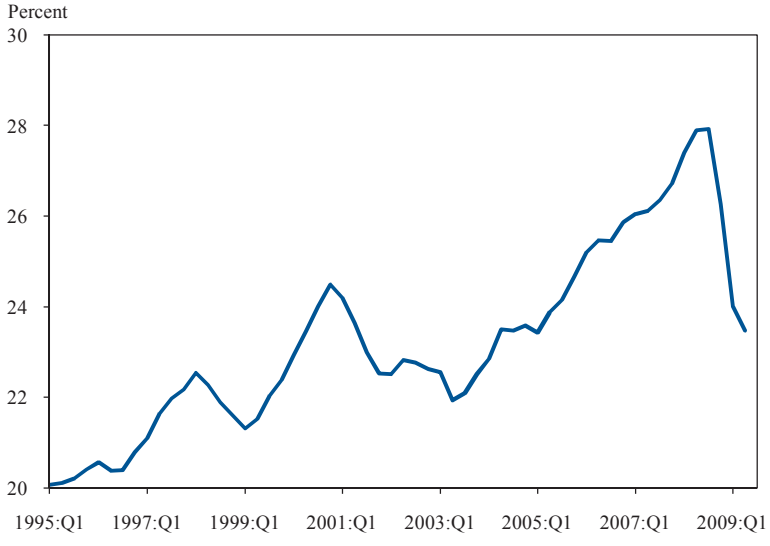
During the peak of the crisis, the spreads on emerging-market bonds spiked, but they returned toward more standard levels over time, and outright financial collapse was avoided. There are a number of reasons for the more contained impact of the exchange-rate movements during the crisis. In the past decade, many developing countries have reduced the currency mismatch on their balance sheets by borrowing less, increasing their stocks of foreign exchange reserves, and shifting away from debt finance (Lane and Shambaugh forthcoming). The improved fiscal positions of some countries likely also helped, as did the strong policy response and coordination described later. Some vulnerable countries also benefited from the strengthening of the IMF's lending capabilities (discussed later). The failure of this shock to turn into a series of deep sustained financial collapses across the emerging world was a welcome development that left the world economy better positioned for a quick turnaround.

The Collapse of World Trade

Despite this crisis's origins in the financial sector, trade rapidly became a crucial source of transmission of the crisis around the world. Exports collapsed in nearly every major trading country, and total world trade fell faster than it did during the Great Depression or any time since. From a peak in July 2008 to the low in February 2009, the nominal value of world goods exports fell 36 percent; the nominal value of U.S. goods exports fell 28 percent (imports fell 38 percent) over the same period. Even countries such as Germany, which did not experience their own housing bubble, experienced substantial trade contractions, which helped spread the crisis. The collapse in net exports in Germany and Japan contributed substantially to their declines in GDP, helping drive these countries into recession. In the fourth quarter of 2008, Germany's drop in net exports contributed 8.1 percentage points to a 9.4 percent decline in GDP (at an annual rate); Japan's net exports contributed 9.0 percentage points to a 10.2 percent GDP decline. Real exports fell even faster in the first quarter of 2009.

Figure 3-3 shows that the drop in the trade-to-GDP ratio during this crisis, from 28 percent to 23 percent in OECD countries, is unprecedented. Trade as a share of GDP had not dropped by more than 2 percentage points from the year before since at least 1970 (the earliest available data), suggesting trade's drop relative to GDP has been larger than in the past. Economists have noted that the responsiveness of trade to GDP has been

Figure 3-3
OECD Exports-to-GDP Ratio

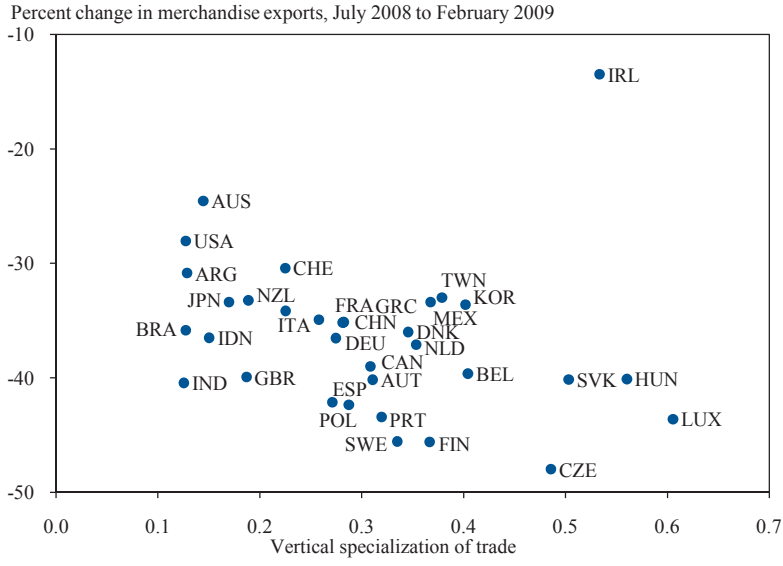


Source: Organisation for Economic Co-operation and Development, Quarterly National Accounts.

rising over time. Three main reasons for the exceptionally large fall in trade, even given the decline in GDP, have been suggested (Freund 2009; Levchenko, Lewis, and Tesar 2009; and Baldwin 2009).

The first reason is the use of global supply chains (or vertical specialization), where parts of production are manufactured or assembled in different countries and intermediate inputs are shipped from country to country, often from one branch of a firm to another, and then sent to a final destination for finishing. In this case, a reduction in output of one car may involve a decrease in shipments far larger than the final value of that single car. For example, a country that imports $80 of inputs and adds $20 of value added before exporting a $100 good will see GDP fall by $20 if demand for that good disappears, but trade (measured as the average of imports and exports) will fall $90. If the decline in demand was concentrated in goods where global supply chains were particularly important, this could help account for the large fall in trade-to-GDP ratios. Estimates are that imported inputs account for, on average, 30 percent of the content of exports in OECD and major emerging market countries, although there is variation across countries within the OECD. Figure 3-4 shows that, with the exception of Ireland, the percentage by which trade declined for a country was

Figure 3-4
Vertical Specialization and the Collapse in Trade



Notes: See text for definition of the vertical specialization of trade. Merchandise exports measured in dollars. Alternate data from Johnson and Noguera (2009), which include the degree to which exports themselves are intermediate inputs, show a similar picture.
Sources: Miroudot and Ragoussis (2009); country sources; CEA calculations.

strongly correlated with the extent of that country's vertical specialization (specifically defined as the degree of imported inputs used in exports).

Second, the disruption in global financial markets may have helped generate the trade collapse. Exporters typically require some form of financing to produce their export goods because importers will not pay for them before they arrive. Similarly, importers may need some sort of financing to bridge the gap between when they need to pay for goods and when they will be able to sell them on a domestic market. When liquidity tightened in world financial markets, the cost of trade finance increased. Little high-quality information is available for trade finance because it is typically arranged by banks or from one party to another, rather than through an organized exchange. The data that do exist show a drop in trade finance, but one that is not necessarily larger than the drop in overall trade. The drop in general financing available for producers and consumers, along with the impact of the recession on aggregate demand, may be factors as significant as the specifics of trade finance.[4]

Finally, the types of products that are traded may have been a critical factor in the trade collapse. Investment goods and consumer durables make up a substantial portion of merchandise trade, representing 57 percent of U.S. exports and 49 percent of U.S. imports in 2006. In a recession, investment spending by firms and purchases of durable goods by consumers often fall more sharply than other components of GDP. Because these investment and purchasing decisions are large and irreversible, they may be delayed until the economic situation is more clear. The drop in spending in these categories during this crisis has been far more severe than in previous recessions in the past 30 years in the United States. Paralleling the movements in overall demand, the collapse in the nominal value of trade was most severe in capital and durable goods and in chemicals and metals, and least severe in services and nondurable goods. The combination of the concentration of the spending reduction in these sectors and the sectors' importance in overall trade appears to be one source of the sharp fall in trade in the crisis.

