

## *Employment outlook: 2008–18*

# The U.S. economy to 2018: from recession to recovery

*Real GDP growth is projected to average 2.4 percent annually over the next decade, near its previous 10-year trend of 2.5 percent, while productivity growth is expected to slow; an increased personal savings rate, slower growth in personal consumption expenditures, rising medical expenses, and the continuation of the trade deficit also will characterize the coming decade*

Ian D. Wyatt  
and  
Kathryn J. Byun

**I**n the summer of 2009, U.S. payroll employment continued to fall as a result of the recession that began more than a year and a half earlier in December 2007. The recession has been one of the most severe since World War II, with the unemployment rate jumping from 4.7 percent in November 2007 to 10.2 percent in October 2009. However, as with other business cycles, the Bureau of Labor Statistics (BLS) projects that the economy will return to a path of long-run growth over the next decade.

Although the recession has had a short-run impact on the economy, the BLS expects that the accompanying slowdown in the growth of both productivity and the labor force also will have an important long-run impact on the economy over the projection period. During the next decade, the massive baby-boomer generation will be leaving the labor force, moving from the prime working-age years to retirement age. As a result, the BLS projects a 0.8-percent average annual growth of the labor force from 2008 to 2018, 0.3 percentage point lower than the historical rate of 1.1 percent posted from 1998 to 2008. Productivity, as measured by output per hour, is projected to grow at 1.8 percent annually during 2008–18,

lower than the exceptionally high 2.6-percent growth from 1998 to 2008, but consistent with average annual growth since 2004 and the 1.7-percent growth rate between 1988 and 1998. These levels of productivity and labor force growth contribute to BLS projections of real growth in the U.S. gross domestic product (GDP) from \$11.7 trillion in 2008 to \$14.7 trillion in 2018, an annual growth rate of 2.4 percent over the 2008–18 period.<sup>1</sup>

As regards employment prospects in the next decade, household employment is projected to increase by about 13.1 million between 2008 and 2018, less than the increase of 13.9 million across the 1998–2008 decade. This employment projection is accompanied by an assumed unemployment rate of 5.1 percent in 2018, 0.7 percentage point lower than the actual rate in 2008.

International trade—specifically, exports and imports—has increased by about half as a share of nominal GDP over the last 20 years. The BLS projects international trade to continue growing faster than GDP, with 3.9-percent average annual growth in exports, and 4.2-percent growth in imports, over the projection horizon. Personal consumption expenditures are expected to exhibit slower growth—2.5

Ian D. Wyatt and Kathryn J. Byun are economists in the Division of Industry Employment Projections, Office of Occupational Statistics and Employment Projections, Bureau of Labor Statistics. E-mail: wyatt.ian@bls.gov and byun.kathryn@bls.gov

percent annually from 2008 to 2018, in comparison to the 3.0-percent average annual growth experienced over the previous two decades. Business spending on equipment and software is anticipated to grow above the trend of the previous decade. Investment in residential construction is expected to return to long-run trend levels. Growing demand for Medicare and Social Security is expected to put mounting stress on the Federal Government's spending, contributing to a projected budget deficit approaching \$900 billion in 2018, accounting for 4.3 percent of nominal GDP.

It is important to note that creating complex economic projections requires time and many steps. The projections presented in this article were completed in midsummer 2009, and by the time the results are published, data will exist and events will have occurred that were unknown at the time the projections were prepared.<sup>2</sup>

The article begins with a discussion of the macroeconomic model and the major assumptions underlying the aggregate economic projections. The discussion then moves to projections of GDP from the demand side, including personal consumption expenditures, business investment, foreign trade, and government spending. There then follows an examination of GDP from the income side, after which projections of employment and productivity are discussed. The last section addresses the uncertain factors that may affect the economic projection. A separate box on page 10 considers how the recession that began in December 2007 affected the various parts of the 2008–18 projections.

## The macroeconomic model

The projections that follow are based on a macroeconomic model (macromodel) created by Macroeconomic Advisers.<sup>3</sup> The model provides a theoretical framework for the projections, maintaining a balance between different economic variables. The company's quarterly model comprises 744 variables in 543 equations descriptive of the U.S. economy; 201 of the variables are exogenous—variables whose values must be provided to the model to calculate a solution for a given period. Among the exogenous variables, only a relatively small number have a major impact on the long-term projections of the value of GDP and its demand makeup, as well as the level of employment necessary to produce that value of GDP. Critical exogenous variables include monetary and fiscal policy, future energy prices, and demographics (including population growth). The key BLS assumptions are listed in table 1.

Beyond the 201 exogenous variables are the remain-

ing 543 endogenous variables. The values of endogenous variables are calculated within the model, resulting from the 543 descriptive equations. In addition, the projections generally are prepared with some selected variables, such as the unemployment rate, the labor productivity growth rate, and the level and growth of both imports and exports, more carefully evaluated than other variables in the model. Because these selected variables are key components of the model, setting target ranges for them, in consultation with other analysts, helps BLS economists define the parameters around which the aggregate projections are developed.

## Major assumptions

*Monetary policy assumptions.* For the purpose of developing its projections, the BLS assumes that, in the long term, the Federal Reserve Board (hereafter, simply, the Fed) will set monetary policy to fulfill its dual mandate: keeping inflation within a “comfort zone” and achieving and maintaining full employment.<sup>4</sup> As the Federal funds (Fed funds) rate<sup>5</sup> rises over the course of the projection period and returns to more normal levels, the spread between that rate and the 10-year Treasury note yield is projected to return to levels consistent with a strong, low-inflation economy. The spread is projected to be about 1.0 percent in 2018. The rate is projected to average 3.9 percent in 2018, and the yield on the 10-year Treasury note is projected to average 4.9 percent that year.<sup>6</sup>

Over the past several years, the Fed has moved from a conventional monetary policy in which it tightens and loosens interest rates in response to economic growth cycles in the economy to far less conventional policies in response to unstable financial markets. In 2004, as the economy expanded at a healthy clip, the Fed began to move toward a more neutral stance and capped a 2-year credit-tightening campaign with 17 consecutive quarter-point rate hikes until the Fed funds rate reached 5.25 percent. In September 2007, because of growing market uncertainty, the Fed cut the target funds rate by half a percentage point, to 4.75 percent, in order to stabilize financial markets. Then, in October 2007, the Fed again lowered the funds rate by a quarter of a percentage point, to 4.5 percent, in hopes of warding off a possible economic slowdown.<sup>7</sup>

Throughout 2008 the Fed cut the funds rate, and by December it reached 0.00–0.25 percent.<sup>8</sup> The last time the rate fell below 1.00 percent was in the 1950s. During most previous recessions, the Fed was concerned that rate cuts could increase inflation considerably. However,

## BLS projections and the recession

The recession that began in December 2007 affected the BLS projections in a number of ways. However, because of the long time horizon of the projections and the nature of projecting a full-employment economy, the impact was smaller than some might expect. In creating its projections, the BLS analyzes long-run economic trends and assumes unemployment levels consistent with a full-employment economy. The BLS does *not* attempt to project turning points in the business cycle. The impact of the recession was unevenly distributed throughout the economy, with some sectors experiencing large declines while others remained relatively unscathed. Focusing on three key economic variables—inflation, unemployment, and new home starts—provides some insight into how the recession affected the projections.

The BLS projection of inflation was affected by the recession. In the 2006–16 projections, the average annual rate of change of inflation in the GDP price index was 2.7 percent. In the 2008–18 projections, the average annual rate is 1.9 percent. During the development of the projections, unemployment was well above inflationary levels and was accompanied by low levels of capacity utilization. Given those circumstances, the BLS expected that inflation would be below long-run trends over the first few years of the projection period, before returning to the Federal Reserve’s comfort zone of around 2.0 percent. Low levels of inflation in the early years of the coming decade are anticipated to reduce the average level over the entire 10 years.

Over the long run, labor markets normally clear and unemployment returns to levels associated with full employment. The unemployment rate associated with full employment is thought to be around 5.0 percent. In a full-employment economy, the number of jobs is driven primarily by the supply of workers. Although the average unemployment rate over the 2008–18 period is expected to reflect the unemployment rate associated with the recession, the BLS assumes that labor market conditions will be consistent with an economy that is at full employment by 2018. Therefore, the number of jobs projected in 2018 is influenced chiefly by the growth in the labor force.

A good example of how the economy moved off of long-term trends in 2008 because of the recession is seen in new-home starts, which were about 900 thousand in 2008. The BLS projects new-home starts to be 1.7 million in 2018. The resultant fast average annual growth of 6.6 percent for the category seems quite dramatic. In reality, however, the projection of 1.7 million new-home starts is a return to long-run trends and is quite similar to the 1.6 million new-home starts in 1998. In this case, the growth rate over the course of the projections is much higher because of the low level of construction in 2008 and the level of new-home starts is actually quite similar to historical levels.

For all three variables, the levels in 2018 were generally not affected by the recession. However, the growth rates of inflation and home starts over the course of the projection period were altered by the recession.

by late 2008, the Agency thought that there was more of a risk of deflation, not inflation.

With the Fed funds rate at nearly zero percent, the Fed pursued a number of policies to stimulate the economy and add liquidity to the credit markets. These policies included increasing lending to banks,<sup>9</sup> providing funding for the commercial paper market and money market funds,<sup>10</sup> and purchasing mortgage-backed securities.<sup>11</sup> With the funds rate falling to near zero, the spread between 10-year Treasury note yields and the funds rate widened from about 1.0 percent in early 2008<sup>12</sup> to around 3.3 percent by late August 2009.<sup>13</sup> In the long run, the projections assume that the Fed will return to a more conventional monetary policy, returning the funds rate to levels similar to those existing before the recession and exiting asset markets, such as commercial paper and mortgage-backed securities, that the Agency avoided prior to the financial crisis.

*Fiscal policy assumptions.* Fiscal policy describes two

Federal Government actions: spending and tax policy. Assumptions about Government outlays, or spending, cover several areas and are based on current Government policies. The BLS expects real gross defense investments to be affected by two conflicting trends: winding down the war in Iraq will reduce investments, but the need to update aging equipment, replace equipment worn out by the wars in Iraq and Afghanistan, and fight and defend against terrorism will require considerable investment dollars. Also, mostly because of the coming retirement of baby boomers, as well as continued growth in health care costs, rapid growth is assumed in the Federal Government’s Medicare and Social Security programs.

