Monthly Labor Review

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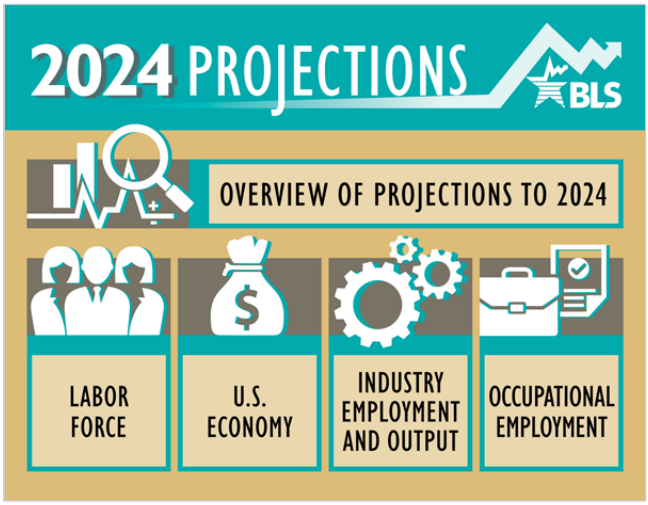
The U.S. economy to 2024

The U.S. economy continues to heal in the aftermath of the Great Recession. Steadily recovering consumption, investment, and housing assist an improving economy, whereas structural factors, such as an aging population, limit the prospects for more rapid growth over the coming decade. The Bureau of Labor Statistics (BLS) projects that growth will continue, but at a slower rate than that seen before the onset of the 2007–09 recession.



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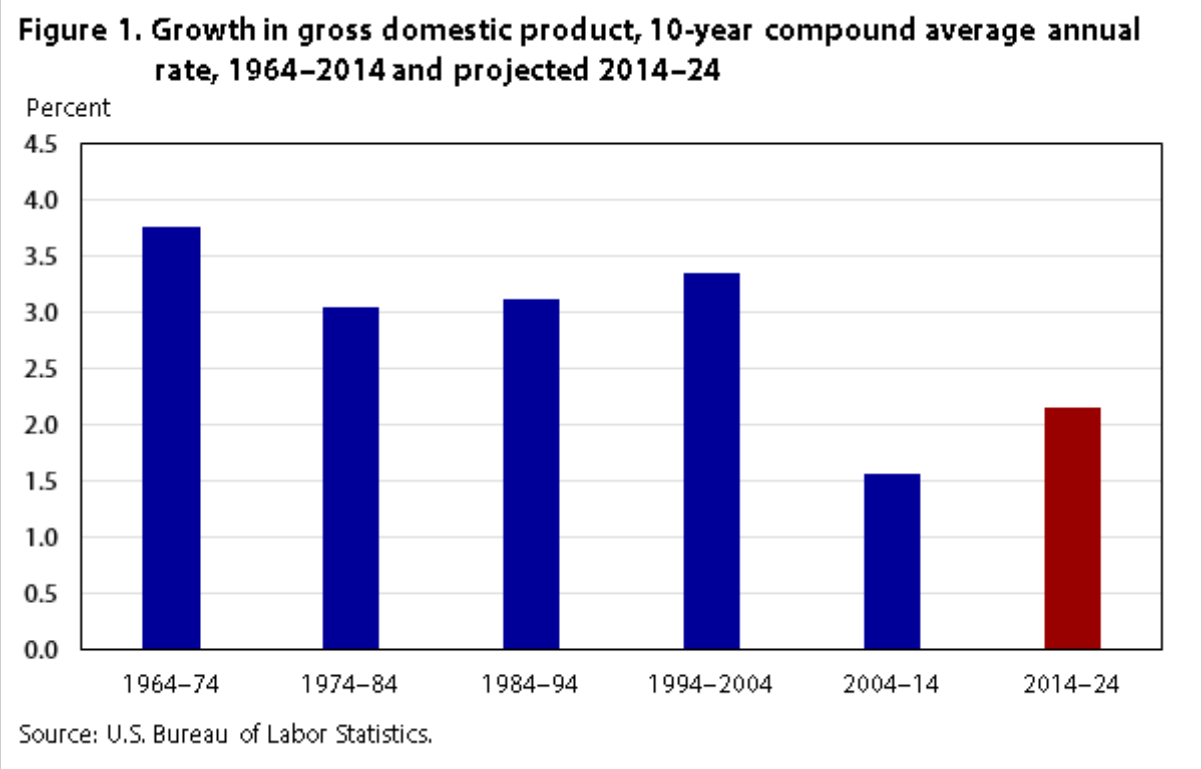


Figure 1. Growth in gross domestic product, 10-year compound average annual rate, 1964–2014 and projected 2014–24

The United States is now more than 6 years into a recovery characterized by slow growth in gross domestic product (GDP), a declining labor force participation rate, low inflation, and disappointing productivity gains. From 2010 to 2014, GDP growth averaged just 2.1 percent annually, a much slower rate than the 3.0-percent or higher annual growth experienced in recent decades.[1] (See figure 1.) Despite the slow recovery in GDP, the unemployment rate fell from a peak of 10.0 percent in October 2009 to 5.0 percent in November 2015. The decline was due to minimal growth in the labor force and lower-than-average productivity gains, rather than the rapid GDP growth that typically follows recessions.

The severity of the Great Recession took a toll on several important components of GDP. Muted growth in personal consumption expenditures (PCE), contractionary government policies, widening trade deficits, and a weakened housing market all contributed to slower GDP growth. Meanwhile, core PCE inflation remains below the target of the Federal Reserve (hereafter, the Fed), despite the federal funds rate[2] being at the lower bound. While the recovery is well along the way, the U.S. economy is not quite back at full employment. Although the unemployment rate fell to 5.0 percent in November 2015, wage growth after the recession has been minimal. Employment levels for long-term unemployed workers, marginally attached workers, and those working part time for economic reasons are improving, but remain below prerecession levels.