The Collapse in Financial Flows

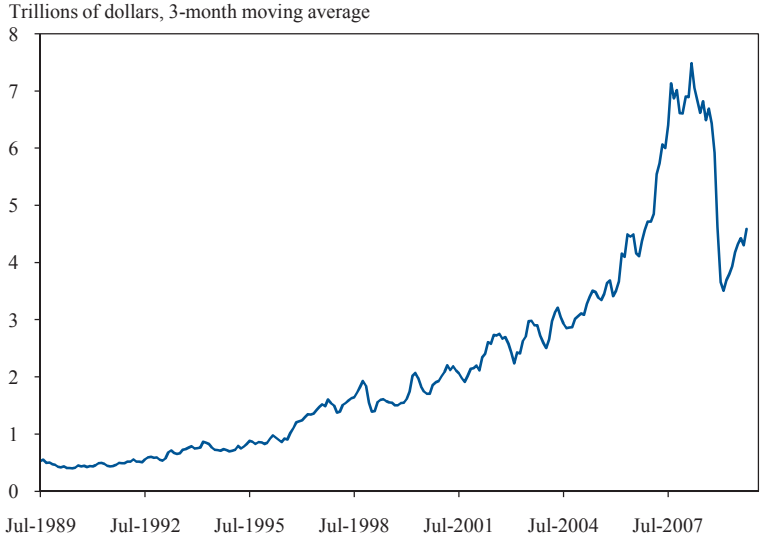
Trade in goods was not the only international flow to collapse. Financial trade evaporated in a way never before seen. U.S. outflows and inflows of finance rose steadily for decades as increasingly integrated capital markets grew in size and scope. By 2007, the average monthly gross purchases and sales of foreign long-term assets by American investors were

[4] See Mora and Powers (2009) for a discussion of trade finance in the recent crisis. Levchenko, Lewis, and Tesar (2009) find no support for the notion that trade credit played a role in the reduced trade flows for the United States during the crisis.

$1.4 trillion, and foreigners' purchases and sales of U.S. long-term assets were $4.9 trillion. Each group both bought and sold a considerable amount of their holdings, so that net purchases by Americans were $19 billion a month and net purchases by foreign investors were $84 billion a month.

When the crisis hit, there was a massive deglobalization of finance that was unprecedented and in many ways more extreme than the collapse in goods and services trade. Figure 3-5 shows that the scale of cross-border flows was cut in half after years of fairly steady climbing. Net purchases by both home and foreign investors actually became negative in the fall of 2008 (that is, there were more sales than purchases). Americans pulled funds home at such a fast pace that from July to November of 2008, Americans on net sold foreign assets worth $143 billion. Foreign investors also liquidated their positions, selling a net $92 billion in U.S. holdings. Hence, outflows from foreign investors returning to their home markets were offset in part by inflows from Americans bringing money back to the United States, likely reducing the impact of the outflows.

Figure 3-5
Cross-Border Gross Purchases and Sales of Long-Term Assets



Source: Department of the Treasury (Treasury International Capital System).

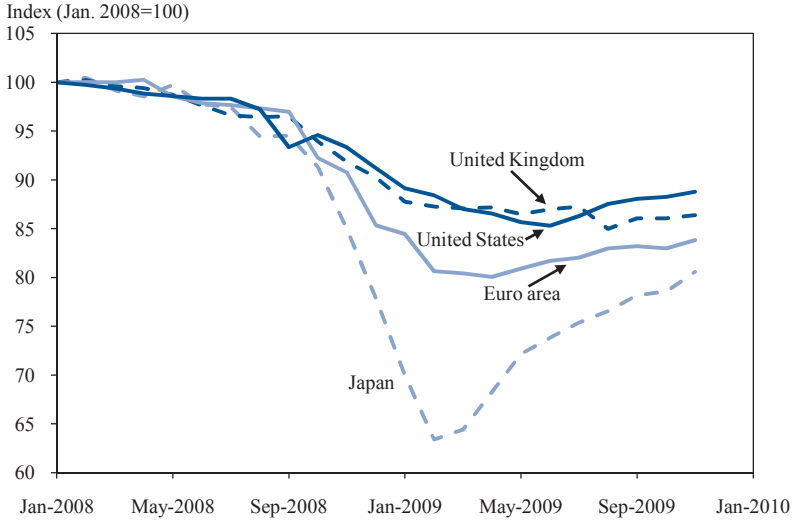
The Decline in Output Around the Globe

While the triggers of the crisis are generally considered financial in nature, these shocks were rapidly transmitted to the real economy. What had been a financial market shock or a trade collapse became a full-fledged recession in countries around the world. The financial disruption was so

strong and swift in most countries that confidence fell as well. Confidence levels are measured in different ways across countries, but they were generally falling throughout 2008 and reached recent lows in the fall of 2008 and winter of 2009. In many countries, confidence had not been so low in more than a decade.

As noted, world GDP is estimated to have fallen roughly 1.1 percent in 2009 from the year before. The number for the annual average masks the shocking depth of the crisis in the winter of 2008–09, when GDP was contracting at an annual rate over 6 percent. In advanced economies, the crisis was even deeper; the IMF expects GDP to have contracted 3.4 percent in advanced economies for all of 2009. For OECD member countries, GDP fell at an annual rate of 7.2 percent in the fourth quarter of 2008 and 8.4 percent in the first quarter of 2009. Despite the historic nature of its collapse, the U.S. economy actually fared better than about half of OECD economies during those quarters. Figure 3-6 shows the decline in industrial production across major economies, with each of these economies in January 2009 more than 10 percent below its January 2008 level, and Japan faring far worse relative to the other major economies.

Figure 3-6
Industrial Production in Advanced Economies

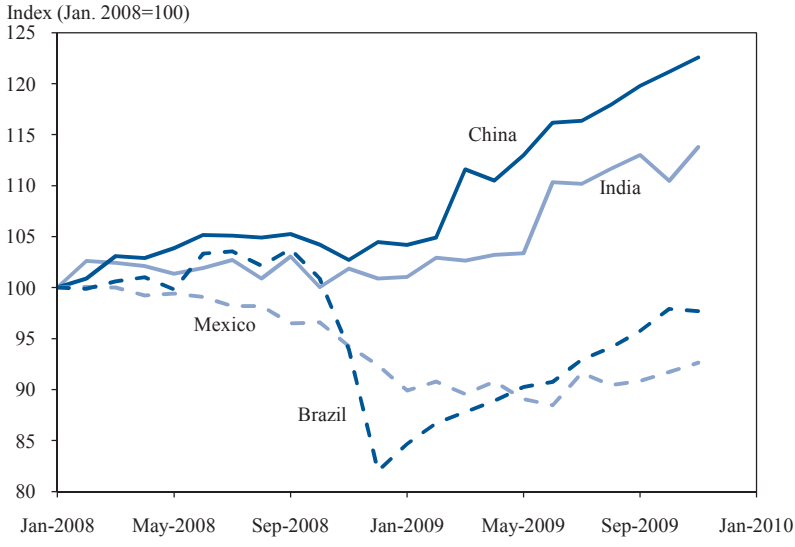


Sources: Country sources.