The tax-related assumptions, such as the effective marginal tax rate, which measures the tax rate applied to an extra dollar in income, affect Federal Government revenues. The effective marginal personal tax rates on interest and wages is held at the same levels in 2018 as in 2008. The long-term capital-gains tax rate was cut to 15.0 percent in 2003 and is assumed to remain unchanged through 2018. The maxi-

**Table 1. Major assumptions affecting aggregate projections, 1988, 1998, 2008, and projected 2018**

Exogenous variables	Billions of chained 2000 dollars (unless otherwise noted)				Average annual rate of change		
	1988	1998	2008	2018	1988–98	1998–2008	2008–18
Monetary policy related:							
Federal funds rate (percent).....	7.57	5.35	1.93	3.88	-3.4	-9.7	7.2
Excess reserves (billions of current dollars).....	1.00	1.50	139.24	3.55	4.1	( <sup>1</sup> )	-30.7
Ninety-day Treasury bill rate (percent).....	6.67	4.78	1.37	3.72	-3.3	-11.8	10.5
Yields on 10-year Treasury notes (percent).....	8.85	5.26	3.67	4.90	-5.1	-3.6	2.9
Fiscal policy, tax related:							
Effective Federal marginal tax rate on wages and salaries (percent).....	20.6	23.3	21.4	21.4	1.2	-8	.0
Effective Federal marginal tax rate on interest income (percent).....	20.5	25.3	23.0	23.0	2.1	-9	.0
Effective Federal marginal tax rate on dividend income (percent).....	22.9	28.9	22.5	22.5	2.4	-2.5	.0
Effective Federal marginal tax rate on capital gains (percent).....	25.7	18.8	15.0	15.0	-3.1	-2.2	.0
Maximum Federal corporate rate (percent).....	34.0	35.0	35.0	35.0	.3	.0	.0
Fiscal policy, Government outlays related:							
Defense Intermediate goods and services purchased.....	158.2	118.6	237.6	303.9	-2.8	7.2	2.5
Defense gross investment.....	70.3	45.6	88.6	106.3	-4.2	6.9	1.8
Nondefense intermediate goods and services purchased.....	44.5	61.5	94.7	81.3	3.3	4.4	-1.5
Nondefense gross investment.....	19.9	31.2	42.7	44.2	4.6	3.2	.4
Federal grants-in-aid, Medicaid and other (billions of current dollars).....	91.6	212.8	388.3	595.2	8.8	6.2	4.4
Federal transfer payments, Medicare (billions of current dollars).....	86.3	205.8	452.7	822.5	9.1	8.2	6.2
Energy related:							
Refiners' acquisition cost of imported oil (nominal dollars per barrel).....	14.62	12.10	92.32	131.66	-1.9	22.5	3.6
Domestic share of U.S. crude-oil acquisitions (as percentage of total acquisitions).....	61.4	41.8	33.7	43.8	-3.8	-2.1	2.6
Domestic oil product.....	36.3	31.5	28.5	25.8	-1.4	-1.0	-1.0
Demographic related:							
Total population including overseas Armed Forces (millions).....	244.8	276.2	305.0	335.4	1.2	1.0	1.0
Population aged 16 years and older (millions).....	184.6	205.2	233.8	258.9	1.1	1.3	1.0

<sup>1</sup> Data not computable.

Analysis, Energy Information Administration, Bureau of Census; projected data—Bureau of Labor Statistics, Energy Information Administration, Census Bureau.

SOURCE: Historical data—Federal Reserve Board, Bureau of Economic

maximum Federal corporate tax rate has been left unchanged at 35.0 percent since 1993 and also is assumed to hold at the same level throughout the entire projection period.

*Demographic assumptions.* Demographic factors play a key role in determining the growth potential of the economy over the long term. The growth rate of the U.S. population, together with changes in the composition of the population, affects the labor force, the unemployment rate, housing demand, and many categories of spending. BLS projections in these areas are based on the Census Bureau's middle-series population projection, which in

turn is based on the mid-level projection for each of the demographic components.<sup>14</sup> The Census Bureau projects the U.S. population expanding at an average rate of 1.0 percent annually between 2008 and 2018, growing from 305.0 million to 335.4 million.

Growth in the older age groups will be strong as the baby boomers age. The 77 million baby boomers, who currently make up a quarter of the Nation's population, will have a variety of effects on the labor force and on labor force participation rates. The BLS prepares labor force and participation rate projections for detailed age, sex, racial, and ethnic groups. Presented elsewhere in this issue,<sup>15</sup>

these detailed projections are aggregated to produce the estimate of the size of the total labor force. Overall, the BLS expects the labor force to grow from 154.3 million in 2008 to 166.9 million in 2018, representing an annual growth rate of 0.8 percent over the projection period.

*Unemployment assumptions.* Under the assumption of long-term economic stability, the BLS model assumes that during the 2008–18 period the economy will return to levels of employment that existed prior to the recent recession. The unemployment rate is assumed to be 5.1 percent in 2018 in the macroeconomic model.

The civilian unemployment rate fell from 7.5 percent in 1992 to 4.0 percent in 2000, the lowest level in 30 years. Over the 1992–2000 period, nonfarm payroll employment expanded by about 24.2 million (seasonally adjusted). In February 2001, payroll employment peaked at 132.5 million jobs. In March 2001, a business-cycle peak marked the end of an expansion and beginning of a recession; the country then sustained about 3 years of declines in payroll employment. After payroll employment bottomed at 129.9 million jobs in 2003, it began to grow again and reached 138.2 million jobs in December 2007. Then, when the recession began at that time, payrolls declined sharply, dropping to 131.3 million jobs in August 2009. Since the December 2007 beginning of the recession, the unemployment rate has risen from 4.9 percent to 10.2 percent in October 2009—the highest rate since the early 1980s. On the basis of the labor force projections and a target GDP growth rate, the economy is expected to be at full employment with the earlier mentioned assumed unemployment rate of 5.1 percent in 2018.

*Inflation assumptions.* Inflation was fairly low from the late 1990s until mid-2004, after which it increased, partly in response to rising housing, health care, and commodity costs. In 2008, inflation slowed again as the U.S. economic slowdown became global. Over the long run, as mentioned earlier, the BLS assumes that the Fed intends to keep inflation within a target range. As measured by the chain-weighted GDP price index, inflation averaged 2.4 percent over the 1998–2008 period. With low inflationary expectations over the near term, the inflation rate, as measured by the GDP price index, is expected to pick up moderately later in the 2008–18 projection period, to reach an overall average annual growth rate of 1.9 percent over the period.

*Energy assumptions.* Oil price projections in the macro-model come from the Department of Energy's Energy

Information Administration's projections.<sup>16</sup> Given no major supply shocks, continued growth in global demand, and higher production costs associated with unconventional liquid fuels, oil prices are projected to increase to around \$132 per barrel in nominal dollars in 2018.

Since the recent economic downturn became global in scope, both the demand for oil and the price of oil have fallen. The average monthly price of a barrel of oil peaked at \$133.88 in June 2008, bottomed at \$39.09 in February 2009, and recovered to \$75.72 in October 2009.<sup>17</sup> Although, obviously, prices are quite volatile in the short term, as evidenced by the February 2009 price being less than one-third the June 2008 price, long-run trends in the consumption and production of oil drive long-run price changes.

Global economic growth, particularly in large emerging markets, is expected to increase global oil demand. Over the long term, the Energy Information Administration projects global oil consumption to rise at an annual rate of 1.4 percent.

The production of unconventional liquid fuels<sup>18</sup> is expected to be an increasing share of global oil production, thereby increasing price projections because unconventional liquid fuels normally are more expensive to produce than conventional liquid fuels.<sup>19</sup> The level of unconventional liquid fuel production depends upon technological advances and how competitive the price of the fuel is with the price of conventional liquid fuels.<sup>20</sup>

## **GDP from the demand side**

The U.S. economy will face some important challenges over the 2008–18 period, including the Nation's aging population, growing demand for medical care, and lingering effects of the recession. After a major fall in the stock market and the bursting of the housing market bubble between 2007 and 2009, consumers are expected to be more risk averse from 2008 to 2018, saving more and increasing their spending at a slower pace than in 1998–2008. Recovery in the housing market is projected to be an important driver in GDP growth over the coming decade. The BLS also expects continued expansion of both imports and exports, although at a slower rate than that exhibited over the past 10 years. Import growth is anticipated to outpace export growth, resulting in a continued trade deficit. Government expenditures, projected to slow somewhat as recession-related spending trails off, will face challenges in controlling the growth of medical and Social Security costs.

In sum, GDP is projected to grow by 2.4 percent per year between 2008 and 2018, only a slight decline from

the 2.5-percent annual growth from 1998 to 2008, but slower than the 3.0-percent annual growth exhibited from 1988 to 1998. (See table 2.) GDP per capita provides an alternative measure for assessing economic performance. Whereas GDP indicates the total output of the economy, GDP per capita measures the per-person output. The BLS expects growth in GDP per capita also to slow slightly, from 1.5 percent annually, on average, from 1998 to 2008 to 1.4 percent from 2008 to 2018.

*Personal consumption expenditures.* Personal consumption expenditures—which account for more than two-thirds of GDP—posted impressive gains over the past two decades. Growth in consumer expenditures in the earlier years of this period mirrored growth in the overall economy, while increases in the latter years were related to the bubble in the housing market. The steady decline in the savings rate over these two decades also contributed to growth. The BLS expects that the recent decline in home prices, substantial swings in the stock market over the previous decade, and the impact of the recession will all contribute to a slowing of growth in consumer spending from 3.0 percent annu-

ally over 1988–2008 to 2.5 percent per year from 2008 to 2018. Although spending on services is expected to maintain its growth rate from the previous decade, purchases of goods are anticipated to slow considerably.

One way to study consumer spending patterns is to examine their contribution to the percentage change in GDP. Consumer purchases accounted for 2.0 percent of the 3.0 percent of GDP growth from 1988 to 1998, or 68.0 percent of the expansion during that period. During the next decade, from 1998 to 2008, consumption accounted for 2.1 percent of the 2.5-percent annual GDP growth, or 83.8 percent of the economic advancement. Over the projection horizon, consumers are anticipated to change their purchases in proportion to gains in real disposable income, rather than relying upon increases in the value of their assets, such as home equity and stock market wealth. Therefore, increases in consumer expenditures are expected to contribute 1.8 percent of the 2.4-percent GDP growth, or 74.3 percent of economic expansion, from 2008 to 2018.