Determining how the U.S. economy will behave over the next 10 years is challenging, because the business cycle cannot be anticipated or modeled well over extended periods. Modern macroeconomic theory assumes that, in the long run, the economy moves along a growth path consistent with full employment. As the economy moves along this path, inflation, output growth, and employment growth are steady. When the economy overheats, the rate of unemployment falls and wage growth ensues. These effects result in inflation overshooting the Fed's target. Slack in the labor market, as experienced in recent years, produced little inflationary pressure, even though the federal

funds rate has been near its lower bound since late 2008. The market can overheat or fall short of potential growth in the short run, but over time it gravitates back to the full-employment path.

Using a full-employment model, the Bureau of Labor Statistics (BLS) projects that GDP will grow at 2.2 percent annually over the coming decade, maintaining its average growth rate experienced during the 2010–14 recovery. By comparison, figure 1 shows that, from the 1960s through the onset of the 2007–09 recession, 10-year average GDP growth exceeded 3 percent. The projected relatively lower growth in GDP is due mostly to the slowing growth in labor supply. As baby boomers age and move into lower participation cohorts, the labor force participation rate is expected to continue to decline, hindering growth prospects. Nonfarm payroll employment is projected to add just 9.3 million jobs over the coming decade, growing at 0.7 percent annually. Labor productivity is expected to register 1.8-percent annual growth. As the economy improves and inflationary pressure resumes, interest rates will recover substantially from their current lows; however, they will not reach prerecession levels.

Every 2 years, BLS develops 10-year projections for the labor force, GDP, and inflation. BLS also publishes detailed projections of employment growth for hundreds of industries and occupations, as well as a thorough breakout of output growth (discussed in accompanying articles in this projections series). This article presents the macroeconomic component of the projections, which provides context for the more detailed occupational outlook, and a reasonable top-line estimate for GDP and employment growth. In order to complete all the other projections, BLS completed its macroeconomic projections in August 2015. Events that have occurred after this time are not reflected in the model estimation. Presented here are the primary assumptions made in the macroeconomic model, major projected trends for the 2014–24 decade, and an evaluation of uncertainty in the projections.

The macroeconomic model

BLS macroeconomic projections are developed with the MA/US model, a structural econometric model of the U.S. economy. The model, licensed from Macroeconomic Advisers (MA), LLC, comprises more than 1,000 variables, behavioral equations, and identities.[3] Central characteristics of MA/US are a life-cycle model of consumption, a neoclassical view of investment, and a vector autoregression (VAR) for the monetary policy sector of the economy. The model's full-employment foundation is the most critical characteristic for the BLS outlook. Within MA/US, a submodel calculates an estimate of potential output from the nonfarm business sector; the calculation is based on full-employment estimates of the sector's hours worked and output per hour. Error correction models are embedded into MA/US, to align the model's solution with the full-employment submodel.

MA/US does not forecast sharp cyclical movements in the economy over the 10-year projection horizon. "Add factors" are either left unchanged after the first couple of years of the solution or returned to historical norms.[4] The structure of the model, exogenous assumptions, and MA's view of the Fed's long-term policy objective largely determine the characteristics of the model's long-term outlook for the economy.

Model assumptions

The macroeconomic model provides key constraints for the industry output and employment projections.[5] The most important of these constraints are the projections for nonfarm payroll employment, labor productivity, and GDP. Certain critical variables set the parameters for the nation's economic growth, largely determining the trend that GDP will follow and the number of jobs needed to support that trend. In developing the macroeconomic

projections, BLS elects to determine these critical variables externally (through research and modeling) and then supply them to the MA/US model as exogenous variables. Table 1 provides a list of key exogenous variables, along with their assumed values.

Table 1. Key exogenous variables and assumptions affecting aggregate projections, 1994, 2004, 2014, and projected 2024

Exogenous variables	Billions of chained 2009 dollars (unless otherwise noted)				Annual rate of change[1]		
	1994	2004	2014	2024	1994– 2004	2004– 14	2014– 24
Monetary policy related:							
Federal funds rate (percent)	4.2	1.3	0.1	3.4	-10.7	-23.8	43.7
Ninety-day Treasury bill rate (percent)	4.4	1.4	.0	3.1	-10.8	-31.3	57.6
Yields on 10-year Treasury notes (percent)	7.1	4.3	2.5	4.3	-4.9	-5.1	5.5
Fiscal policy, tax related:							
Effective federal marginal tax rate on wages and salaries (percent)	21.8	21.4	23.2	23.2	-.2	.8	.0
Effective federal marginal tax rate on interest income (percent)	23.4	23.0	25.0	25.0	-.2	.8	.0
Effective federal marginal tax rate on dividend income (percent)	26.4	24.5	28.0	28.0	-.8	1.4	.0
Effective federal marginal tax rate on capital gains (percent)	24.7	15.0	20.0	20.0	-4.8	2.9	.0
Maximum federal corporate rate (percent)	35.0	35.0	35.0	35.0	.0	.0	.0
Fiscal policy, government outlays related:							
Defense intermediate goods and services purchased	129.9	211.1	216.5	207.2	5.0	.3	-.4
Defense gross investment	101.1	133.2	134.1	153.3	2.8	.1	1.3
Nondefense intermediate goods and services purchased	49.7	84.7	91.4	73.3	5.5	.8	-2.2
Nondefense gross investment	70.9	94.2	105.0	110.3	2.9	1.1	.5
Federal grants-in-aid, Medicaid and other (billions of current dollars)	166.9	332.2	501.0	749.1	7.1	4.2	4.1
Federal transfer payments, Medicare (billions of current dollars)	164.4	304.4	587.8	955.8	6.4	6.8	5.0
Energy related:							
Price of West Texas Intermediate crude oil (nominal dollars per barrel)	17.2	41.4	93.3	99.9	9.2	8.4	.7
Price of Brent crude oil (nominal dollars per barrel)	15.8	38.2	99.0	107.3	9.2	10.0	.8
Price of natural gas (nominal dollars per million BTU)	1.7	5.4	4.0	6.5	12.0	-2.9	5.0
Domestic oil product	2.4	2.0	3.1	4.6	-2.0	4.7	3.9
Demographic related:							
Total population, including overseas Armed Forces (millions)	263.5	293.1	319.1	343.9	1.1	.9	.8
Population ages 16 and older (millions)	196.8	223.4	247.9	269.1	1.3	1.0	.8

Notes:

[1] Ten-year compound average annual rate.