Some emerging market countries collapsed as well, with contractions at an annual rate of over 20 percent in Mexico, Russia, and Turkey, but the collapses were brief—lasting only a quarter or so. On average, the emerging and developing world was quite resilient to the crisis and is

projected to have continued to expand in 2009 at a rate of 1.7 percent for the year (these countries contracted in the first quarter, but they began growing quickly in the second quarter). Some regions, such as developing Asia, continued to grow at a robust pace for the year as a whole (over 6 percent), but even that rate is considerably slower than their growth in the mid-2000s. Figure 3-7 shows that industrial production fell in Brazil and Mexico in a manner similar to that in industrial economies, but in China and India it merely stalled for a brief period and then accelerated again. This overall performance in the emerging world is a turnaround from previous crises, where recessions in the advanced countries were followed by sustained collapses in some emerging countries.

Figure 3-7
Industrial Production in Emerging Economies

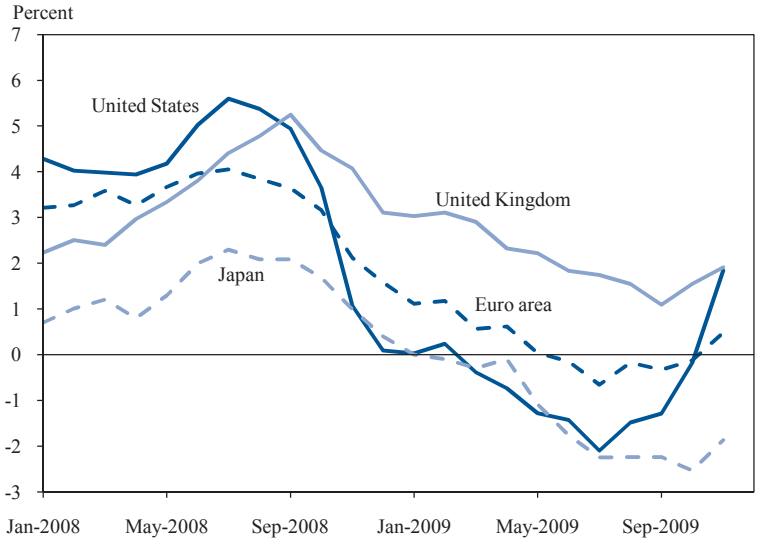


Sources: Country sources.

The combination of weak aggregate demand and falling energy prices has meant that price pressure has been starkly absent in this crisis. In fact, lower oil prices have meant that year-over-year inflation numbers were negative in most major countries until toward the end of 2009 (Figure 3-8). Core inflation rates—which exclude volatile energy and food prices—have also been quite low over the year and even negative in Japan. This lack of price pressure has left the world's central banks with more flexibility than they had in the 1970s recessions because they do not have pressing inflation problems to consider. Inflation has also been muted in emerging and developing countries relative to their history; it is estimated

to be 5.5 percent over 2009 and is projected to fall slightly in 2010. As economies and commodity markets strengthened toward the end of 2009, inflation pressure grew in a limited number of countries but was not in any way widespread.

Figure 3-8
Headline Inflation, 12-Month Change



Sources: Country sources.

Policy Responses Around the Globe

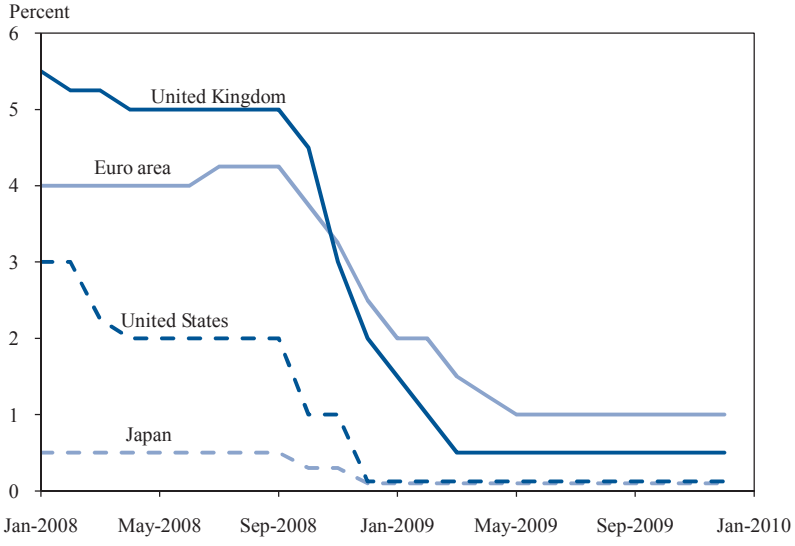
Given the severity of the downturn, it is not surprising that policymakers responded with dramatic action. Central banks cut interest rates, governments spent considerable sums in the form of fiscal stimulus, and governments and central banks supported financial sectors with funds and guarantees. Many of these actions were coordinated as policymakers tried to prevent the financial market upheaval and recession from becoming a full-fledged depression.

Monetary Policy in the Crisis

The response of monetary authorities was both strong and swift across the globe. The major central banks coordinated a significant rate cut of 50 basis points on October 8, 2008, in an attempt to increase liquidity and to boost confidence by demonstrating that they were prepared to act decisively. During the crisis, every member of the Group of Twenty (G-20)

major economies cut interest rates. By March 2009, the Federal Reserve, the Bank of Japan, and the Bank of England had all cut rates to 0.5 percent or less, with the Federal Reserve and the Bank of Japan approaching the zero nominal lower bound. The European Central Bank (ECB) responded slightly more slowly but still cut its policy rate more than 3 percentage points to 1 percent by May 2009 (Figure 3-9). Emerging market countries and major commodity exporters, whose economies were growing fast in the summer of 2008, moved as well, but not to the near-zero levels seen at the major central banks.

Figure 3-9
Policy Rates in Economies with Major Central Banks

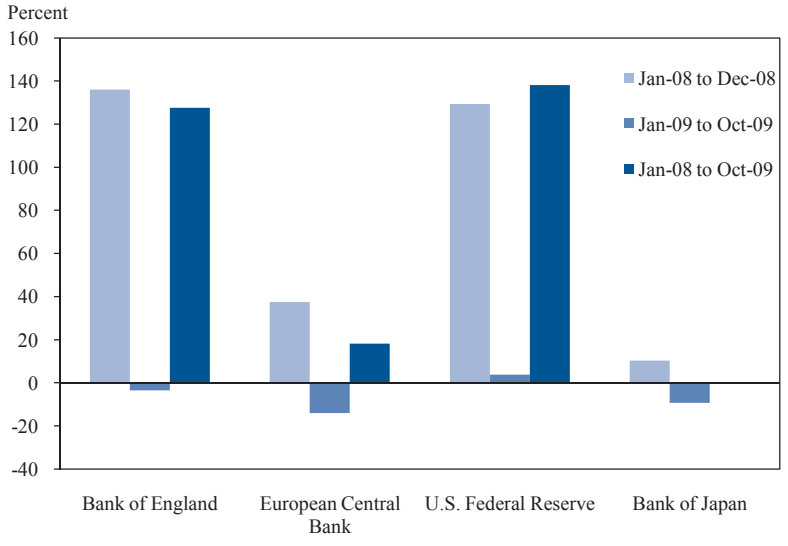


Sources: Country sources; CEA calculations.

Besides cutting interest rates, three of the largest central banks used nonstandard monetary policy as well. As Figure 3-10 shows, the Federal Reserve and the Bank of England more than doubled the size of their balance sheets in 2008 (see Chapter 2 for more details on the Federal Reserve's actions). The two banks bought large quantities of assets, substantially increasing the supply of reserves, and made loans against a variety of asset classes. The goal of these programs was to free up credit in markets that were being underserved through purchases of, or loans against, asset-backed securities and commercial paper. The ECB also expanded its balance sheet substantially (37 percent) in 2008 and made loans against a variety of assets, but it did not undertake the same level of quantitative easing as either the U.S. or U.K. central banks. The Bank of Japan did not expand its balance

sheet on a similar scale.[5] While it did expand some of its lending programs in corporate bond markets, its policies were more oriented to financial markets than to quantitative monetary policy. As noted earlier, Japan's inflation rate has been negative.