From the mid-1960s through 1980, personal consumption expenditures accounted for between 61.0 percent and 63.1 percent of nominal GDP. Over the years

**Table 2. Real gross domestic product, by major demand category, 1988, 1998, 2008, and projected 2018**

Category	Billions of chained 2000 dollars				Average annual rate of change			Contribution to percent change in real GDP		
	1988	1998	2008	2018	1988–98	1998–2008	2008–18	1988–98	1998–2008	2008–18
Gross domestic product.....	\$6,742.7	\$9,066.9	\$11,652.0	\$14,741.4	3.0	2.5	2.4	3.0	2.5	2.4
Personal consumption expenditures.....	4,547.0	6,125.9	8,272.1	10,577.3	3.0	3.0	2.5	2.0	2.1	1.8
Gross private domestic investment.....	890.5	1,524.1	1,689.1	2,474.5	5.5	1.0	3.9	.9	.2	.6
Exports.....	454.6	966.5	1,514.1	2,213.3	7.8	4.6	3.9	.8	.5	.5
Imports <sup>1</sup> .....	561.4	1,170.3	1,904.3	2,866.1	7.6	5.0	4.2	–.9	–.7	–.7
Federal defense consumption expenditures and gross investment.....	482.0	365.3	538.1	644.0	–2.7	3.9	1.8	–.2	.2	.1
Federal nondefense consumption expenditures and gross investment.....	152.3	196.0	259.5	282.6	2.6	2.8	.9	.1	.1	.0
State and local consumption expenditures and gross investment.....	806.6	1,063.0	1,273.0	1,456.5	2.8	1.8	1.4	.3	.2	.2
Residual <sup>2</sup> .....	–28.9	–3.6	10.3	–40.6	...	...	...	...	...	...
Addendum.....										
GDP per capita, chained 2000 dollars.....	27,544	32,821	38,209	43,952	1.8	1.5	1.4	...	...	...

<sup>1</sup> Imports are subtracted from the other components of GDP because imports are not produced in the United States.

ports, less other components.

<sup>2</sup> The residual is calculated as real gross domestic product, plus im-

SOURCE: Historical data—Bureau of Economic Analysis; projected data—Bureau of Labor Statistics.

that followed, consumers tapered off their savings rate from around 10 percent in the early 1980s to less than 1 percent from 2005 to 2007. Consequently, consumer purchases rose steadily, from 65.7 percent of GDP in 1988, to 67.2 percent of GDP in 1998, and to 70.5 percent in 2008. (See table 3.) Slower growth in consumer purchases is projected to end this trend over the coming decade, with consumer expenditures edging downward to 70.2 percent of GDP in 2018.

Consumption expenditures are divided into three major categories: services, nondurable goods, and durable goods. Services, the largest category, grew 2.7 percent

annually from 1998 to 2008 and are projected to maintain this growth rate from 2008 to 2018. (See table 4.) Medical services have been growing faster than other service categories. As baby boomers reach retirement age and technological advances persist, demand and costs for health care are expected to continue their rapid ascent. A number of factors, however, are expected to limit this growth, including budgetary constraints by Federal, State, and local governments, an increase in outpatient care and home health services, integrated delivery of care, and the elimination of unnecessary procedures. Therefore, the BLS projects that medical expenditures will grow 3.6 percent

**Table 3. Nominal gross domestic product, by major demand category, 1988, 1998, 2008, and projected 2018**

Category	Billions of current dollars				Percent distribution			
	1988	1998	2008	2018	1988	1998	2008	2018
Gross domestic product.....	\$5,103.8	\$8,747.0	\$14,264.6	\$21,786.0	100.0	100.0	100.0	100.0
Personal consumption expenditures.....	3,353.6	5,879.5	10,057.9	15,293.5	65.7	67.2	70.5	70.2
Gross private domestic investment.....	821.6	1,509.1	1,993.5	3,431.2	16.1	17.3	14.0	15.7
Exports.....	444.1	955.9	1,859.4	3,037.0	8.7	10.9	13.0	13.9
Imports <sup>1</sup> .....	554.5	1,115.9	2,528.6	4,250.1	10.9	12.8	17.7	19.5
Federal defense consumption expenditures and gross investment.....	354.9	345.7	734.9	1,067.5	7.0	4.0	5.2	4.9
Federal nondefense consumption expenditures and gross investment.....	107.4	184.7	337.0	468.3	2.1	2.1	2.4	2.1
State and local consumption expenditures and gross investment.....	576.7	987.8	1,810.4	2,738.6	11.3	11.3	12.7	12.6

<sup>1</sup> Imports are subtracted from the other components of GDP because imports are not produced in the United States.

SOURCE: Historical data—Bureau of Economic Analysis; projected data—Bureau of Labor Statistics.

**Table 4. Personal consumption expenditures, 1988, 1998, 2008, and projected 2018**

Category	Billions of chained 2000 dollars				Average annual rate of change		
	1988	1998	2008	2018	1988–98	1998–2008	2008–18
Personal consumption expenditures.....	\$4,547.0	\$6,125.9	\$8,272.1	\$10,577.3	3.0	3.0	2.5
Durable goods.....	445.0	720.3	1,188.5	1,858.8	4.9	5.1	4.6
Motor vehicles and parts.....	260.4	338.9	387.2	561.3	2.7	1.3	3.8
Other durable goods.....	198.4	381.6	828.5	1,335.0	6.8	8.1	4.9
Nondurable goods.....	1,421.8	1,794.4	2,378.4	2,775.0	2.4	2.9	1.6
Services.....	2,691.4	3,614.9	4,714.2	6,137.2	3.0	2.7	2.7
Housing services.....	763.1	948.9	1,182.5	1,427.5	2.2	2.2	1.9
Medical services.....	739.5	970.6	1,374.8	1,950.0	2.8	3.5	3.6
Other services.....	1,190.4	1,695.9	2,156.1	2,751.3	3.6	2.4	2.5
Residual <sup>1</sup> .....	-26.5	-4.5	-35.3	-222.7	...	...	...

<sup>1</sup> The residual is the difference of the first line and the sum of the most detailed lines for each first-level subcategory.

SOURCE: Historical data—Bureau of Economic Analysis; projected data—Bureau of Labor Statistics.

annually from 2008 to 2018, nearly equivalent to the 3.5-percent annual growth from 1998 to 2008.

Nondurable goods include products with a life expectancy of less than 3 years, such as food, clothing, and gasoline. Demand for these types of goods tends to be less sensitive to income changes than demand for durable goods. As consumers' disposable income grew, purchases of nondurable goods increased by 2.4 percent annually from 1988 to 1998 and by 2.9 percent annually from 1998 to 2008, much more slowly than growth in demand for durable goods. Expecting consumers to trim their spending over the coming decade, the BLS projects that growth in demand for nondurable goods will slow to 1.6 percent annually between 2008 and 2018.

The macromodel breaks out purchases of durable goods into purchases of motor vehicles and purchases of other durable goods. The latter category has grown faster than any other consumption category over the past two decades, increasing 6.8 percent annually, on average, from 1988 to 1998 and 8.1 percent per year from 1998 to 2008. These goods, which include such big-ticket items as appliances, computers, video and audio goods, and furniture, need to be replaced less frequently than nondurable goods. Historically, this sector has exhibited large swings around the business cycle, indicating that purchases of durable goods may be more flexible than other consumption categories. Therefore, the BLS anticipates that the projected slowdown in overall consumer spending growth will affect this category, resulting in substantially slower growth of 4.9 percent annually over the 2008–18 period.

Sales of cars and light trucks first reached 16 million in 1986, but did not return to that level again for 13 years. In order to increase sales, the motor vehicle industry offered unprecedented sales incentives. Buyers responded, and purchases reached a record 17.3 million units in 2000. Continued incentives and the easing of credit allowed sales to stay above 16 million through 2007. The subsequent downturn in economic conditions, along with stricter lending standards, contributed to sales declining to 13.1 million units in 2008, the lowest level since 1992. The BLS expects that technological improvements in motor vehicles, coupled with increased savings by consumers, will lead to individuals holding onto their vehicles for a longer time. Sales are therefore projected to pick up to 14.4 million units in 2018, but are not anticipated to reach the levels exhibited in the previous decade.

*Nonresidential investment.* As theory holds, nonresidential investment was a lagging indicator of the 2008 recession. Demand for nonresidential investment at first

appeared somewhat resilient, but then slowed considerably from mid-2008 through mid-2009. As the recession comes to an end, demand is expected to return to the long-term-trend level. Investment in computers and software is anticipated to contribute substantially to this growth, while demand for nonresidential construction is expected to slow. In total, the BLS anticipates that nonresidential investment will grow by 3.0 percent per year from 2008 to 2018, about the same as the 3.1-percent annual growth exhibited from 1998 to 2008. (See table 5.)

Within nonresidential investment, demand for equipment and software has grown more quickly in recent history than demand for structures. From 1988 to 1998, equipment and software posted an 8.5-percent annual growth rate. Despite the bursting of the “dot-com” bubble and the resulting 2001 recession, business investment in equipment and software maintained an overall healthy average annual growth rate of 3.5 percent from 1998 to 2008. The sector is projected to grow at 4.3 percent annually from 2008 through 2018, slightly faster than it grew the previous decade. Demand for computers and software is expected to contribute the majority of this growth as the category expands at 8.0 percent annually over 2008–18. A number of factors are anticipated to contribute to this continuation of growth, including increasing development of Internet and intranet sites, the adoption of e-prescribing and electronic health records, the need for computer security, and growing demand for compatibility with mobile technologies.

The “dot-com” bubble and tax incentives of the late 1990s led to an excess supply of office buildings, dampening demand for nonresidential structures for some time. The housing boom during the early to mid-2000s may have contributed further to pulling construction projects toward the more profitable residential sector. After housing starts peaked in 2005, nonresidential construction posted increases, even during the recession year of 2008. The BLS projects that investment in nonresidential structures will decline slightly, to 0.7-percent annual growth from 2008 to 2018, from a growth rate of 1.4 percent annually the previous decade. As the market for residential construction returns to its historical growth pattern, demand for nonresidential structures is anticipated to slow slightly. However, continued demand for nursing homes, medical treatment facilities, and educational structures is expected to facilitate some growth.

*Residential investment.* Many economic trends contributed to the formation of a bubble in the housing market in the early to mid-2000s, including the securitizing of

**Table 5. Gross private domestic investment, 1988, 1998, 2008, and projected 2018**

Category	Billions of chained 2000 dollars				Average annual rate of change		
	1988	1998	2008	2018	1988-98	1998-2008	2008-18
Gross private domestic investment.....	\$890.5	\$1,524.1	\$1,689.1	\$2,474.5	5.5	1.0	3.9
Fixed nonresidential.....	560.9	1,037.8	1,405.4	1,887.5	6.3	3.1	3.0
Equipment and software.....	330.7	745.6	1,047.0	1,599.7	8.5	3.5	4.3
Computers and software.....	24.9	186.1	464.0	1,002.7	22.3	9.6	8.0
Other equipment.....	356.4	561.4	615.7	766.9	4.6	.9	2.2
Structures.....	265.9	294.5	338.8	363.6	1.0	1.4	.7
Fixed residential structures.....	337.4	418.3	359.5	592.9	2.2	-1.5	5.1
Single family.....	174.7	218.1	136.0	281.4	2.2	-4.6	7.5
Multifamily.....	30.8	26.7	31.6	48.7	-1.4	1.7	4.4
Other.....	131.6	173.4	195.2	266.3	2.8	1.2	3.2
Change in business inventories.....	20.3	72.6	-29.0	46.1	13.6	( <sup>1</sup> )	( <sup>1</sup> )
Residual <sup>2</sup> .....	-114.1	-8.7	-63.1	-301.2	...	...	...