Sources: Historical data, U.S. Federal Reserve Board, U.S. Bureau of Economic Analysis, U.S. Energy Information Administration, U.S. Census Bureau; projected data, U.S. Bureau of Labor Statistics, U.S. Energy Information Administration, U.S. Census Bureau.

Full employment. Because fluctuations in the business cycle are not foreseeable over a 10-year period, BLS assumes—on the basis of estimates for the productive capacity of the United States—a full-employment economy in the target year (2024). This assumption is common in making medium- and long-term projections and is consistent with the structure of the MA/US model. Constructing a full-employment scenario requires that a value for the exogenous nonaccelerating inflation rate of unemployment (NAIRU) be supplied to the model.[6] The BLS estimate for NAIRU, set at 5.2 percent for 2024, is based on an assessment of historical trends and an extensive literature review. The MA/US model uses error correction models and the VAR monetary policy rule to ensure that the unemployment rate reaches NAIRU.

Along with NAIRU, the outlook for the labor force provides a critical constraint for the full-employment estimates. BLS assumes that, over the 2014–24 period, total factor productivity (TFP) will continue to grow at a pace consistent with its long-run trend, 1.0 percent annually. Given assumptions for NAIRU and TFP growth, as well as the estimated labor force outlook, the MA/US model estimates full-employment hours and GDP. These results are then used in identity equations to arrive at labor productivity estimates.

Energy prices. BLS overwrote the outlook for energy prices in the MA/US model with the energy outlook published by the Energy Information Agency (EIA). The procedure included prices for West Texas Intermediate (WTI) crude oil, Brent crude oil, and natural gas. The 2024 projections relied on EIA's *Annual energy outlook 2015*, which takes a long-run look at fuel production and consumption and incorporates the assumption that current energy regulations will remain unchanged.[7] Because of technological advances in recent years, EIA expects that domestic oil production will continue to rise, peaking at 22.2 quadrillion British thermal units (Btu) in 2020, and then decline slightly, to 21.7 quadrillion Btu in 2024. EIA also projects that the nominal price of WTI crude oil will reach $99.9 per barrel in 2024, up from $93.3 in 2014. Similarly, the price of Brent crude oil is forecasted to reach $107.3 in 2024, up from $99.0 in 2014.

Oil prices dropped dramatically in mid- to late 2014; they rebounded slightly in 2015, reaching $50.90 in July 2015, according to the latest data available before publication of this article.[8] These price movements were largely in line with EIA projections, which expected the price of Brent crude oil to fall to $58 per barrel in 2015. A rise in prices over the remainder of the decade is expected as a result of increased demand from emerging economies. Domestic production is projected to help mitigate this rise but not to offset impacts of increased worldwide demand. Domestic production of natural gas is expected to continue to grow because of advances in shale gas extraction. EIA expects that the United States will transition from being a moderate importer of natural gas in 2014 to being a net exporter in 2017. Natural gas prices are projected to rise to $6.48 per million Btu in 2024, up from $3.99 in 2014.

Monetary and fiscal policy. The MA/US model determines monetary policy through a vector autoregression (VAR). Within the model, the federal funds rate is set on the basis of the Fed's dual mandate of achieving maximum employment and price stability. Specifically, the model targets core PCE inflation to 2.0-percent average annual growth. For each model run, the VAR forecasts the expected funds rate over 2- and 10-year horizons, ensuring that the results are consistent with the model results as a whole. The final estimate of the funds rate, as well as other key interest rates, is a gauge of the feasibility of the model's assumptions and results.

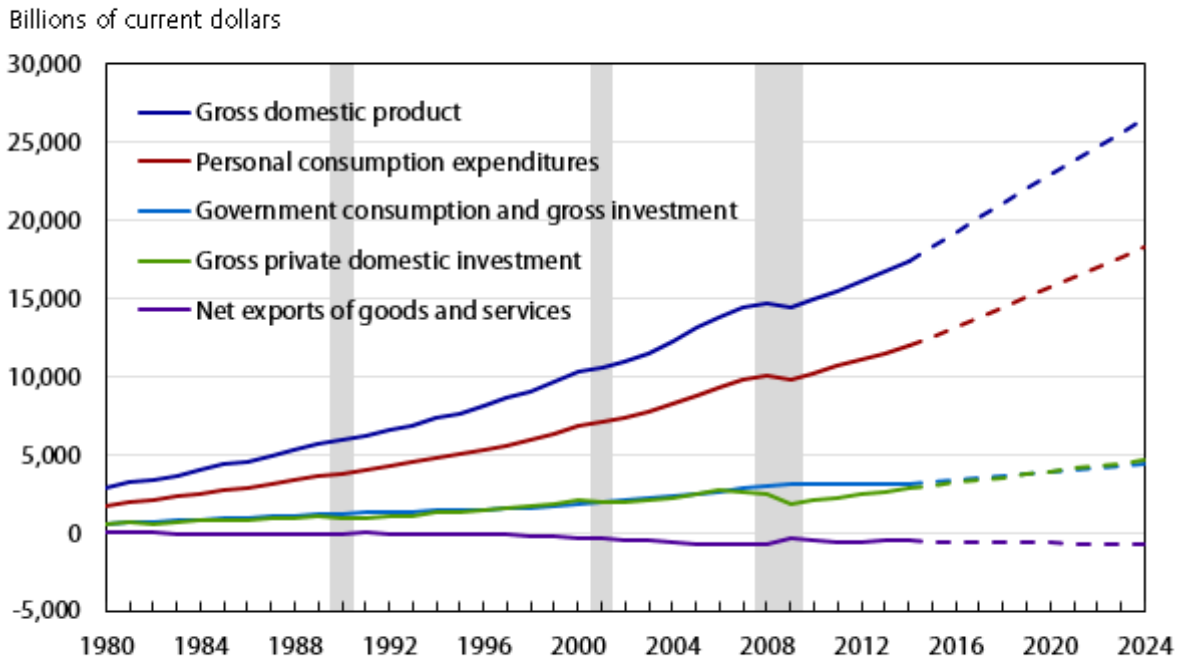
In response to the deep recession and subsequent slow recovery, the Fed has aggressively set monetary policy over the last 6 years. The federal funds rate has been pegged near zero since December 2008. As the funds rate reached its lower bound, the Fed implemented a new stimulative policy known as "quantitative easing," which