Figure 3-10
Change in Central Bank Assets



Sources: Country sources; CEA calculations.

As Figure 3-10 shows, the rapid growth of central bank balance sheets halted during 2009, but the central banks have not withdrawn the liquidity they injected into the system. Similarly, policy interest rates have remained constant since December 2008 in the United States and Japan and since the spring of 2009 in the euro area and the United Kingdom. Some commodity producers and smaller advanced nations with strong growth have begun to withdraw some monetary accommodation. Australia, Israel, and Norway have all raised policy interest rates. Also, authorities in countries such as China and India had not raised main policy rates as of the end of 2009, but they have made administrative changes that tightened lending to slow the expansion of credit as their economies began to grow more quickly.

In addition to lending support, authorities directly intervened to support the banking sectors in a number of countries. Countries took many actions on their own, ranging from the policies pursued in the United States such as the Troubled Asset Relief Program (discussed in Chapter 2), to direct takeovers of some banks in the United Kingdom, to the creation of other

[5] On December 1, 2009, the Bank of Japan announced a roughly $115 billion increase in lending, equivalent to a nearly 10 percent increase in its balance sheet. This increase was significant but still far below the actions taken by other major central banks.

entities to centralize some bad assets and clean the balance sheets of other banks in Switzerland and Ireland, to general support and guarantees in a wide range of countries.

Central Bank Liquidity Swaps

In addition to the coordination of rate cuts, one other important form of international coordination took place across central banks. As noted, a dollar funding shortage materialized abroad, as the normal channels for the transmission of dollar liquidity from U.S. markets to the global financial system broke down. This shortage presented a unique set of challenges to central banks. They could have simply provided domestic currency and left banks to sell it for dollars, but the foreign exchange swaps market in which such transactions are usually conducted was severely impaired. Alternatively, central banks could have used dollar reserves to provide foreign currency funds, but few advanced countries (outside of Japan) had sufficient foreign currency holdings to fully address the foreign currency funding needs of their banking systems.

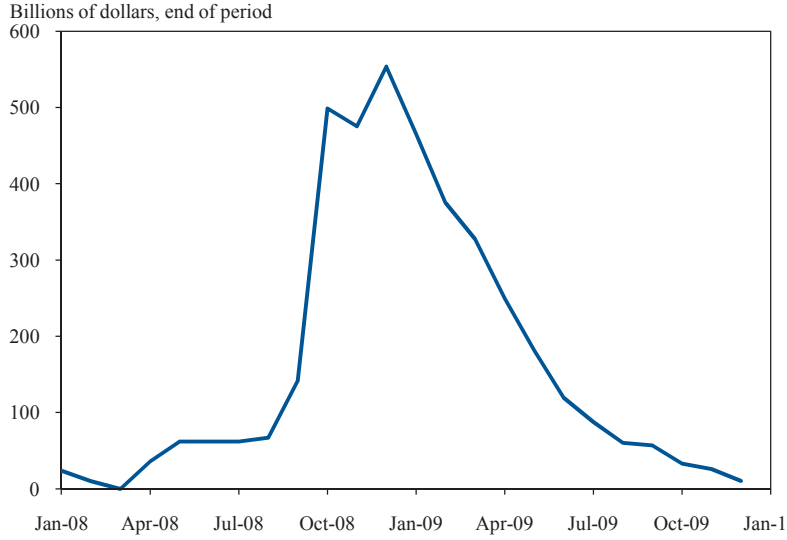
Central banks whose currencies were in demand responded to the shortage by providing large amounts of liquidity to partner central banks through central bank liquidity swaps.[6] In many of these arrangements, the Federal Reserve purchased foreign currency in exchange for U.S. dollars and at the same time agreed to return the foreign currency for the same quantity of dollars at a specific date in the future. When foreign central banks drew dollars in this way to fund their auctions of dollar liquidity in local markets, the Federal Reserve received interest equal to what the foreign central banks were receiving on the lending operations. The Federal Reserve first used these swaps in late 2007 on a relatively small scale. But, as shown in Figure 3-11, from August 2008 through December 2008 these swaps increased from $67 billion to $553 billion. This massive supply of liquidity was larger than the available lending facilities of the IMF. The United States extended this program to major emerging market countries as well on October 29, 2008, providing lines of up to $30 billion each to Brazil, Mexico, Singapore, and Korea.

As the acute funding needs have subsided, nearly all of the central bank swaps have been unwound, and the Federal Reserve has announced that it anticipates that these swap arrangements will be closed by February 1, 2010. There was no long-term funding cost to the Federal Reserve from these swap lines; moreover, the Federal Reserve's counterparties in these transactions were the central banks of other countries, and the loans

[6] See Fender and Gyntelberg (2008) for a more comprehensive discussion.

were fully collateralized with foreign currency, so very little credit risk was involved in these transactions.

Figure 3-11
Central Bank Liquidity Swaps of the Federal Reserve



Source: Federal Reserve Board, Factors Affecting Reserve Balances of Depository Institutions and Condition Statements of Federal Reserve Banks, H.4.1 Table 1.

Although the dollar funding shortages were unique, the Federal Reserve was not the only central bank to provide swap lines. Some of the more notable examples include the European Central Bank, which made euros available to a number of central banks in Europe, among them the central banks of Denmark, Hungary, and Poland, that felt pressure for funding in euros; the Swedish central bank, which provided support to central banks in the Baltics; and the Swiss National Bank, which provided Swiss francs to the European Central Bank and Poland. Across Asia there was renewed interest in the Chiang Mai Initiative, under which various Asian central banks set up swap lines that could be used in an emergency. Despite the increases in these cross-Asian country swap lines, together they totaled $90 billion, far less than the available Federal Reserve swap lines, and they were not drawn on during the crisis. In sum, while existing institutional structures (IMF lending or reserves) appear to have been insufficient to meet this aspect of the crisis, the world's central banks innovated to take temporary actions that quelled market disruptions and avoided even sharper financial dislocation.

Fiscal Policy in the Crisis

In part because major central banks had pushed interest rates as low as they could go and in part because of the magnitude of the crisis, by the beginning of 2009, many countries decided to institute substantial fiscal stimulus. The hope was that government spending could step into the breach left by the collapse of private demand and provide the necessary lift to prevent a slide into a deep recession or worse.

Nearly every major country instituted stimulus, with the exception of some countries hampered by substantial public finance concerns, such as Hungary and Ireland. Every G-20 nation implemented substantial stimulus, with an unweighted average of 2.0 percent of GDP in 2009 (Table 3-1), and many other OECD nations also adopted stimulus plans. Among G-20 countries, China, Korea, Russia, and Saudi Arabia enacted the most extensive stimulus programs in 2009, all equivalent to more than 3 percent of GDP. The U.S. stimulus in 2009 (estimated at 2 percent of GDP) was greater than the OECD's estimate of its member country average (1.6 percent of GDP), but the same as the G-20 average and not quite as extensive as the four high-stimulus nations.