<sup>1</sup> Data not computable.

<sup>2</sup> The residual is the difference of the first line and the sum of the most detailed lines for each first-level subcategory.

SOURCE: Historical data—Bureau of Economic Analysis; projected data—Bureau of Labor Statistics.

mortgages (which helped sustain a large amount of available credit), record low mortgage rates, and lenient lending requirements, resulting in an upsurge in subprime mortgages. As prices reached unsustainable levels, the bubble started to show the first signs of weakening in 2006, when private housing starts declined by 12.6 percent. Soon thereafter, a severe decline in the stock market, tighter lending requirements, and general fear due to the recession put additional stress on home sales and prices.

In 2008, investment in residential construction fell to \$359.5 billion, the lowest level since 1995. Sales plunged by nearly 40 percent from their 2005 peak of \$595.4 billion. Moreover, in 2008 private housing starts fell to 900,000, the lowest level since at least 1966. Consequently, demand for fixed residential structures declined by 1.5 percent annually, on average, from 1998 to 2008.<sup>21</sup>

Investment in the housing market generally is driven by changing demographics. In the bubble years, however, the demand stemmed from other sources, including rapid price appreciation and an easing of credit requirements. Therefore, the BLS expects that, as excess supply from the bubble period clears and consumer confidence in the housing market returns, investment in residential construction will return to the long-run-trend level by 2018. In order to account for the low starting point in 2008, investment in residential structures is projected to grow by 5.1 percent

annually between 2008 and 2018 and reach \$592.9 billion, not quite the peak exhibited in 2005. Private housing starts are anticipated to recover to 1.7 million in 2018, near the 2002 level.

Within residential construction, single-family structures were the most affected by the housing bubble. In 2008, investment in single-family homes fell to their lowest point since 1991, resulting in an average annual decline of 4.6 percent from 1998 to 2008. Construction of single-family homes is projected to grow by an average of 7.5 percent annually from 2008 to 2018. Demand in 2018, however, is anticipated to be roughly equal to the 2003 level, 13.7 percent lower than the peak in 2005.

Gross private domestic investment, in its entirety, including nonresidential and residential investment, is anticipated to account for 15.7 percent of overall nominal GDP in 2018, an increase from 14.0 percent in 2008, but lower than the category's 17.3-percent contribution in 1998. (See table 3.) BLS projections indicate that real business investment will grow at 3.9 percent annually over the 2008-18 period, much faster than during 1998-2008, when it increased by only 1.0 percent annually. Business investment is expected to be an important factor in economic growth over the next decade, contributing an anticipated 0.6 percentage point, on average, to the 2.4-percent GDP growth, or one-quarter of the expansion.

Much of the progress is expected to be attributable to a resumption of growth in residential construction as the housing market rebounds.

*Foreign trade in goods and services and the current account.* The BLS projects that the United States will become increasingly integrated with the rest of the world in the trade of goods and services over the projection period. Increased savings and a slowdown in consumption expenditures are anticipated to continue to support slower, but still relatively strong, import growth. Global demand for U.S. exports is expected to grow over the projection period, although at a slower pace than in the previous two decades. The BLS expects that, in order to minimize the impact of the recession and aid in the recovery, the Nation will continue to import more than it exports, relying upon foreign support to fund this debt.

Because exports have not grown as much as imports, the U.S. trade balance has been in a deficit for quite some time now. In real 2000 dollars, the United States has maintained a negative trade balance every year since at least the mid-1960s, except for 1980 and 1981. Even in nominal terms, the trade balance has been negative every year since 1976. In nominal terms, the deficit grew steadily from \$27.5 billion dollars in 1991 to \$757.3 billion in 2006. With the onset of the recession, it receded to \$669.2 billion in 2008. The BLS projects that the trade deficit will reach \$1.2 trillion in 2018. The deficit also has been increasing steadily in real dollars since 1991, except for a small decline in 2005 and more substantial declines in 2007 and 2008. In real dollars, the trade deficit is expected to reach \$652.8 billion in 2018, about \$37 billion higher than its peak in 2006.

As a share of GDP, nominal exports increased from 8.7 percent in 1988 to 10.9 percent in 1998 and 13.0 percent in 2008. Meanwhile, imports also grew as a share of GDP, from 10.9 percent in 1988, to 12.8 percent in 1998, to 17.7 percent in 2008. (See table 3.) Over the projection period, the BLS expects the world to continue along a path of increased trade. Both imports and exports are projected to grow as a proportion of GDP, but at a slower pace than their growth during the past two decades. The BLS projects that exports will amount to 13.9 percent of GDP, and imports will make up 19.5 percent, in 2018.

Exports expanded from \$966.5 billion (in real 2000 dollars) in 1998 to \$1.5 trillion by 2008, exhibiting 4.6-percent average annual growth. (See table 6.) Demand for exports is projected to slow to 3.9 percent annually from 2008 to 2018, with the level of exports reaching \$2.2 trillion by 2018. Over this time, exports of services are ex-

pected to grow considerably faster than exports of goods, which are anticipated to slow from 4.5 percent annually between 1998 and 2008 to an annual rate of 3.2 percent from 2008 to 2018. Service exports are projected to pick up their pace from 4.7-percent annual growth during the past 10 years to 5.3 percent over the projection period.

Imports grew by an average of 5.0 percent a year over the last decade, from \$1.2 trillion in 1998 to \$1.9 trillion in 2008. Imports of goods supported the majority of this increase, with a 5.1-percent annual growth rate, while services posted 4.3-percent annual growth. The BLS projects that import growth as a whole will slow to 4.2 percent annually from 2008 to 2018, with import goods declining to a 4.4-percent annual growth rate and services falling to a 3.4-percent rate. Since the early 2000s, rising oil prices have been a major contributor to the rapid growth of U.S. imports. Higher prices and an increasing reliance on alternative fuels are expected to slow the growth of U.S. petroleum imports from 1.4 percent per year during 1998–2008 to 1.1 percent annually over 2008–18.

The growing trade deficit and a corresponding increase in foreign investment in the United States have caused the current-account deficit (the excess of imports and income flows to foreigners over exports and foreign income of Americans) to increase dramatically since the 1990s. Economic prosperity made the Nation an attractive destination for foreign investors, thereby enabling the current-account deficit to inflate from 2.1 percent of GDP in 1998 to 5.9 percent in 2006. Then, as the stock market slipped and the United States entered a recession, the current-account deficit fell to 4.6 percent of GDP in 2008. The BLS projects the current-account deficit to be 5.1 percent of GDP by 2018, reflecting an expectation of continued foreign investor confidence in the U.S. economy.<sup>22</sup>

*Federal Government.* As society ages and medical technologies advance, the cost of Medicare, Medicaid, and Social Security programs is expected to take up a growing share of the Federal Government's budget. Replacing military equipment worn down from the wars in Iraq and Afghanistan and maintaining current troop levels are together anticipated to require substantial defense expenditures. In sum, the BLS expects that the current budget deficit will continue—and even increase—by 2018 as the Federal Government faces both growing demand for social programs by an aging society and the continued cost of national security.

The primary budgetary challenge the Federal Government is expected to face over the projection period is limiting spending on Social Security and Medicare programs.

**Table 6. Exports and imports of goods and services, 1988, 1998, 2008, and projected 2018**

Category	Billions of chained 2000 dollars				Average annual rate of change		
	1988	1998	2008	2018	1988–98	1998–2008	2008–18
Exports of goods and services.....	\$454.6	\$966.5	\$1,514.1	\$2,213.3	7.8	4.6	3.9
Goods.....	302.5	679.3	1,058.4	1,445.4	8.4	4.5	3.2
Nonagricultural.....	265.3	630.8	995.9	1,353.7	9.0	4.7	3.1
Agricultural.....	36.3	48.4	65.4	95.1	2.9	3.1	3.8
Services.....	154.8	287.2	455.1	760.9	6.4	4.7	5.3
Residual <sup>1</sup> .....	-1.8	.1	-2.3	3.5	...	...	...
Imports of goods and services.....	561.4	1,170.3	1,904.3	2,866.1	7.6	5.0	4.2
Goods.....	437.5	974.5	1,608.2	2,462.3	8.3	5.1	4.4
Nonpetroleum.....	375.6	868.7	1,499.6	2,399.6	8.7	5.6	4.8
Petroleum.....	75.8	112.9	130.0	145.6	4.1	1.4	1.1
Services.....	127.8	195.6	297.0	414.4	4.4	4.3	3.4
Residual <sup>2</sup> .....	-17.9	-6.9	-22.3	-93.5	...	...	...
Trade surplus/deficit.....	-106.8	-203.8	-390.2	-652.8	6.7	6.7	5.3

<sup>1</sup> The residual following the detailed categories for exports is the difference of the aggregate of “exports of goods and services” and the sum of the most detailed lines for each first-level subcategory of “exports of goods and services.”

<sup>2</sup> The residual following the detailed categories for imports is the difference

of the aggregate of “imports of goods and services” and the sum of the most detailed lines for each first-level subcategory of “imports of goods and services.”

SOURCE: Historical data—Bureau of Economic Analysis; projected data—Bureau of Labor Statistics.

The oldest baby boomers reached age 62 in 2008 and qualified for partial Social Security retirement benefits. In 2011, they will be eligible to receive full Medicare benefits. In addition, new technology is expected to further increase medical costs at a pace much faster than the rest of the economy grows.<sup>23</sup> Social Security and Medicare grew from 27.5 percent of nominal Government expenditures in 1988 to 33.1 percent in 1998 and 34.2 percent in 2008. This trend is expected to continue, with these two programs together making up 35.1 percent of Government expenditures by 2018.<sup>24</sup>

As mentioned a couple of paragraphs ago, the need to replace worn-down equipment is anticipated to require a considerable amount of funding. Also, on the basis of Department of Defense estimates, the BLS assumes that military force levels will remain fixed at 1.4 million troops throughout the coming decade. The cost of maintaining current troop levels and replacing worn-down equipment is expected to lead to a rise in real defense spending from a 40-year record high of \$538.1 billion in 2008 to a yet-higher \$644 billion in 2018, an annual growth rate of 1.8 percent, in comparison to 3.9 percent per year between 1998 and 2008.<sup>25</sup> (See table 7.) Defense expenditures are expected to account for 4.9 percent of nominal GDP

in 2018, a slight decline from 5.2 percent in 2008, but substantially higher than the 4.0-percent figure registered in 1998. (See table 3.) Nondefense expenditures also are projected to fall, from 2.4 percent of nominal GDP in 2008 to 2.1 percent in 2018.