entailed embarking on three rounds of purchasing mortgage-backed securities and other long-term assets. With the unemployment rate reaching 5.0 percent in November 2015 (according to the most recent data available before publication), the federal funds rate is expected to start rising again in the near term. Given the structure of the model, the federal funds rate is expected to increase to 3.4 percent by 2024—still lower than the historical trend. The 90-day Treasury bill yield is projected to rise similarly, from 0.0 percent in 2014 to 3.1 percent in 2024. Meanwhile, the yield for the 10-year Treasury note is expected to increase from 2.5 percent in 2014 to 4.3 percent in 2024.

Assumptions about fiscal policy, including tax policies and government spending, substantially affect expectations for government revenue, national debt, and economic growth. BLS generally assumes no major changes to current tax laws over the projection period. Effective marginal tax rates are also held constant, at their 2014 level, over the period. However, many of the 2014 “tax extenders” (i.e., tax policies typically reauthorized on an annual basis, such as the Alternative Minimum Tax “fix”) are assumed to be reinstated for 2015 and maintained over the next decade. On the expenditure side, Medicare is assumed to grow at 5.0 percent annually between 2014 and 2024, slower than the 6.8-percent annual growth experienced over the previous decade. Meanwhile, Medicaid is assumed to grow only slightly slower than it did during the previous decade, increasing by 4.1 percent annually, on average, over the projection period. By 2024, intermediate purchases of goods and services are assumed to decline from their 2014 levels, offsetting assumed growth in government investment categories.

GDP from the demand side

Figure 2. Nominal gross domestic product and final demand, 1980–2014 and projected 2024



Note: Shaded regions represent recessions as designated by the National Bureau of Economic Research.
Sources: Historical data, U.S. Bureau of Economic Analysis; projected data, U.S. Bureau of Labor Statistics.

One way to view and measure GDP is through a demand (or expenditure) perspective. In the 6 years since the official end of the Great Recession, the economy has undergone a steady, if slow, recovery. (See figure 2.) In 2011, real GDP—defined as all final purchases by businesses and consumers—surpassed its previous peak, but the severity of the drop in aggregate demand precluded a balanced recovery for the labor market. Indeed, a great amount of research surrounding the nature of financial crises (such as those experienced by the U.S. economy) and their effects (particularly on the labor market) has emerged.[9] In addition to the recession's cyclical impact on the economy, one longstanding structural concern has been the demographically driven downturn in labor force growth. The fiscal drag of an aging population is expected to put more stress on a troubled government balance sheet. That sheet already saw debt more than double in the 4 years after the recession, partly because of government countermeasures to mitigate economic damage. Global economic uncertainty presents another challenge that could dampen recovery in the United States. The sum total of these developments is an economy that will likely experience modest growth over the projection period, continuing recent postrecession trends.

This story of moderating growth is borne out by the numbers. Real GDP saw a robust 3.4-percent annual growth from 1994 through 2004 and a slower growth of just under 2.6 percent annually between 2004 and 2007. It is worth noting that the Great Recession was longer than the 2001 recession, and recovery from it has been far weaker. Growth over the 2007–11 period was less than a quarter of that seen over the 2001–03 period. BLS projects that, from 2014 to 2024, real GDP growth will be only 2.2 percent. (See table 2.) Per capita real GDP growth will slow to 1.4 percent, which is less than the 2.3-percent growth experienced from 1994 to 2004 and the 1.6-percent prerecession growth seen between 2004 and 2007.

Table 2. Real gross domestic product, by major demand category, 1994, 2004, 2014, and projected 2024

Category	Billions of chained 2009 dollars				Annual rate of change[1]			Contribution to percent change in real GDP		
	1994	2004	2014	2024	1994–2004	2004–14	2014–24	1994–2004	2004–14	2014–24
Gross domestic product	$9,905.4	$13,773.5	$16,085.6	$19,917.9	3.4	1.6	2.2	3.4	1.6	2.2
Personal consumption expenditures	6,338.0	9,208.2	10,969.1	13,862.2	3.8	1.8	2.4	2.5	1.3	1.6
Gross private domestic investment	1,502.2	2,511.3	2,704.7	3,610.9	5.3	.7	2.9	1.0	.2	.5
Exports	826.5	1,300.5	2,084.6	3,090.8	4.6	4.8	4.0	.5	.6	.5
Imports[2]	937.5	2,035.4	2,537.3	3,716.7	8.1	2.2	3.9	-1.0	-.5	-.6
Government consumption expenditures and gross investment	2,245.6	2,808.2	2,889.7	3,124.6	2.3	.3	.8	.4	.1	.1
Federal defense	565.5	652.7	702.4	698.7	1.4	.7	-.1	.0	.1	.0
Federal nondefense	280.3	364.5	421.0	419.0	2.7	1.5	.0	.1	.0	.0
State and local	1,394.5	1,792.8	1,765.2	2,000.9	2.5	-.2	1.3	.3	.0	.1
Residual[3]	-64.1	-21.2	-24.1	-47.9	—	—	—	—	—	—
Addendum:										
GDP per capita, chained 2009 dollars	37,589.1	46,985.4	50,413.0	57,917.6	2.3	.7	1.4	—	—	—

Notes:

[1] Ten-year compound average annual rate.