Table 3-1
2009 Fiscal Stimulus as Share of GDP, G-20 Members

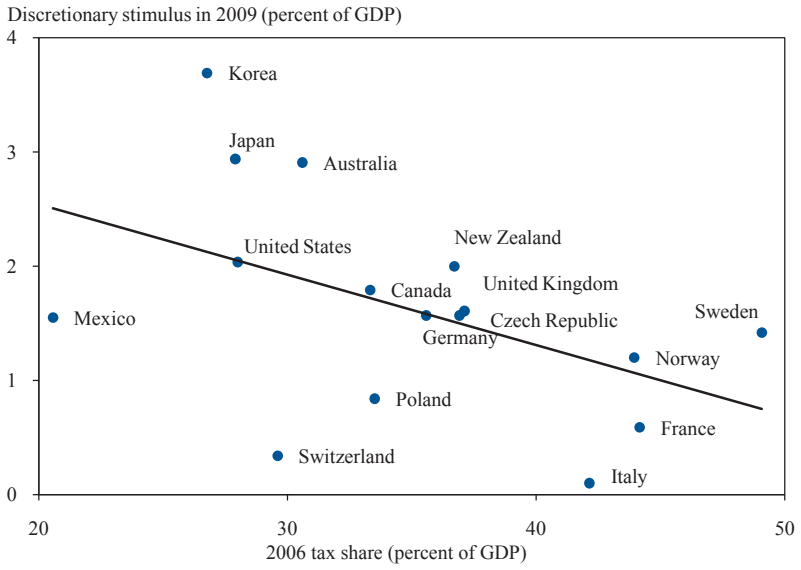
Argentina	1.5%	Japan	2.9%
Australia	2.9%	Mexico	1.6%
Brazil	0.6%	Russia	4.1%
Canada	1.8%	Saudi Arabia	3.3%
China	3.1%	South Africa	3.0%
France	0.6%	South Korea	3.7%
Germany	1.6%	Turkey	2.0%
India	0.6%	United Kingdom	1.6%
Indonesia	1.4%	United States	2.0%
Italy	0.1%	**All G-20 Nations**	**2.0%**

Note: Values are average of International Monetary Fund and Organisation for Economic Co-operation and Development estimates for nations with expansionary fiscal policies.
Sources: Horton, Kumar, and Mauro (2009); Organisation for Economic Co-operation and Development (2009a).

Discretionary fiscal action was not the only form of fiscal stimulus; automatic stabilizers (unemployment insurance, welfare, reduction in taxes collected due to lower payrolls) are triggered when an economy slows down. The size of automatic stabilizers present in an economy appears to be negatively correlated with the size of discretionary stimulus. As Figure 3-12 shows, those countries that already had large automatic stabilizers in place

appear to have adopted less discretionary fiscal stimulus, but they were obviously still providing substantial fiscal relief during the crisis.[7]

Figure 3-12
Tax Share and Discretionary Stimulus



Notes: The regression line is stimulus = 3.8 - 0.06*(tax share). The coefficient on tax share is significant at the 90 percent confidence level. The R-squared is 0.23.
Sources: Organisation for Economic Co-operation and Development, Tax Database Table O.1; Organisation for Economic Co-operation and Development (2009a); Horton, Kumar, and Mauro (2009).

Stimulus is expected to fade slowly in 2010. Overall, the IMF estimates that advanced G-20 countries will spend 1.6 percent of GDP on discretionary stimulus in 2010, compared with 1.9 percent in 2009.[8] Emerging and developing G-20 countries will also spend 1.6 percent of GDP in 2010, compared with 2.2 percent in 2009. The IMF projects that among the G-20 countries that adopted large stimulus programs, only Germany, Korea, and Saudi Arabia will increase those programs in 2010. In addition, substantial stimulus will continue into 2010 in Australia, Canada, China, and the United

[7] The level of taxation in the economy is used as a proxy for automatic stabilizers. Countries with large levels of taxation see immediate automatic stabilizers because any lost income immediately reduces taxes. Those same countries often tend to have more generous social safety nets (funded by their higher taxes).

[8] The averages are calculated by the IMF using PPP GDP weights. That is, the IMF uses the size of an economy—evaluated at purchasing power parity exchange rates, which take into account different prices for different types of goods and services—to weight the different countries in the averages.

States.[9] Thus, substantial fiscal stimulus should continue to support the recovering world economy. The crucial question will be whether sufficient private demand has been rekindled by late 2010 to pick up the economic slack as stimulus unwinds.

Trade Policy in the Crisis

An extremely welcome development is the policy that was not called on during the crisis: trade protectionism. Frequently viewed as an accelerant of the Great Depression, protectionism has been largely absent during the current crisis. In the Great Depression, trade protectionism came into play after the crisis had started and was not a cause of the Depression itself (Eichengreen and Irwin 2009). But the extensive barriers that built up in the first few years of the Depression meant that as production rebounded, trade levels could not do so. In the current crisis, rather than respond to declining exports with increasing tariffs, countries left markets open, allowing for the possibility of a rebound in world trade. No major country has instituted dramatic trade restrictions. Furthermore, while antidumping and countervailing duty investigations have increased, the value of imports facing possible new import restrictions by G-20 countries stemming from new trade remedy investigations begun between 2008:Q1 and 2009:Q1 represents less than 0.5 percent of those countries' imports (Bown forthcoming).

The Role of International Institutions

Rather than resort to beggar-thy-neighbor policies, this crisis has been characterized by international policy coordination. National policies did not take place in a vacuum; to the contrary, nations used a number of international institutions to coordinate and communicate their rescue efforts.

The G-20

The G-20, which includes 19 nations plus the European Union, was the locus of much of the coordination on trade policy, financial policy, and crisis response. Its membership is composed of most of the world's largest economies—both advanced and emerging—and makes up nearly 90 percent of world gross national product.

The first G-20 leaders' summit was held at the peak of the crisis in November 2008. At that point, G-20 countries committed to keep their markets open, adopt policies to support the global economy, and stabilize the financial sector. Leaders also began discussing financial reforms that would help prevent a repeat of the crisis.

[9] Japan has announced additional stimulus since these estimates and will also be providing extensive stimulus in 2010.

The second G-20 leaders' summit took place in April 2009 at the height of concern about rapid falls in GDP and trade. Leaders of the world's largest economies pledged to "do everything necessary to ensure recovery, to repair our financial systems and to maintain the global flow of capital." Furthermore, they committed to work together on tax and financial policies. Perhaps the most notable act of world coordination was the decision to provide substantial new funding to the IMF. U.S. leadership helped secure a commitment by the G-20 leaders to provide over $800 billion to fund multilateral banks broadly, with over $500 billion of those funds allocated to the IMF in particular.

In September 2009, the G-20 leaders met in Pittsburgh. They noted that international cooperation and national action had been critical in arresting the crisis and putting the world's economies on the path toward recovery. They also recognized that continued action was necessary, pledged to "sustain our strong policy response until a durable recovery is secured," and committed to avoid premature withdrawal of stimulus. The leaders also focused on the policies, regulations, and reforms that would be needed to ensure a strong recovery while avoiding the practices and vulnerabilities that gave rise to boom-bust cycles and the current crisis. They launched a new Framework for Strong, Sustainable, and Balanced Growth that committed the G-20 countries to work together to assess how their policies fit together and evaluate whether they were "collectively consistent with more sustainable and balanced growth." Further, the leaders committed to act together to improve the global financial system through financial regulatory reforms and actions to increase capital in the system.

Given the central role the G-20 had played in the response to the crisis, it is not surprising that the leaders agreed in Pittsburgh to make the G-20 the premier forum for their economic coordination. This shift reflects the growing importance of key emerging economies such as India and China—a shift that was reinforced by the agreement in Pittsburgh to realign quota shares and voting weights in the IMF and World Bank to better reflect shifts in the global economy.

The International Monetary Fund

The IMF's role has changed considerably over time, from being the shepherd of the world's Bretton Woods fixed exchange rate system to becoming a crisis manager. In a systemic bank run, a central bank sometimes steps in as the lender of last resort. The IMF is not a central bank and can neither print money nor regulate countries' behavior in advance of a crisis, but it has played a coordinating and funding role in many crises. As the scale of the current crisis became apparent, it was clear that the IMF's

funds were insufficient to backstop a large systemic crisis, particularly in advanced nations. While it is still unlikely to be able to arrest a run on major advanced country financial systems, the increase in resources stemming from the G-20 summit has roughly tripled the resources available to the IMF and left it better suited to quell runs in individual countries.