As mentioned earlier, the Federal Government has run nominal annual budget deficits for most of the past 40 years. The deficit started to abate in 1993 and continued to decline for almost 10 years, culminating in 4 years of surplus from 1998 to 2001. The bursting of the “dot-com” bubble, along with costs related to the terrorist attacks of September 11, 2001, the wars in Iraq and Afghanistan, and tax cuts, pushed the budget back into larger and larger deficits since that time. The crisis in the housing and financial markets in 2008 put additional stress on the Government’s balance sheet.<sup>26</sup> The deficit more than doubled from 2007 to 2008, from \$229 billion and 1.7 percent of GDP to \$525 billion and 3.7 percent of GDP. Taking into account mounting financial responsibilities to care for an aging society and continued growth in defense spending, the BLS projects a budget deficit of almost \$900 billion—4.1 percent of nominal GDP—in 2018.<sup>27</sup> (See table 8.)

As the recession ends, individual and corporate tax revenues are projected to pick up from their low levels

**Table 7. Government consumption expenditures and gross investment, 1988, 1998, 2008, and projected 2018**

Category	Billions of chained 2000 dollars				Average annual rate of change		
	1988	1998	2008	2018	1988–98	1998–2008	2008–18
Government consumption expenditures and gross investment.....	\$1,445.1	\$1,624.4	\$2,070.2	\$2,384.1	1.2	2.5	1.4
Federal Government consumption and investment.....	636.1	561.3	798.2	928.2	-1.2	3.6	1.5
Defense consumption and investment.....	482.0	365.3	538.1	644.0	-2.7	3.9	1.8
Consumption expenditures.....	410.6	319.8	452.6	541.5	-2.5	3.5	1.8
Compensation, military.....	124.8	90.2	101.5	105.6	-3.2	1.2	.4
Compensation, civilian.....	75.6	53.1	53.3	67.5	-3.5	.1	2.4
Consumption of fixed capital.....	57.7	61.3	69.2	79.8	.6	1.2	1.4
Intermediate goods and services purchased.....	158.2	118.6	237.6	303.9	-2.8	7.2	2.5
Less own-account investment.....	1.8	1.5	1.4	1.4	-1.9	-9	.1
Less sales to other sectors.....	1.9	1.8	2.2	1.7	-5	2.1	-2.7
Gross investment.....	70.3	45.6	88.6	106.3	-4.2	6.9	1.8
Own-account investment.....	1.8	1.5	1.4	1.4	-1.9	-9	.1
Other investment.....	68.4	44.1	87.6	105.4	-4.3	7.1	1.9
Nondefense consumption and investment.....	152.3	196.0	259.5	282.6	2.6	2.8	.9
Consumption expenditures.....	133.3	164.7	217.9	238.8	2.1	2.8	.9
Compensation.....	93.9	91.8	101.9	127.3	-2	1.1	2.2
Consumption of fixed capital.....	12.1	18.8	27.9	34.0	4.5	4.0	2.0
Intermediate goods and services purchased:							
Commodity credit corporation purchases.....	-6.7	.2	.5	.0	( <sup>1</sup> )	9.9	-100.0
Other.....	51.3	61.4	94.3	81.3	1.8	4.4	-1.5
Less own-account investment.....	2.9	2.9	1.9	1.7	.2	-4.1	-1.4
Less sales to other sectors.....	7.0	4.4	3.8	4.2	-4.5	-1.5	1.0
Gross investment.....	19.9	31.2	42.7	44.2	4.6	3.2	.4
Own-account investment.....	2.9	2.9	1.9	1.7	.2	-4.1	-1.4
Other investment.....	17.2	28.4	41.0	42.9	5.1	3.7	.5
State and local government consumption and investment.....	806.6	1,063.0	1,273.0	1,456.5	2.8	1.8	1.4
Consumption expenditures.....	671.8	866.5	1,021.2	1,125.5	2.6	1.7	1.0
Compensation.....	548.1	648.7	723.7	768.7	1.7	1.1	.6
Consumption of fixed capital.....	50.4	77.1	109.2	145.5	4.3	3.5	2.9
Intermediate goods and services purchased..	232.0	358.9	460.0	525.4	4.5	2.5	1.3
Less own-account investment.....	9.7	13.5	17.1	20.6	3.4	2.4	1.9
Less sales to other sectors.....	146.4	205.0	253.6	291.5	3.4	2.1	1.4
Gross investment.....	135.9	196.7	251.6	332.1	3.8	2.5	2.8
Own-account investment.....	9.7	13.5	17.1	20.6	3.4	2.4	1.9
Other investment.....	126.1	183.2	234.5	311.4	3.8	2.5	2.9
Residual <sup>2</sup> .....	85.2	91.7	89.8	110.0	...	...	...

<sup>1</sup> Data not computable.<sup>2</sup> The residual is the difference of the first line and the sum of the most detailed lines for each first-level subcategory.

SOURCE: Historical data—Bureau of Economic Analysis; projected data—Bureau of Labor Statistics.

in 2008. Federal Government receipts are anticipated to increase by 5.4 percent annually over 2008–18, faster than the 3.8-percent annual growth exhibited over the 1998–2008 period. Although the cost of the medical and Social Security programs is anticipated to grow rapidly during the next decade, the cost of the stimulus packages during the 2008 recession is projected to end. Federal ex-

penditures are expected to slow in nominal terms from 6.0-percent annual growth over the 1998–2008 period to 5.4 percent per year between 2008 and 2018. The BLS projects that transfer payments by the Federal Government will decline from 58.4 percent of total Government spending in 2008 to 54.3 percent in 2018. Interest payments to persons, businesses, and the rest of the world are

**Table 8. Federal Government receipts and expenditures, 1988, 1998, 2008, and projected 2018**

Category	Billions of current dollars				Percent distribution				Average annual rate of change		
	1988	1998	2008	2018	1988	1998	2008	2018	1988-98	1998-2008	2008-18
Receipts.....	\$958.3	\$1,773.8	\$2,569.3	\$4,340.4	100.0	100.0	100.0	100.0	6.4	3.8	5.4
Tax receipts.....	566.7	1,116.8	1,526.8	2,652.8	59.1	63.0	59.4	61.1	7.0	3.2	5.7
Personal taxes.....	402.9	825.8	1,123.9	2,065.3	42.0	46.6	43.7	47.6	7.4	3.1	6.3
Corporate income taxes.....	111.2	204.3	291.1	422.8	11.6	11.5	11.3	9.7	6.3	3.6	3.8
Taxes on production and imports.....	50.3	81.1	96.2	140.0	5.2	4.6	3.7	3.2	4.9	1.7	3.8
Taxes from the rest of the world.....	2.3	5.7	15.4	24.8	.2	.3	.6	.6	9.3	10.5	4.9
Contributions for social insurance.....	353.1	613.8	971.9	1,580.5	36.8	34.6	37.8	36.4	5.7	4.7	5.0
Income receipts on assets.....	30.0	21.5	31.8	46.0	3.1	1.2	1.2	1.1	-3.3	4.0	3.8
Interest receipts.....	28.0	17.7	22.2	28.7	2.9	1.0	.9	.7	-4.5	2.3	2.6
Rents and royalties.....	2.0	3.8	9.6	17.4	.2	.2	.4	.4	6.6	9.7	6.1
Transfer receipts.....	10.8	21.6	39.4	61.1	1.1	1.2	1.5	1.4	7.2	6.2	4.5
From businesses.....	8.0	12.9	21.4	33.8	.8	.7	.8	.8	4.9	5.1	4.7
From persons.....	2.8	8.6	18.0	27.4	.3	.5	.7	.6	11.9	7.6	4.3
Surplus of government enterprises.....	-2.3	.1	-5	.0	-2	.0	.0	.0	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Expenditures.....	1,092.7	1,734.9	3,094.3	5,240.1	100.0	100.0	100.0	100.0	4.7	6.0	5.4
Consumption expenditures.....	382.5	454.6	932.0	1,375.2	35.0	26.2	30.1	26.2	1.7	7.4	4.0
Transfer payments.....	481.9	946.5	1,806.4	2,845.6	44.1	54.6	58.4	54.3	7.0	6.7	4.6
Government social benefits.....	379.1	719.2	1,382.3	2,202.1	34.7	41.5	44.7	42.0	6.6	6.8	4.8
Social Security benefits.....	213.9	369.2	605.6	1,017.2	19.6	21.3	19.6	19.4	5.6	5.1	5.3
Medicare benefits.....	86.3	205.8	452.7	822.5	7.9	11.9	14.6	15.7	9.1	8.2	6.2
Unemployment benefits.....	13.2	19.5	52.3	49.9	1.2	1.1	1.7	1.0	4.0	10.4	-5
Other benefits to persons.....	64.1	122.3	268.0	306.9	5.9	7.0	8.7	5.9	6.7	8.2	1.4
Benefits to the rest of the world.....	1.6	2.3	3.8	5.6	.1	.1	.1	.1	3.7	5.0	4.1
Other transfer payments.....	102.8	227.4	424.2	643.5	9.4	13.1	13.7	12.3	8.3	6.4	4.3
Grants-in-aid:											
To State and local government.....	91.6	212.8	388.3	595.2	8.4	12.3	12.5	11.4	8.8	6.2	4.4
To the rest of the world.....	11.2	14.6	35.9	48.2	1.0	.8	1.2	.9	2.7	9.4	3.0
Interest payments.....	199.3	298.9	308.2	965.3	18.2	17.2	10.0	18.4	4.1	.3	12.1
To persons and businesses.....	167.6	219.6	141.2	362.1	15.3	12.7	4.6	6.9	2.7	-4.3	9.9
To the rest of the world.....	31.7	79.3	167.0	603.2	2.9	4.6	5.4	11.5	9.6	7.7	13.7
Subsidies.....	29.0	35.0	47.7	54.0	2.7	2.0	1.5	1.0	1.9	3.2	1.2
Less wage accruals less disbursements.....	.0	.0	.0	.0	...	...	...	...	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Net Federal Government saving.....	-134.4	38.8	-525.0	-899.7	...	...	...	...	( <sup>1</sup> )	( <sup>1</sup> )	5.5
Surplus or deficit as percent of gross domestic product.....	-2.6	.4	-3.7	-4.1	...	...	...	...	( <sup>1</sup> )	( <sup>1</sup> )	1.2

<sup>1</sup> Data not computable.