See footnotes at end of table.

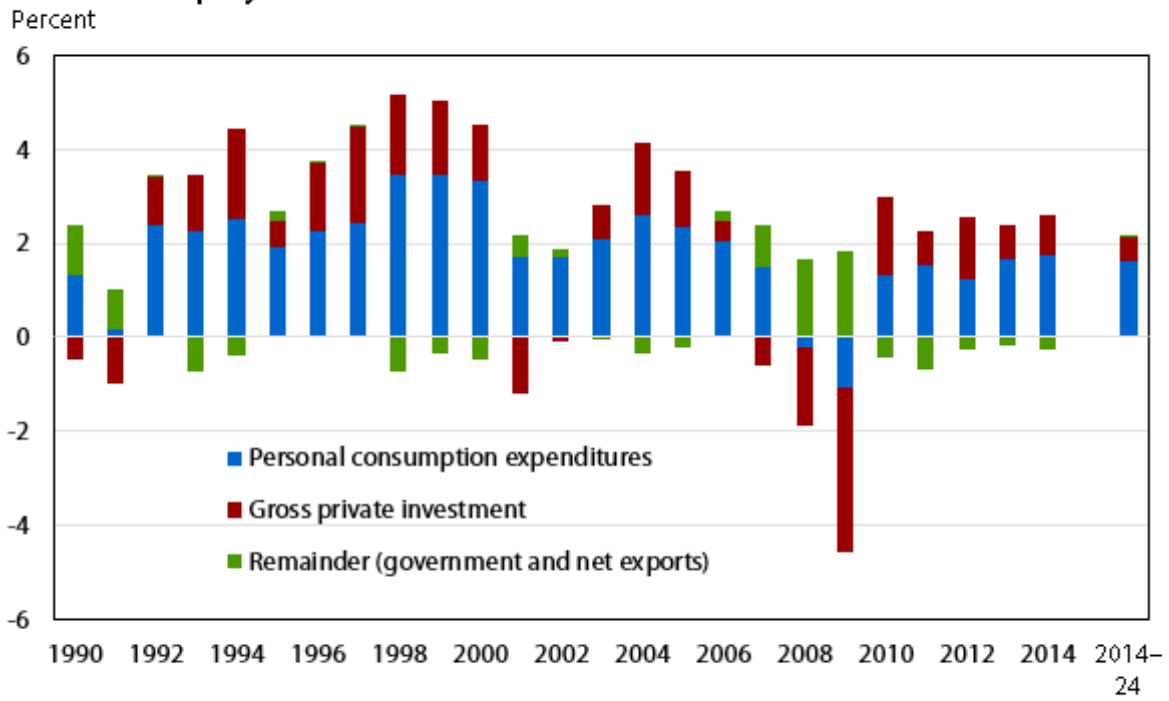
(2) Imports are subtracted from the other components of gross domestic product (GDP) because they are not produced in the United States.

(3) The residual is calculated as real GDP, plus imports, less other components.

Note: Dash indicates data not computable or not applicable.

Sources: Historical data, U.S. Bureau of Economic Analysis; projected data, U.S. Bureau of Labor Statistics.

Figure 3. Contributions to growth in real gross domestic product, 1990–2014 and projected 2014–24



Sources: Historical data, U.S. Bureau of Economic Analysis; projected data, U.S. Bureau of Labor Statistics.

Personal consumption expenditures. Personal consumption expenditures (PCE) have long been the main driver of economic growth for the U.S. economy. (See figure 3.) Year-on-year PCE growth outpaced year-on-year real GDP growth in 15 of the 20 years between 1994 and 2014. This growth differential caused the PCE share of nominal GDP to increase from 64.9 percent in 1994 to 68.5 percent in 2014. (See table 3.) Loose credit conditions and wealth effects from high stock and real estate prices created favorable conditions for a relative consumption boom.[10] In the wake of the recession, however, PCE slowed and grew by only 2.2 percent, on average, from 2009 through 2014. This growth rate represents a strong slowdown from the 2.9-percent growth rate seen during the prerecession period (2004–07) and an even more drastic drop from the rapid 3.8-percent growth rate experienced from 1994 to 2004. BLS projects that PCE will continue on a slower path (relative to historical trends) and grow at 2.4 percent, on average, from 2014 to 2024. While it may be unlikely that PCE will resume an outsize role in the economy, it is reasonable to expect that they will be a stable and consistent source of growth over the next decade.[11]

Table 3. Nominal gross domestic product, by major demand category, 1994, 2004, 2014, and projected 2024