As the IMF's resources were expanded, the institution took a number of concrete interventions. It set up emergency lines of credit (called Flexible Credit Lines) with Colombia, Mexico, and Poland, which in total are worth over $80 billion. These lines were intended to provide immediate liquidity in the event of a run by investors, but also to signal to the markets that funds were available, making a run less likely. Now, rather than have to go to the IMF for funds during a crisis, these countries are "pre-approved" for loans. In each of these countries, markets responded positively to the announcement of the credit lines, with the cost of insuring the countries' bonds narrowing (International Monetary Fund 2009b). The IMF also negotiated a set of standby agreements with 15 countries, committing a total of $75 billion to help them survive the economic crisis by smoothing current account adjustments and mitigating liquidity pressures. IMF analysis suggests that this program discouraged large exchange-rate swings in these countries (International Monetary Fund 2009b). These actions as well as the very existence of a better-funded global lender may have helped to keep the contraction short and to prevent sustained currency crises in many emerging nations.

The Beginning of Recovery Around the Globe

In contrast to the Great Depression, where poor policy actions—monetary, fiscal, regulatory, and protectionist—helped turn a sharp global downturn into the worst worldwide collapse the modern economy has known, the recent massive policy response helped stop the spiraling of this Great Recession. Already financial markets have stabilized, GDP has begun to grow, and trade has begun to rebound. The crisis is far from over, however; most notably, employment in many countries is still distressingly weak. But the world economy appears to have avoided the outright collapse that was feared at one point and is now moving toward recovery.

The second quarter of 2009 saw the first hints of recovery in many countries. World average growth was 2.4 percent, and even OECD countries registered a positive 0.2 percent growth rate.[10] The rebound caught many by surprise. The IMF and the OECD had revised projections steadily

[10] World weighted average quarterly real GDP growth rates at a seasonally adjusted annual rate are from CEA calculations. The OECD growth rate is from the OECD quarterly national accounts database.

downward through the winter and spring, but by the middle of 2009 many economies had returned to growth. The one-quarter improvement in annualized growth of 5.7 percentage points (from -6.4 percent to -0.7 percent from the first to the second quarter of 2009) in the United States was one of the largest improvements in decades, but other countries that had deeper contractions rebounded even more. Annualized growth rates improved more than 14 percentage points in Germany and Japan, while growth rates rose more than 30 percentage points in Malaysia, Singapore, Taiwan, and Turkey. Other emerging markets, such as China, India, and Indonesia, which did not contract but faced lower growth during the crisis, rebounded to growth rates on par with their performance during the 2000s (if not the rapid booms of 2006–07).

Trade had collapsed quickly, and it has begun to rebound quickly as well. Beginning in March, when GDP was still falling rapidly, exports began to turn. From lows in February 2009, nominal world goods exports in dollar terms had grown 20 percent by October. U.S. nominal goods exports picked up later but had grown 17 percent from their April lows by October. As GDP began to rise, trade volume began to grow faster. Annualized growth for world real exports was 2.4 percent in the second quarter of 2009 and 16.8 percent in the third quarter. By comparison, world weighted average annualized real GDP growth in the second and third quarters of 2009 was 2.4 percent and 3.4 percent, respectively.

Financial markets are rebounding as well. Net cross-border financial flows are near their pre-crisis levels, and gross flows are increasing (although as of October 2009 they were still less than 80 percent of their average level in 2008). Libor-OIS spreads have fallen to more typical levels, and equivalent measures in other markets have subsided as well. Stock market indexes in the United States, Japan, the United Kingdom, and the European Union have all risen substantially. By October 2009, all were above their levels in October 2008, making up dramatic losses in early 2009. House prices have stabilized in most markets. Furthermore, the cost of insuring emerging-market bonds, which had spiked in the fall of 2008, is now back roughly to its pre-crisis level. The value of the dollar, which rose dramatically during the crisis, has retreated toward its value before the crisis (see Figure 3-2). From the end of March 2009 through December, the dollar depreciated 10 percent against a basket of currencies. The trade-weighted value is roughly at the same level as in the fall of 2007 and above its lows in 2008.

Potential financial problems still exist. Banks around the world may not have recognized all the losses on their balance sheets. The shock waves from the threatened default by Dubai World in November 2009 showed that there are still concerns in the market about potential bad debts on

various entities' balance sheets. There also are concerns in some countries that asset prices may be rising ahead of fundamentals. But the crush of near-bankruptcy across the system has clearly eased.

The Impact of Fiscal Policy

The broad financial rescues and the monetary policy responses played crucial roles in stabilizing financial markets. Fiscal policy also played an essential role in the macroeconomic turnaround. A simple examination of G-20 advanced economies shows that while they all had broadly similar GDP contractions during the crisis, the high-stimulus countries—despite having much smaller automatic stabilizers—grew faster after the crisis than countries that adopted smaller stimulus packages. Table 3-2 shows the 2009 discretionary fiscal stimulus as a share of GDP, the tax share of GDP (which is a rough estimate of automatic stabilizers), as well as the GDP growth during the two quarters of crisis (2008:Q4 and 2009:Q1) and the second quarter of 2009 when growth resumed in many countries. Growth reappeared first in the high-stimulus G-20 countries.

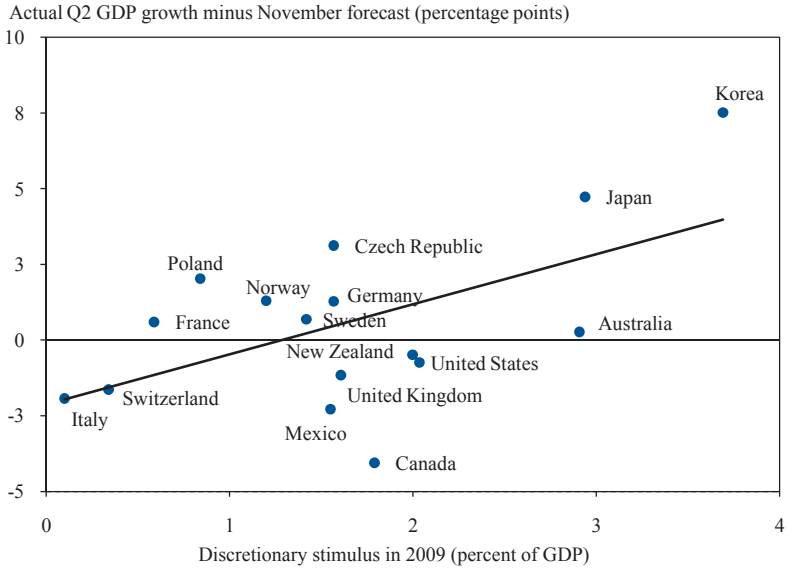
Table 3-2
Stimulus and Growth in Advanced G-20 Countries

	Stimulus (% of GDP)	Stabilizers (% of GDP)	Growth during:	
			Crisis (%)	2009:Q2 (%)
High stimulus	3.2	28.4	-7.1	5.4
Mid stimulus	1.7	35.3	-8.3	-1.3
Low stimulus	0.3	43.2	-7.4	-0.3
United States	2.0	28.0	-5.9	-0.7

Notes: High countries are Australia, Japan, and Korea; middle countries are Canada, Germany, and the United Kingdom; low countries are France and Italy. Growth rates are annualized. Crisis refers to Q4:2008 and Q1:2009.
Sources: Organisation for Economic Co-operation and Development, Tax Database Table 0.1; Horton, Kumar, and Mauro (2009); Organisation for Economic Co-operation and Development (2009a); country sources.