SOURCE: Historical data—Bureau of Economic Analysis; projected data—Bureau of Labor Statistics.

anticipated to rise from 10 percent of spending in 2008 to 18.4 percent in 2018.

*State and local governments.* State and local governments will face increasing fiscal challenges in the coming decade that, in many ways, echo the problems that will confront the Federal Government. Funding for Medicaid will account for a growing share of States' budgets as demand continues to grow and the Federal Government offers

less money in grants-in-aid to fund State programs. Most States have some form of balanced-budget requirement allowing only short-term minimal deficits. Therefore, any failure on their part to contain costs in the medical sector would constrain spending in other categories of State and local expenditures.<sup>28</sup>

Current receipts of State and local governments are projected to grow at 4.7 percent annually from 2008 to 2018, slightly more slowly than the increase of 5.2 percent

per year from 1998 to 2008. (See table 9.) In particular, grants-in-aid from the Federal Government for Medicaid and other programs are expected to decelerate to an annual growth rate of 4.4 percent between 2008 and 2018. Grants-in-aid have been declining from 8.8-percent annual growth between 1988 and 1998 to 6.2 percent between 1998 and 2008. A continued slowdown is expected as the Federal Government struggles to meet growing demands for health care while limiting the budget deficit.

As growth in receipts slow, so will expenditures by State and local government. Expenditures are expected to increase by 4.2 percent annually over the 2008–18 period, a much slower pace than the 6.1-percent annual growth between 1998 and 2008. By 2018, State and local government expenditures on Medicaid alone are projected

to outgrow the Federal grants-in-aid received. The BLS projects that declining Federal funds will force State and local governments to slow the growth rates for all spending categories. The only anticipated exception is interest payments, which make up a small part of their budgets.

Consumption and gross investment by State and local governments increased by 1.8 percent annually from 1998 to 2008. (See table 7.) The BLS projects that these categories will grow slightly more slowly, at 1.4 percent annually, from 2008 to 2018. Consumption by State and local governments is anticipated to represent 12.6 percent of nominal GDP in 2018, nearly equivalent to the 12.7-percent figure registered in 2008. (See table 3.) In sum, the BLS projects that the States will run a small nominal surplus of \$8.8 billion in 2018. (See table 9.)

**Table 9. State and local government receipts and expenditures, 1988, 1998, 2008, and projected 2018**

Category	Billions of current dollars				Percent distribution				Average annual rate of change		
	1988	1998	2008	2018	1988	1998	2008	2018	1988–98	1998–2008	2008–18
Receipts.....	\$635.6	\$1,163.2	\$1,935.1	\$3,049.9	100.0	100.0	100.0	100.0	6.2	5.2	4.7
Tax receipts.....	452.8	794.9	1,318.6	2,081.1	71.2	68.3	68.1	68.2	5.8	5.2	4.7
Personal taxes.....	102.1	201.2	333.4	531.4	16.1	17.3	17.2	17.4	7.0	5.2	4.8
Corporate income taxes.....	26.0	34.9	47.6	75.7	4.1	3.0	2.5	2.5	3.0	3.1	4.7
Taxes on production and imports.....	324.6	558.8	937.6	1,474.0	51.1	48.0	48.5	48.3	5.6	5.3	4.6
Sales taxes and other.....	188.1	327.8	533.0	787.7	29.6	28.2	27.5	25.8	5.7	5.0	4.0
Property taxes.....	136.5	231.0	404.5	686.3	21.5	19.9	20.9	22.5	5.4	5.8	5.4
Contributions for social insurance.....	8.4	10.4	23.8	37.1	1.3	.9	1.2	1.2	2.1	8.7	4.6
Income receipts on assets.....	60.5	80.9	103.8	173.2	9.5	7.0	5.4	5.7	2.9	2.5	5.3
Interest receipts.....	55.9	74.6	87.7	146.7	8.8	6.4	4.5	4.8	2.9	1.6	5.3
Dividends.....	.2	1.7	3.0	4.7	.0	.1	.2	.2	23.7	5.9	4.6
Rents and royalties.....	4.4	4.6	13.1	21.9	.7	.4	.7	.7	.4	11.0	5.3
Transfer receipts.....	109.0	266.7	496.8	759.2	17.2	22.9	25.7	24.9	9.4	6.4	4.3
Federal grants-in-aid.....	91.6	212.8	388.3	595.2	14.4	18.3	20.1	19.5	8.8	6.2	4.4
From businesses (net).....	5.4	22.0	42.0	66.5	.8	1.9	2.2	2.2	15.2	6.6	4.7
From persons.....	12.0	31.9	66.5	97.4	1.9	2.7	3.4	3.2	10.3	7.6	3.9
Surplus of government enterprises.....	4.8	10.3	-7.6	-7	.8	.9	-4	.0	7.8	( <sup>1</sup> )	-21.8
Expenditures.....	617.7	1,111.2	2,015.2	3,041.1	100.0	100.0	100.0	100.0	6.0	6.1	4.2
Consumption expenditures...	470.4	801.3	1,454.4	2,118.6	76.2	72.1	72.2	69.7	5.5	6.1	3.8
Government social benefit payments to persons.....	98.5	235.8	455.8	757.5	15.9	21.2	22.6	24.9	9.1	6.8	5.2
Medicaid.....	56.8	175.3	357.0	605.8	9.2	15.8	17.7	19.9	11.9	7.4	5.4
Other.....	41.7	60.5	98.8	151.6	6.8	5.4	4.9	5.0	3.8	5.0	4.4
Interest payments.....	48.4	73.6	102.0	162.1	7.8	6.6	5.1	5.3	4.3	3.3	4.7
Subsidies.....	.4	.4	3.0	2.9	.1	.0	.1	.1	2.5	20.9	-4
Less wage accruals less disbursements.....	.0	.0	.0	.0	.0	.0	.0	.0	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Net State and local government saving.....	17.9	52.0	-80.1	8.8	...	...	...	...	11.3	( <sup>1</sup> )	( <sup>1</sup> )

<sup>1</sup> Data not computable.

SOURCE: Historical data—Bureau of Economic Analysis; projected data—Bureau of Labor Statistics.

## GDP from the income side

The compensation of employees, or labor income, has declined as a share of total personal income over the past 20 years, accounting for 69.8 percent of personal income in 1988, 67.6 percent in 1998, and 66.5 percent in 2008. Similarly, wage and salary disbursements, the largest segment of labor income, also have shown a decline in share, from 57.7 percent in 1988 to 54.1 percent in 2008. Wage and salary disbursements have declined more than compensation as the percentage of income received in benefits has risen. Employer contributions for insurance and re-

tirement programs have risen from 7.1 percent of income in 1998 to 8.5 percent in 2008. The BLS anticipates that, over the next 10 years, labor income's share will continue to decline slightly, reaching 64.8 percent of total income in 2018, accompanied by a 52.5-percent share for wage and salary disbursements (see table 10) and little change to employer insurance and retirement contributions, at 8.7 percent of income in 2018.

Another major component of personal income—business-related personal income, which includes proprietors' income, rental income, and personal income on assets—has remained steady over the past 20 years, at a 27.1-percent

**Table 10. Personal income, 1988, 1998, 2008, and projected 2018**

Category	Billions of current dollars				Percent distribution				Average annual rate of change		
	1988	1998	2008	2018	1988	1998	2008	2018	1988-98	1998-2008	2008-18
<b>Sources</b>											
Personal income .....	\$4,253.7	\$7,423.0	\$12,100.7	\$19,129.6	100.0	100.0	100.0	100.0	5.7	5.0	4.7
Compensation of employees.....	2,967.2	5,020.1	8,052.8	12,404.8	69.8	67.6	66.5	64.8	5.4	4.8	4.4
Wage and salary disbursements....	2,452.9	4,183.4	6,548.0	10,043.1	57.7	56.4	54.1	52.5	5.5	4.6	4.4
Supplements to wages and salary .....	514.3	836.7	1,504.8	2,361.8	12.1	11.3	12.4	12.3	5.0	6.0	4.6
Proprietors' income .....	341.6	627.8	1,072.4	1,647.7	8.0	8.5	8.9	8.6	6.3	5.5	4.4
Rental income .....	40.6	137.5	64.4	146.2	1.0	1.9	.5	.8	13.0	-7.3	8.5
Personal income on assets.....	769.3	1,283.2	2,037.6	3,543.3	18.1	17.3	16.8	18.5	5.3	4.7	5.7
Personal interest income.....	639.5	933.3	1,208.5	2,194.9	15.0	12.6	10.0	11.5	3.9	2.6	6.1
Personal dividend income.....	129.7	350.0	829.1	1,348.3	3.0	4.7	6.9	7.0	10.4	9.0	5.0
Personal current transfer receipts...	496.6	978.6	1,869.1	3,005.2	11.7	13.2	15.4	15.7	7.0	6.7	4.9
Federal social benefits.....	377.5	716.8	1,378.6	2,196.5	8.9	9.7	11.4	11.5	6.6	6.8	4.8
State and local social benefits.....	98.5	235.8	455.8	757.5	2.3	3.2	3.8	4.0	9.1	6.8	5.2
Other, from businesses (net).....	20.6	26.0	34.7	51.2	.5	.3	.3	.3	2.3	2.9	4.0
Less social insurance contribution .....	361.5	624.2	995.7	1,617.6	8.5	8.4	8.2	8.5	5.6	4.8	5.0
<b>Use</b>											
Personal income .....	4,253.7	7,423.0	12,100.7	19,129.6	100.0	100.0	100.0	100.0	5.7	5.0	4.7
Personal consumption .....	3,353.6	5,879.5	10,057.9	15,293.5	78.8	79.2	83.1	79.9	5.8	5.5	4.3
Personal taxes.....	505.0	1,027.1	1,457.3	2,596.6	11.9	13.8	12.0	13.6	7.4	3.6	5.9
Personal interest payments.....	96.8	174.5	248.2	375.9	2.3	2.4	2.1	2.0	6.1	3.6	4.2
Personal transfer payments.....	25.4	65.2	144.6	212.8	.6	.9	1.2	1.1	9.9	8.3	3.9
To government.....	14.8	40.5	84.5	124.8	.3	.5	.7	.7	10.6	7.6	4.0
Federal .....	2.8	8.6	18.0	27.4	.1	.1	.1	.1	11.9	7.6	4.3
State and local.....	12.0	31.9	66.5	97.4	.3	.4	.5	.5	10.3	7.6	3.9
To the rest of the world (net).....	10.6	24.6	60.1	88.1	.2	.3	.5	.5	8.8	9.3	3.9
Personal savings .....	272.9	276.8	192.6	650.9	6.4	3.7	1.6	3.4	.1	-3.6	12.9
<b>Addenda</b>											
Disposable personal income.....	3,748.7	6,396.0	10,643.3	16,532.9	...	...	...	...	5.5	5.2	4.5
Disposable personal income, chained 2000 dollars.....	5,082.7	6,664.0	8,753.4	11,434.5	...	...	...	...	2.7	2.8	2.7
Per capita disposable income.....	15,314	23,153	34,902	49,293	...	...	...	...	4.2	4.2	3.5
Per capita disposable income, chained 2000 dollars.....	20,763	24,123	28,704	34,092	...	...	...	...	1.5	1.8	1.7
Savings rate (percent).....	7.3	4.3	1.8	3.9	...	...	...	...	-5.1	-8.4	8.1

SOURCE: Historical data—Bureau of Economic Analysis; projected data—Bureau of Labor Statistics.

share of personal income in 1988, 27.6 percent in 1998, and 26.2 percent in 2008. The BLS projects that the share for this type of income will be a similar 27.9 percent in 2018.