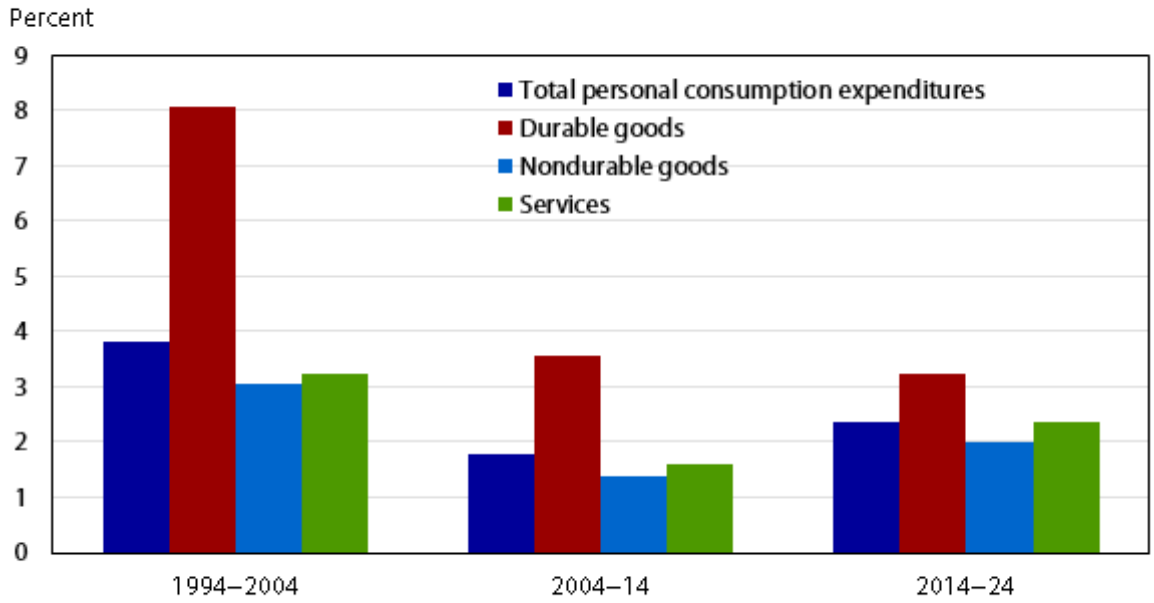
Category	Billions of current dollars				Percent distribution			
	1994	2004	2014	2024	1994	2004	2014	2024
Gross domestic product	$7,308.8	$12,274.9	$17,418.9	$26,563.6	100.0	100.0	100.0	100.0
Personal consumption expenditures	4,741.0	8,260.0	11,930.3	18,235.3	64.9	67.3	68.5	68.6
Gross private domestic investment	1,256.5	2,276.7	2,851.6	4,639.8	17.2	18.5	16.4	17.5
Exports	720.9	1,181.5	2,336.9	3,795.7	9.9	9.6	13.4	14.3
Imports[1]	813.4	1,800.7	2,875.2	4,550.7	11.1	14.7	16.5	17.1
Government consumption expenditures and gross investment	1,403.7	2,357.4	3,175.2	4,443.5	19.2	19.2	18.2	16.7
Federal defense	380.3	570.2	761.5	923.0	5.2	4.6	4.4	3.5
Federal nondefense	192.4	322.1	457.6	534.6	2.6	2.6	2.6	2.0
State and local	831.0	1,465.1	1,956.1	2,985.9	11.4	11.9	11.2	11.2

Notes:

[1] Imports are subtracted from the other components of gross domestic product because they are not produced in the United States.

Sources: Historical data, U.S. Bureau of Economic Analysis; projected data, U.S. Bureau of Labor Statistics.

Figure 4. Growth in categories of personal consumption expenditures, 10-year compound average annual rate, 1994–2014 and projected 2014–24



Sources: Historical data, U.S. Bureau of Economic Analysis; projected data, U.S. Bureau of Labor Statistics.

PCE can be broken down into three categories: durable goods, nondurable goods, and services. (See table 4.) Durable goods, whose lifespans are considered to be more than 3 years, are further subdivided into (1) motor vehicles and parts and (2) other durable goods. Durable goods are projected to grow only slightly slower than they did over the last decade. (See figure 4.) In nominal terms, motor vehicles and parts account for just over a third of all durable-goods demand. Strong demand for motor vehicles peaked in 2004 but lost much ground during the recession, before rebounding after 2009. All told, between 2004 and 2014 there was zero net real growth for this

demand component. BLS projects relatively muted growth through 2024, with motor vehicle demand growing 1.7 percent a year, on average. In terms of physical units, light vehicle sales are projected to grow only 0.3 percent per year from 2014 through 2024.

Table 4. Personal consumption expenditures, 1994, 2004, 2014, and projected 2024

Category	Billions of chained 2009 dollars				Annual rate of change[1]		
	1994	2004	2014	2024	1994– 2004	2004– 14	2014– 24
Personal consumption expenditures	$6,338.0	$9,208.2	$10,969.1	$13,862.2	3.8	1.8	2.4
Durable goods	457.0	992.9	1,410.0	1,937.4	8.1	3.6	3.2
Motor vehicles and parts	252.6	405.5	405.0	479.0	4.8	.0	1.7
Other durable goods	222.3	592.3	1,008.2	1,496.6	10.3	5.5	4.0
Nondurable goods	1,527.2	2,063.6	2,364.8	2,879.2	3.1	1.4	2.0
Food	618.4	729.8	809.7	946.2	1.7	1.0	1.6
Gasoline	272.3	299.3	274.5	297.4	.9	-.9	.8
Other nondurable goods	664.0	1,030.8	1,292.6	1,667.6	4.5	2.3	2.6
Services	4,485.2	6,156.6	7,218.6	9,114.1	3.2	1.6	2.4
Housing services	1,356.6	1,717.9	1,981.7	2,411.8	2.4	1.4	2.0
Imputed rent	810.2	1,104.7	1,253.6	1,567.1	3.1	1.3	2.3
Natural gas	58.2	56.2	56.0	54.9	-.4	.0	-.2
Electricity	128.4	157.0	163.8	199.4	2.0	.4	2.0
Other housing services	361.8	398.8	508.5	588.7	1.0	2.5	1.5
Medical services	1,046.1	1,442.3	1,830.7	2,466.6	3.3	2.4	3.0
Other services	2,089.3	2,995.3	3,404.9	4,230.6	3.7	1.3	2.2
Residual[2]	-185.6	-3.7	-38.4	-131.7	—	—	—

Notes:

[1] Ten-year compound average annual rate.

[2] The residual is the difference between the first line and the sum of the most detailed lines.

Note: Dash indicates data not computable or not applicable.

Sources: Historical data, U.S. Bureau of Economic Analysis; projected data, U.S. Bureau of Labor Statistics.