Countries may have different typical growth patterns, however. Thus, to understand the impact of fiscal stimulus, one must estimate what would have happened had there been no stimulus—a counterfactual. Private sector expectations in November 2008—after the crisis had begun but before most stimulus packages were adopted—can serve as that counterfactual. Thus, one can compare actual growth minus predicted growth with the degree of stimulus to see whether those countries with large stimulus packages outperformed expectations once the stimulus policies were in place. The second quarter of 2009 is used as the test case. Figure 3-13 shows actual growth minus expected growth compared with 2009 discretionary fiscal

Figure 3-13
Outperforming Expectations and Stimulus



Notes: The regression line is (growth - forecast) = -2.1 + 1.65 * stimulus. The coefficient on stimulus is significant at the 95 percent confidence level. The R-squared is 0.31.
Sources: J.P. Morgan Global Data Watch, Global Economic Outlook Summary Table, November 7, 2008; Horton, Kumar, and Mauro (2009); Organisation for Economic Co-operation and Development (2009a); country sources; CEA calculations.

stimulus for the OECD countries for which private sector forecasts were available on a consistent date.[11] Countries with larger stimulus on average exceeded expectations to a greater degree than those with smaller stimulus packages. The two countries in this exercise with the largest stimulus packages, Korea and Japan, outperformed expectations by dramatic amounts. Countries such as Italy that had virtually no stimulus performed worse than most. Among non-OECD countries, China had one of the largest fiscal stimulus packages, and in the second quarter of 2009 its growth was both rapid and far in excess of what had been expected in November 2008. Fiscal

[11] Stimulus is measured as in Table 3-1, using IMF and OECD estimates of 2009 fiscal stimulus. Forecasts are from J.P.Morgan. See Council of Economic Advisers (2009) for more details. That report examines more countries and a set of time series forecasts in addition to the private sector (J.P.Morgan) forecasts. The results are quite similar with a simple time series forecast. Results are slightly weaker with a broader sample, but that is not surprising because the swings in the economies in emerging markets were quite severe and difficult to predict, and the stimulus policies may operate somewhat differently in those nations. Council of Economic Advisers (2009) used Brookings estimates as well as OECD and IMF, but those ceased being updated in March, and thus this analysis uses only IMF and OECD estimates. Using the June estimates alone slightly weakens the results because stimulus announced late in the second quarter likely had little impact on growth in that quarter.

stimulus seems to have been important in restarting world economic growth in the second quarter of 2009.

After the second quarter of 2009, the relationship between stimulus and growth weakens somewhat. High-stimulus countries still exceed expectations relative to low-stimulus countries, but the relationship is not statistically significant. It may be that quarterly growth projections made nearly a year in advance are not precise enough a measure of a third-quarter growth counterfactual.

The World Economy in the Near Term

While the return to GDP and export growth is encouraging, exports are still far below their level in the summer of 2008, and GDP is now far below its prior trend level. The IMF currently forecasts annual world growth of 3.1 percent in 2010; the OECD projects 3.4 percent.[12] For advanced countries, the forecasts are even more restrained: the IMF projects 1.3 percent, the OECD 1.9 percent for OECD countries. The IMF forecasts world trade to grow 2.5 percent in 2010; the OECD, 6.0 percent. These forecasts may be conservative. The IMF forecast would leave trade at a much lower share of GDP than before the crisis, and even if trade growth met the OECD's more aggressive forecast, trade would not reach its previous level as a share of GDP for some time. Given that trade declined faster than GDP in the crisis, it is possible it will continue to bounce back faster as well, surpassing these estimates.

How Fast Will Countries Grow? There is an open question about how fast countries will grow following the crisis. After typical recessions, the magnitude of a recovery often matches the depth of the drop. In this way, GDP returns not only to its previous growth rate, but to its previous trend path as well. If, however, the world's advanced economies emerge from the crisis only slowly and simply return to stable growth rates, output will be on a permanently lower path. A financial crisis could lower the future level of output by generating lower levels of labor, capital, or the productivity of those factors. If the economy returns to full employment, and productivity growth remains on trend, though, capital should eventually return to its pre-crisis path because the incentives to invest will be high. Thus, as long as the economy eventually returns to full employment, the long-run impact of the crisis chiefly rests on productivity growth in the years ahead. Chapter 10 discusses the prospects and importance of productivity in more detail.

Some research suggests financial crises may result in a slow growth pattern (International Monetary Fund 2009a), with substantial average

[12] IMF estimates are from International Monetary Fund (2009a). OECD estimates are from Organisation for Economic Co-operation and Development (2009b).

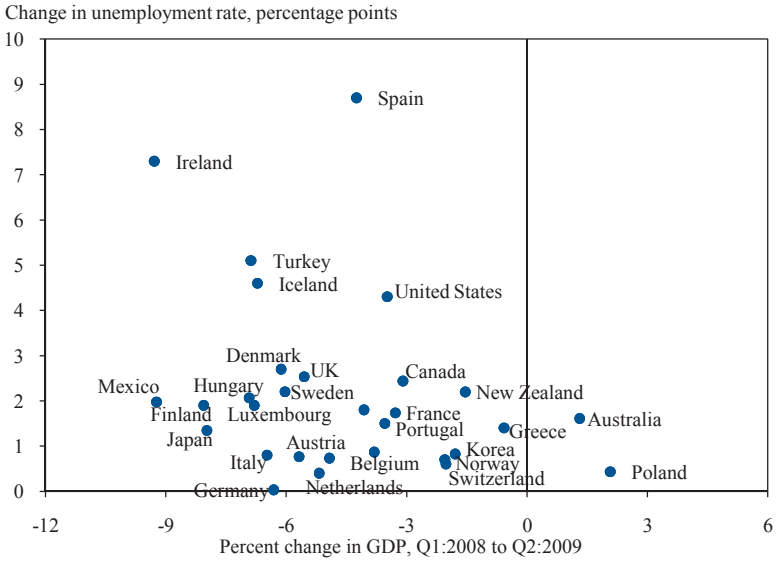
losses in the level of output in the years following a financial crisis. The same research, however, shows a wide variety of experiences following crises, with a substantial number of countries returning to or exceeding the pre-crisis trend level path of GDP. It is far too early to project the likely outcome of this recession and recovery, but there is hope that the aggressive policy responses and the potential for a sharp uptick in world trade—bouncing back with responsiveness similar in magnitude to its downturn—will return the path of GDP to previous trend levels in many economies.

Concerns about Unemployment. One reason for the great concern about the pace of growth after the recession is the current employment situation. What was a financial crisis and then a real economy and trade crisis has rapidly become a jobs crisis in many advanced economies. The OECD projects the average unemployment rate in OECD countries will have risen 2.3 percentage points from 2008 to 2009, with an average jobless rate of 8.2 percent in 2009. More worryingly, the OECD projects the group average will continue rising in 2010, and in some areas (such as the euro area) the jobless rate is expected to be even higher in 2011.

The United States has been an outlier in the extent to which the GDP contraction has turned into an employment contraction. Figure 3-14 shows the change in GDP and in the unemployment rate from the first quarter of 2008 to the second quarter of 2009. Typically, one would expect a line running from the upper left to the lower right because countries with small declines in GDP (or even increases) would have small increases in unemployment (lower right) and those with larger declines in GDP would have larger increases in unemployment (upper left). Countries broadly fit this pattern during the current crisis and recovery, but there are a number of aberrations. Germany saw a large contraction in GDP, and while growth has resumed, its one-year contraction was still sizable. Still, Germany's unemployment rate barely increased. In contrast, the United States suffered a relatively mild output contraction (for an OECD country), and yet it has had the largest jump in the unemployment rate outside of Iceland, Ireland, Spain, and Turkey, all of which had larger GDP declines.