By contrast, the receipt of transfer payments has become an increasingly substantial source of personal income over the past two decades. Transfer payments rose as a share of personal income from 11.7 percent in 1988, to 13.2 percent in 1998, to 15.4 percent in 2008. The BLS projects that this category of income receipts will account for 15.7 percent of personal income in 2018.

The use of income can be broken up into the following categories: consumption, taxation, interest payments, and savings. Consumption (also called personal consumption) is by far the major use of income, accounting for 83.1 percent of personal income in 2008, when the personal savings rate was 1.8 percent. Over the past few years, the personal savings rate has dipped below historical levels. During the peak of the housing bubble, 2005–07, as households saw their net worth rise rapidly because of growing home values, the savings rate declined.<sup>29</sup> As the housing bubble burst and the value of homes declined, households began to feel more of a need to save: from the latter half of 2008 into the first half of 2009, the savings rate rose, staying above 4.0 percent in the second quarter of 2009.<sup>30</sup> The BLS anticipates that personal consumption will ease over the projection period and settle down to a 79.9-percent share of total personal income in 2018, compared with an 83.1-percent share in 2008. The savings rate is projected to be 3.9 percent in 2018, above the 1.8-percent rate posted in 2008.

Per capita real disposable personal income is projected to increase at an average annual rate of 1.7 percent from 2008 to 2018, reaching a level of around \$34,100 in 2018, a gain of about \$5,400 over the projection span. Another way of interpreting this growth is that, measured on the basis of growth of disposable personal income, standards of living will rise at about 1.7 percent per year over the projection period, 0.1 percentage point lower than the rate of growth between 1998 and 2008. Thus, the BLS expects its projections to be characterized by long-term stable growth in the real standard of living.

## Employment

The expectation of slower increases in the labor force over the projection period indicates more moderate long-run employment growth in the future. Total civilian household employment is projected to rise by 0.9 percent per year from 2008 to 2018, resulting in an increase of about 13.1 million workers over the 10-year projection period,

slightly below the increase of 13.9 million during the 1998–2008 span. Nonfarm payroll employment is projected to grow at an annualized rate of 1.0 percent between 2008 and 2018, rising from 137.0 million to 151.6 million, an increase of 14.6 million jobs.<sup>31</sup>

## Productivity

Increases in productivity are an important driver of the long-term growth of GDP. In this article, labor productivity is measured as output per hour in the private nonfarm business sector. Rising productivity is a critical part of improving living standards. Growth in labor productivity allows companies to increase the salaries and benefits of workers on the basis of their greater efficiency, rather than passing salary increases through to consumers in the form of higher prices.

BLS expects that productivity will grow at 1.8 percent per year over the 2008–18 period, a slower rate than the strong 2.6-percent average annual growth achieved over the 1998–2008 period, but in line with growth since 2004 and the 1.7-percent rate posted during the 1988–98 decade. (See table 11.) The anticipated productivity growth stems in part from the healthy growth of capital stocks resulting from projected rates of business investment.<sup>32</sup>

## Uncertainty of the economic projections

Any look at the future is uncertain. Although the use of the macroeconomic model to prepare the aggregate economic projections is a scientific approach, different assumptions would naturally lead to different economic projection paths. For instance, in the macromodel, the population 16 years and older influences real GDP. Principally, the demographic characteristics of this population, along with certain other variables, are used to determine the size of the labor force in the BLS macroeconomic projections. Accordingly, because the labor force itself is the most important element in determining the economy's ability to supply output within the macroeconomic model, the demographics of the 16-years-and-older population has a substantial effect on output and, hence, GDP.

Besides affecting the supply of output, an increase in the population influences various components of demand. For example, an increase in the number of 35- to 50-year-olds would result in a larger home-buying population, which in turn would lead to more housing starts, along with a greater demand for residential construction.

A large change in oil prices also could change the projection. Because the United States imports a large amount of oil, changes in oil prices can alter the balance of trade.

**Table 11. Labor supply and factors affecting productivity, 1988, 1998, 2008, and projected 2018**

Category	Level				Average annual rate of change		
	1988	1998	2008	2018	1988–98	1998–2008	2008–18
Labor supply (in millions, unless noted):							
Total population .....	244.8	276.2	305.0	335.4	1.2	1.0	1.0
Population aged 16 years and older.....	184.6	205.2	233.8	258.9	1.1	1.3	1.0
Civilian labor force .....	121.7	137.7	154.3	166.9	1.2	1.1	.8
Civilian household employment .....	115.0	131.5	145.4	158.4	1.4	1.0	.9
Nonfarm payroll employment.....	105.3	125.9	137.0	151.6	1.8	.9	1.0
Unemployment rate (percent).....	5.5	4.5	5.8	5.1	-2.0	2.6	-1.3
Productivity:							
Private nonfarm business output per hour (billions of chained 2000 dollars).....	31.0	36.8	47.5	56.8	1.7	2.6	1.8

SOURCE: Historical data—Bureau of Economic Analysis, Bureau of Census, Bureau of Labor Statistics; projected data—Bureau of Labor Statistics.

In addition, higher oil prices encourage the domestic production of oil, can change whether consumers buy cars or light trucks, and affect the rate of inflation. As mentioned earlier in connection with interest rates and the Fed's policy, a change in the inflation rate could cause the Fed to change the funds rate. A shift in the funds rate in turn alters the cost of borrowing for consumers and businesses and may alter their decisions when they are contemplat-

ing buying a house or building a new factory.

In conclusion, a hallmark of the BLS projections is that the assumptions and model-based findings on which they are based are made explicit, although any number of unexpected key factors may modify the path of the 2018 projections. With these points in mind, readers will be better able to grasp and appreciate the projections and estimates presented in this issue of the *Review*. □

## Notes

<sup>1</sup> All figures in this article, except growth rates and dollar values, are real values using year-2000 dollars.

<sup>2</sup> The model used for this year's projections reflects the National Income and Product Accounts (NIPA) data published in July 2009, including GDP data and other data for the first quarter of 2009. Revisions to GDP data released after that time are not included in the BLS projections. However, it is important to remember that those projections are long-run projections based upon long-run trend analysis. The major NIPA revision, if incorporated, would have a limited impact on the BLS projections.

<sup>3</sup> This model has been used to prepare BLS aggregate economic projections since May 2002. Macroeconomic Advisers developed and still supports the Washington University Macro Model, which the firm's team uses as a central analytical tool for its short- and long-term forecasts of the U.S. economy. The model operates and performs simulations on a Windows-based software program called wummsim.

<sup>4</sup> Until the recent release of Federal Open Market Committee notes, the levels of unemployment and inflation that the Fed targeted were frequently debated. According to the minutes from the January 2009 meeting, the Fed's targets are to keep core personal consumption expenditure price index inflation at 1.7 percent to 2.0 percent, unemployment at 4.8 percent to 5.0 percent, and GDP growth at 2.5 percent to 2.7 percent. In the Macroeconomic Advisers' model, the BLS assumes that the Fed will adjust interest rates to push the economy toward the stated goals for inflation, unemployment, and GDP growth. For a discussion of the Fed's recent stances toward targeting inflation, see "Real Time Economics: Inflation Targeting Makes Fed Comeback," *Wall Street Journal Blogs*, Nov. 3, 2009, on the Internet at [blogs.wsj.com/economics/2009/01/08/inflation-targeting-makes-fed-comeback](http://blogs.wsj.com/economics/2009/01/08/inflation-targeting-makes-fed-comeback) (visited Nov. 18, 2009).

<sup>5</sup> The Fed funds rate is the Fed's target for the rate banks charge other banks for overnight loans. More information on the rate can be found in "Open Market Operations" (Federal Reserve Board, Dec. 16, 2008), on the Internet at the Fed's Web site, [www.federalreserve.gov/fomc/fundsrate.htm](http://www.federalreserve.gov/fomc/fundsrate.htm) (visited Nov. 18, 2009).

<sup>6</sup> The BLS follows the commonly held belief that 10-year Treasury yields reflect the market's forecast of future short-term interest rates. Because short-term rates cannot be cut below zero, it is logical to expect the spread between the Fed funds rate and the 10-year Treasury note yield to widen because future rates cannot be cut further, but must only stay flat or increase. Under a more normal interest rate environment, the spread would be narrower, as the market would be pricing in the possibility of both future rate decreases and increases, instead of simply pricing in increases.

<sup>7</sup> Recently, much has happened in financial markets. Problems in the subprime lending market spread to other credit markets. At its August 2007 meeting, the Fed maintained the funds rate target at 5.25 percent, but turned quickly to concerns about the liquidity of short-term credit markets. Initially, the Fed intervened to increase liquidity through open-market operations. Then, on August 17, 2007, the Fed announced a 50-basis-point cut in its discount rate (the rate at which the Agency will lend to commercial banks), to 5.75 percent. Finally, the aforementioned half-percent funds rate cut to 4.75 percent came on September 18, followed by a cut to 4.5 percent in October.

<sup>8</sup> See "Historical Changes of the Target Federal Funds and Discount Rates"

(Federal Reserve Bank of New York, Dec. 22, 2008), on the Internet at [www.newyorkfed.org/markets/statistics/dlyrates/fedrate.html](http://www.newyorkfed.org/markets/statistics/dlyrates/fedrate.html) (visited Nov. 18, 2009).