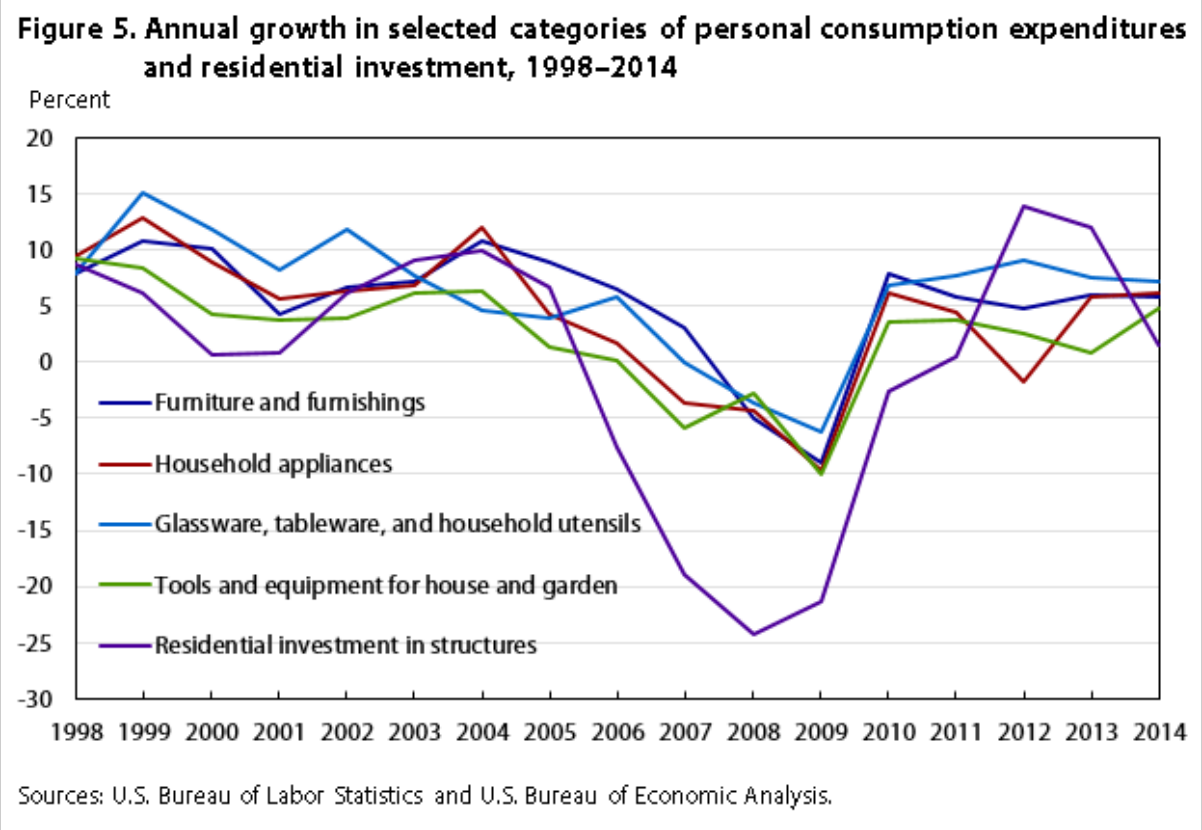


Figure 5. Annual growth in selected categories of personal consumption expenditures and residential investment, 1998–2014

Sources: U.S. Bureau of Labor Statistics and U.S. Bureau of Economic Analysis.

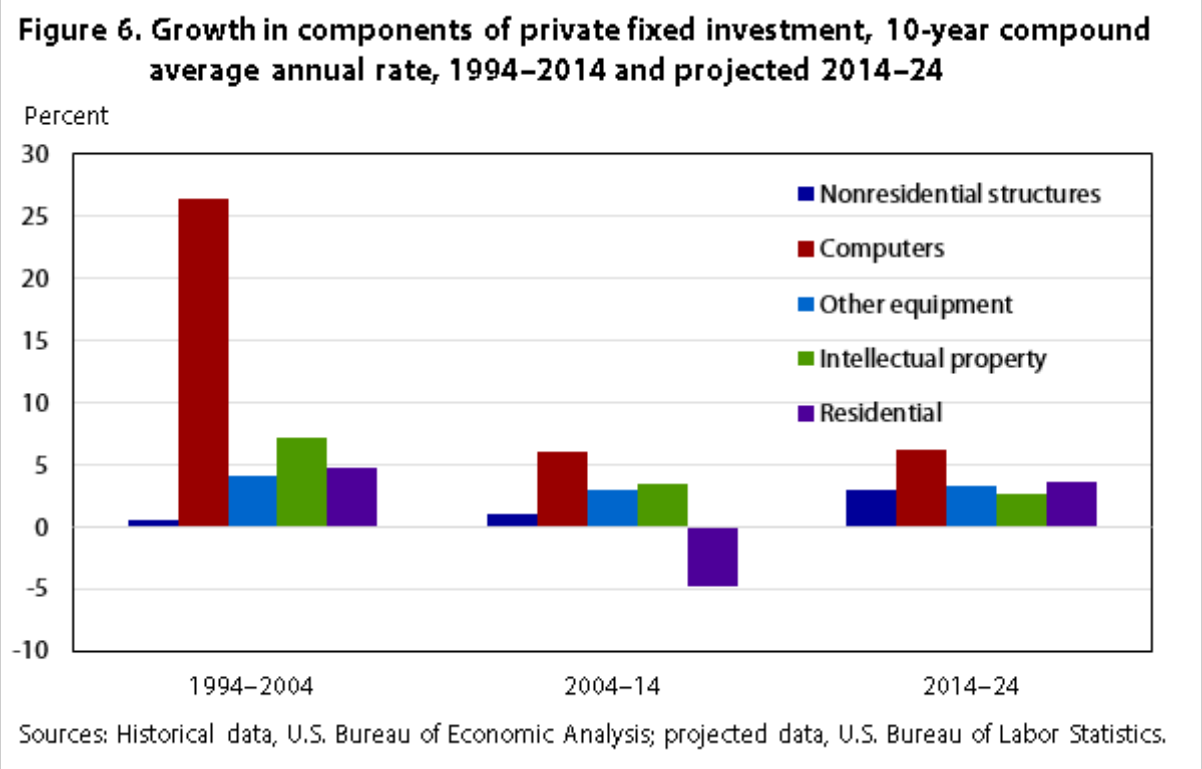
The category of other durable goods contains several other types of long-lived consumer items, such as furniture and fixtures, audio and video equipment, jewelry, and books. As a whole, this category is projected to grow slightly slower over the 2014–24 period than it did in the preceding 10 years, with growth slowing from 5.5 percent to 4.0 percent. The three largest categories within other durable goods are audio and video equipment, furniture and finishings, and information-processing equipment. Household-related durables compose almost half of other durable goods and underscore the important relationship between consumer durables and the housing market. Figure 5 shows the year-on-year change in several categories of household-related consumer durables, indicating that movements in demand for these goods coincide with the collapse in residential investment. The long-lived nature of the goods allows households to defer purchases during difficult economic times, much as businesses tend to defer capital expenditures during recessions.