There are several partial explanations for the large variation in the GDP-unemployment relationship across countries. The more flexible labor markets in the United States make the usual response of unemployment to output movements larger than in most other OECD countries; and, as discussed in Chapter 2, the rise in U.S. unemployment in the current episode has been unusually large given the output decline. Another factor is a policy response in some countries aimed at keeping current employees in current jobs. The extreme example of such a policy has been Germany's *Kurzarbeit* (short-time work) program, which subsidizes companies that put workers

Figure 3-14
OECD Countries: GDP and Unemployment



Sources: Organisation for Economic Co-Operation and Development, Quarterly National Accounts and Key Short-Term Economic Indicators; country sources.

on shorter shifts rather than firing them. The OECD estimates the German unemployment rate would be roughly 1 percentage point higher without the program. Because such programs benefit only those who already have jobs, they could hold down unemployment at the cost of a more rigid labor market. Labor market flexibility is generally seen as allowing lower unemployment on average over the course of the business cycle and as permitting a more efficient distribution of labor resources, thus enhancing productivity.

Global Imbalances in the Crisis

In addition to the unambiguous signs of problems in the U.S. economy going into the crisis, there were clear signals that the global economy was not well balanced. Global growth was strong from 2002 to 2007, but the growth was not well distributed around the world economy, with fast growth in some emerging markets and sluggish growth in some advanced economies. Further, that growth came with mounting imbalances in saving and borrowing across the world. U.S. saving was very low, which led to substantial borrowing from the rest of the world. Home price bubbles and overborrowing were not exclusive to the United States; the United Kingdom, Spain, and many other economies also borrowed extensively, helping inflate

asset prices in those economies. This borrowing was paired with very high saving in some countries, particularly in emerging Asia.

The extent to which the global imbalances were a cause of the crisis or represented a symptom of poor policy choices in different countries is a question of active debate (see Obstfeld and Rogoff 2009 for discussion). The current account (net borrowing from or lending to the rest of the world) can be defined as a country's saving minus its investment. Thus, some argue that forces in the rest of the world cannot be deterministic of a country's current account balance. A country saves or borrows based on its own choices. In this formulation, the imbalances were merely a symptom. In fact, some argued the imbalances were beneficial because savings were channeled away from inefficient financial markets in poor countries toward what were thought to be more efficient markets in rich countries. Conversely, some argue that the influx of global savings into the United States distorted incentives by keeping interest rates too low and led to overborrowing and asset bubbles. In this view, the imbalances played a leading role in the crisis.

The truth almost certainly lies somewhere in between. The influx of global savings into the United States did lower borrowing rates and encouraged more spending and less saving within the U.S. economy. This may have allowed the credit expansion and related asset price bubbles to continue longer than they could have otherwise. At the same time, even if the global savings in some sense led to U.S. borrowing, the failure of the financial system to use that borrowing productively and the failure of regulation to make sure risk was being treated appropriately were surely partly to blame for the crisis.

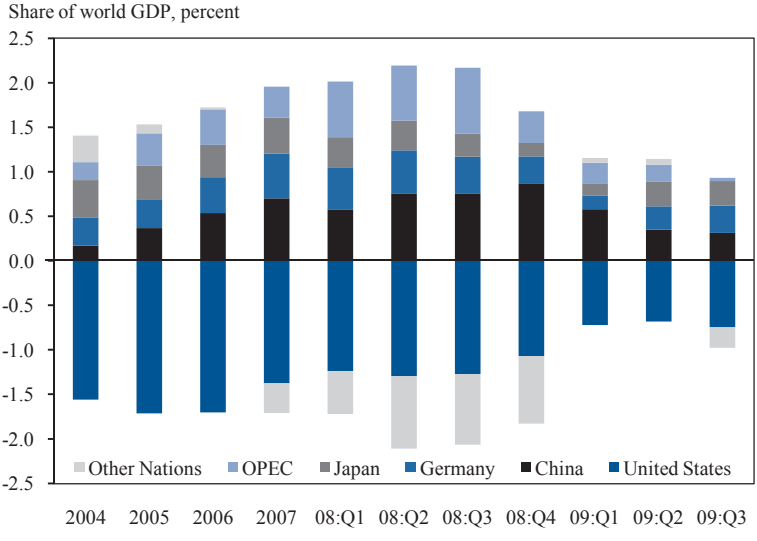
As the U.S. economy seeks to find a more sure footing and a growth path less dependent on borrowing and bubbles, world demand needs to be redistributed so that it is less dependent on the U.S. consumer and does not cause global imbalances to reappear and contribute to distortions in the economy. Fixing the imbalances can help provide more demand for the U.S. economy. But these imbalances also need to be treated as symptoms of deeper regulatory and policy failures. Fixing the imbalances alone will not prevent another crisis.

Since the onset of the crisis, the imbalances have partially unwound (the likely future path of the U.S. current account is discussed in more detail in Chapter 4). The U.S. current account deficit, which had built to over 6 percent of GDP in 2006, was on a downward path before the crisis struck in full force, falling to under 5 percent of GDP at the start of 2008. After the crisis hit, it fell below 3 percent of GDP in the first quarter of 2009. Major surplus countries—China, Germany, and Japan—have all seen a reduction in their current account surpluses from the highs of 2007. In all three

cases, the surpluses have stabilized at substantial levels (in the range of 3–5 percent of GDP), but they are notably down from their highs. One essential part of the response to the crisis has been the substantial fiscal stimulus implemented by these three countries, which has helped demand in these countries stay stronger than it otherwise would have been.

Figure 3-15, which shows current account imbalances scaled to world GDP, demonstrates how much of total world excess saving or borrowing is attributable to individual countries. As the figure makes clear, by 2005 and 2006, the United States was borrowing nearly 2 percent of world GDP, and by the end of 2008, China was lending nearly 1 percent of world GDP. During the crisis, the surpluses of OPEC (Organization of Petroleum Exporting Countries) countries, Japan, and Germany contracted, and the United States is now borrowing less than 1 percent of world GDP. China's surplus is also smaller than before the crisis, but China is still lending nearly 0.5 percent of world GDP, and OPEC surpluses may rise as well. But by the third quarter of 2009, the degree of imbalance was substantially lower than just a year earlier. There is hope that the short-run moves in these current account balances are not simply cyclical factors that will return quickly to

Figure 3-15
Current Account Deficits or Surpluses



Notes: Sample limited by data availability. In the figure, OPEC includes Ecuador, Iran, Kuwait, Saudi Arabia, and Venezuela; and Other Nations includes all other countries with quarterly current account data. Third quarter 2009 data for both OPEC and Other Nations were incomplete at the time of writing.
Sources: Country sources; CEA estimates.

former levels but rather that they represent a more sustained rebalancing of world demand.

Net export growth is often a key source of growth propelling a country out of a financial crisis. But in a global crisis, not every country can increase exports and decrease imports simultaneously. Someone must buy the products that are being sold, and the world's current accounts must balance out. Thus far, the crisis has come with a reduction in imbalances, with strong growth and smaller surpluses in many surplus countries. Whether these shifts become a permanent part of the world economy or policies and growth models revert to the pattern of the 2000s will be an important area for policy coordination.

Conclusion

The period from September 2008 to the end of 2009 will be remembered as a historic period in the world economy. The drops in GDP and trade may stand for many decades as the largest worldwide economic crisis since the Great Depression. In contrast to the Depression, however, the history of the period may also show how aggressive policy action and international coordination can help turn the world economy from the edge of disaster. The recovery is unsteady and, especially with regard to unemployment, incomplete, but compared with a year ago, the positive shift in trends in the world economy has been dramatic.