<sup>9</sup> See “Credit and Liquidity Programs and the Balance Sheet” (Board of Governors of the Federal Reserve System, Aug. 21, 2009), on the Internet at [www.federalreserve.gov/monetarypolicy/bst\\_lendingdepository.htm](http://www.federalreserve.gov/monetarypolicy/bst_lendingdepository.htm) (visited Nov. 18, 2009).

<sup>10</sup> *Ibid.*

<sup>11</sup> See “Credit and Liquidity Programs and the Balance Sheet” (Board of Governors of the Federal Reserve System, Mar. 26, 2009), on the Internet at [www.federalreserve.gov/monetarypolicy/bst\\_crisisresponse.htm](http://www.federalreserve.gov/monetarypolicy/bst_crisisresponse.htm) (visited Nov. 18, 2009).

<sup>12</sup> See “Interest Rate Statistics: Daily Treasury Yield Curve Rates,” on the Internet at [www.ustreas.gov/offices/domestic-finance/debt-management/interest-rate/yield\\_historical\\_2008.shtml](http://www.ustreas.gov/offices/domestic-finance/debt-management/interest-rate/yield_historical_2008.shtml) (visited Nov. 18, 2009).

<sup>13</sup> See “Federal Reserve Statistical Release: Selected Interest Rates” (Federal Reserve Board, Aug. 31, 2009), on the Internet at [www.federalreserve.gov/Releases/H15/20090831](http://www.federalreserve.gov/Releases/H15/20090831) (visited Nov. 18, 2009).

<sup>14</sup> For a further discussion of population and labor force projections, see Mitra Toossi, “Labor force projections to 2018: older workers staying more active,” this issue, pp. 30–51.

<sup>15</sup> *Ibid.*

<sup>16</sup> The Energy Information Administration produces the *Annual Energy Outlook*. More information can be found on the Internet at the Agency’s Web site, [www.eia.doe.gov/oiaf/aeo/index.html](http://www.eia.doe.gov/oiaf/aeo/index.html) (visited Nov. 18, 2009).

<sup>17</sup> See “Petroleum Navigator: Monthly Cushing, OK WTI Spot Price FOB” (Energy Information Administration, Nov. 4, 2009), on the Internet at [tonto.eia.doe.gov/dnav/pet/hist/rwtcM.htm](http://tonto.eia.doe.gov/dnav/pet/hist/rwtcM.htm) (visited Nov. 18, 2009).

<sup>18</sup> Unconventional liquid fuels include gas-to-liquid biofuels (natural gas converted to gasoline or diesel fuel) and coal-to-liquid biofuels (coal converted to gasoline or diesel fuel), such as ethanol, as well as oil refined from extraheavy oil or oil sands.

<sup>19</sup> See “Issues in Focus,” in *Annual Energy Outlook 2009* (Energy Information Administration, 2009), pp. 28–55, especially p. 31, on the Internet at [www.eia.doe.gov/oiaf/aeo/pdf/issues.pdf](http://www.eia.doe.gov/oiaf/aeo/pdf/issues.pdf) (visited Nov. 18, 2009).

<sup>20</sup> See Appendix G, “Projections of Liquid Fuels and Other Petroleum Production in Five Cases: Reference; High Price; Low Price; High Economic Growth; Low Economic Growth,” in *Annual Energy Outlook 2009*, pp. 225–44, on the Internet at [www.eia.doe.gov/oiaf/ieo/pdf/ieopol.pdf](http://www.eia.doe.gov/oiaf/ieo/pdf/ieopol.pdf) (visited Nov. 18, 2009).

<sup>21</sup> The Federal Government instituted several measures aimed at stimulating demand. The central bank brought down the Fed funds rate to less than 1 percent in late 2008. Although mortgage rates then fell, this stimulus was not enough to lure buyers back into the market. Also in 2008, the Government offered home buyers up to a \$7,500 tax credit. Buyers were required to pay back the credit over the next 15 years, but no interest was charged. This allowance, too, did little to persuade buyers back into the market. Finally, in 2009, the Government offered a true tax credit of up to \$8,000 for first-time home buyers. This program has been effective at increasing demand and has since been extended through mid-2010 on somewhat modified terms.

<sup>22</sup> On the basis of national accounting identities, the national savings rate is calculated by adding the current-account balance (exports less imports, with net factor income added) to gross investment and dividing the resulting sum by GDP. In other words, the current-account balance is the mathematical difference of national savings and domestic investment. Thus, a decrease in the national savings rate reflects a widening of the external deficit.

<sup>23</sup> It is important to note that the macromodel assumes that current health care policy will remain in place over the projection period. Recently, there has

been much discussion regarding health care reform that, if implemented, could affect the projection significantly. There are bills in both the Senate and the House proposing radical changes to the current health care system. The Congressional Budget Office estimates that a similar plan would increase Government spending on health care, further contributing to the upcoming problems in this sector of the economy.

<sup>24</sup> The Congressional Budget Office estimates that, left in their current situation, the Medicare, Medicaid, and Social Security programs alone would entirely crowd out all discretionary spending, including defense, education, and homeland security, by 2040. (See *Overview of the President’s 2009 Budget* (Government Printing Office, no date), especially p. 7.), on the Internet at [www.gpoaccess.gov/usbudget/fy09/pdf/budget/overview.pdf](http://www.gpoaccess.gov/usbudget/fy09/pdf/budget/overview.pdf) (visited Nov. 12, 2009).

<sup>25</sup> For a discussion of defense spending and estimates of military force levels, see *National Defense Budget Estimates for FY 2009* (Office of the Under Secretary of Defense, September 2008); and *Fiscal 2010 Department of Defense Budget Release* (Department of Defense, May 7, 2009).

<sup>26</sup> In order to restore confidence in the financial sector, the Treasury Department was given the authority to purchase \$700 billion of “toxic” assets through the Troubled Assets Relief Program (TARP). The Congressional Budget Office estimates that TARP injected roughly \$247 billion into the economy in 2008. By June 6, 2009, approximately \$432.7 billion had been distributed through TARP, including \$85 billion to the auto industry and \$69.8 billion to American International Group (AIG). Most of the remaining funds went to stabilize banks. (See *TARP Transactions Report* (U.S. Department of the Treasury, June 6, 2009); *Tranche Report to Congress* (U.S. Department of the Treasury, January 2009); and *The Troubled Assets Relief Program: Report on Transactions through December 31, 2008* (Congressional Budget Office, January 2009), on the Internet at [www.cbo.gov/ftpdocs/99xx/doc9961/01-16-TARP.pdf](http://www.cbo.gov/ftpdocs/99xx/doc9961/01-16-TARP.pdf) (visited Nov. 12, 2009).)

<sup>27</sup> The BLS projection of nearly \$900 billion for the Federal budget deficit in 2018 is slightly lower than the Congressional Budget Office’s March 2009 forecast of \$1 trillion. (See *A Preliminary Analysis of the President’s Budget and an Update of CBO’s Budget and Economic Outlook* (Congressional Budget Office, March 2009), on the Internet at [www.cbo.gov/ftpdocs/100xx/doc10014/03-20-PresidentBudget.pdf](http://www.cbo.gov/ftpdocs/100xx/doc10014/03-20-PresidentBudget.pdf) (visited Nov. 12, 2009).) In August 2009, however, the Office revised its forecast to \$622 billion. (See *The Budget and Economic Outlook, An Update* (Congressional Budget Office, August 2009), on the Internet at [www.cbo.gov/ftpdocs/105xx/doc10521/08-25-BudgetUpdate.pdf](http://www.cbo.gov/ftpdocs/105xx/doc10521/08-25-BudgetUpdate.pdf) (visited Nov. 12, 2009).) The Office of Management and Budget expects the deficit to be \$688 billion in 2018. (See *Updated Summary Tables, May 2009: Budget of the U.S. Government, Fiscal Year 2010* (Office of Management and Budget, May 2009), on the Internet at [www.whitehouse.gov/omb/budget/fy2010/assets/summary.pdf](http://www.whitehouse.gov/omb/budget/fy2010/assets/summary.pdf) (visited Nov. 12, 2009).)

<sup>28</sup> For further discussion on upcoming challenges to State and local governments, see *State and Local Governments: Growing Fiscal Challenges Will Emerge during the Next 10 Years* (U.S. Government Accountability Office, January 2008), on the Internet at [www.gao.gov/new.items/d08317.pdf](http://www.gao.gov/new.items/d08317.pdf) (visited Nov. 12, 2009).

<sup>29</sup> See C. Alan Garner, *A Perspective on the Low U.S. Saving Rate* (Kansas City, MO, Federal Reserve Bank of Kansas City, Kansas and Missouri Forums, spring 2006), on the Internet at [www.kansascityfed.org/SpeechBio/GarnerKSForum03-06.pdf](http://www.kansascityfed.org/SpeechBio/GarnerKSForum03-06.pdf) (visited Nov. 18, 2009).

<sup>30</sup> See “Personal Savings Rate” (U.S. Department of Commerce, Bureau of Economic Analysis, Oct. 29, 2009), on the Internet at [www.bea.gov/briefrm/saving.htm](http://www.bea.gov/briefrm/saving.htm) (visited Nov. 12, 2009).

<sup>31</sup> The measure of civilian employment used in the aggregate economic projections discussed in this article is a count of persons who are working. Estimates of civilian employment are derived from the Current Population Survey (CPS), a survey of households carried out for the Bureau of Labor Statistics by the Census Bureau. Payroll employment is a count of jobs and is based on the Current Employment Statistics survey (CES), a BLS survey of establishments. Although the employment measures from the two surveys show similar trends over the long term, shorter term differences have arisen. For further information on these two employment measures and on employment growth differences, see Mary K. Bowler and Teresa L. Morisi, “Understanding the employment meas-

ures from the CPS and CES survey,” *Monthly Labor Review*, February 2006, pp. 23–38; on the Internet at [www.bls.gov/opub/mlr/2006/02/art2full.pdf](http://www.bls.gov/opub/mlr/2006/02/art2full.pdf) (visited Nov. 12, 2009). The BLS maintains a monthly update on CES and CPS employment trends on the Internet at [www.bls.gov/web/ces\\_cps\\_trends.pdf](http://www.bls.gov/web/ces_cps_trends.pdf) (visited Nov. 12, 2009).

<sup>32</sup> For more detailed information on labor productivity and employment, see

Rose Woods, “Industry output and employment projections to 2018,” this issue, pp. 52–81. See also *Labor Productivity: Developments since 1995* (Congressional Budget Office, March 2007); James A. Kahn and Robert W. Rich, “Tracking Productivity in Real Time,” *Current Issues in Economics and Finance* (Federal Reserve Bank of New York, November 2006); and “Productivity Growth,” *Economic Report of the President, the Annual Report of the Council of Economic Advisers*, chapter 2, February 2007, pp. 45–62.