BLS projects that some of the fastest growing components within other durable goods are those which deal with smart phones, computers, televisions, and other digital personal devices. While growth in these components is not projected to be greater than that seen in the previous 10 years, it will still serve as a driver of consumer spending.

Whereas durable goods represent long-lived luxuries or household investments, consumer nondurables are the everyday essentials (e.g., food, clothing, and fuel) that consumers need regardless of economic circumstances. Overall annual growth in nondurables was 3.1 percent from 1994 to 2004 and only 1.4 percent from 2004 to 2014. All nondurables are projected to grow somewhat more strongly between 2014 and 2024, at 2.0 percent annually, on average. Expenditures on gasoline are expected to increase, as gas prices are projected to increase moderately along with increases in average fuel economy.[12]

Services account for the majority of PCE and are expected to grow as a proportion of total consumer spending. In nominal terms, services have grown from 63.2 percent of PCE in 1994 to just under 66.7 percent in 2014. BLS projects that 69.9 percent of PCE in 2024 will be spent on services. This projection is consistent with the popular narrative that the U.S. economy is undergoing a long-term transition from a manufacturing-based economy to a services-based one.[13] Housing services were predictably affected by the housing market crash. Annual growth in imputed rent, the main component of housing services, dropped to just 0.7 percent from 2009 to 2014, after averaging 2.5 percent per year from 2004 to 2007. BLS projects that housing services will rebound as the housing market recovers and will grow at 2.0 percent, on average, from 2014 to 2024. Medical services have increased steadily as a percentage of overall PCE, reflecting trends in health and insurance markets. In 1994, medical services accounted for 14.4 percent of nominal consumer spending on services. This number increased to 15.0 percent in 2004 and 16.7 percent in 2014. As healthcare costs rise and demand a larger share of consumption, medical services are projected to grow at 3.0 percent per year, on average, and account for more than 18 percent of total PCE by 2024. Other services, a subcategory that includes services such as financial intermediation, leisure, and education, grew rapidly between 1994 and 2004, at 3.7 percent per year, on average. From 2004 to 2014, this growth slowed to 1.3 percent per year. BLS projects that growth in other services will increase to 2.2 percent between 2014 and 2024, with categories such as financial services and Internet services driving the increase.

Residential investment. Residential investment, another important GDP component, has large economic impacts relative to its size. It played a key role in both the runup to the housing bubble and the economic recovery. Although residential investment represented only about 3 percent of nominal GDP in 2014, it has been the subject of extensive research and analysis because of the economic spillovers it causes.[14] As previously mentioned, the housing market is a key determinant of several categories of PCE and has strong positive externalities for both economic and employment growth.



Long before the recession, investment in residential structures experienced strong growth, increasing almost 5 percent per year between 1994 and 2004. (See figure 6 and table 5.) Such strong growth raised red flags, with some economists questioning its sustainability and warning of a forming bubble.[15] Residential investment peaked in 2005 and actually decreased—at 13.7 percent annually, on average—from 2004 through 2009. It experienced a modest recovery between 2009 and 2014, registering average growth of 4.8 percent per year. Although this increase would represent a strong recovery for most sectors of the economy, it was anemic (compared with past recoveries) for residential investment. Wealth effects from the housing crash, consumer debt overhangs, stricter lending standards, lagging household formation rates, and excess housing stock caused by overbuilding all contributed to a relatively weak housing recovery.[16] While some research indicates that residential investment after financial crises heals fully only in the long run, there are demographic and economic factors that point toward a relatively strong recovery for residential investment through 2024.[17] BLS projects that household formation rates will return to historical levels. Because the housing market is driven largely by demographics, higher household formation rates typically correlate with increased residential investment.[18] Demographic trends and the absorption of excess stock should provide sufficiently strong tailwinds, allowing residential investment to grow at 3.7 percent per year over the projection period.[19]

Table 5. Gross private domestic investment, 1994, 2004, 2014, and projected 2024

Category	Billions of chained 2009 dollars				Annual rate of change[(1)]		
	1994	2004	2014	2024	1994–2004	2004–14	2014–24
Gross private domestic investment	$1,502.2	$2,511.3	$2,704.7	$3,610.9	5.3	0.7	2.9
Fixed nonresidential investment	937.6	1,605.3	2,116.4	2,826.3	5.5	2.8	2.9
Equipment	381.7	731.2	1,008.2	1,432.9	6.7	3.3	3.6

See footnotes at end of table.

Table 5. Gross private domestic investment, 1994, 2004, 2014, and projected 2024

Category	Billions of chained 2009 dollars				Annual rate of change[1]		
	1994	2004	2014	2024	1994–2004	2004–14	2014–24
Computers	4.5	46.8	84.6	154.9	26.5	6.1	6.2
Other equipment	463.1	692.0	921.4	1,279.0	4.1	2.9	3.3
Intellectual property products	232.6	464.9	654.2	843.1	7.2	3.5	2.6
Structures	389.7	414.1	456.2	610.6	.6	1.0	3.0
Fixed residential structures	512.8	818.8	496.1	710.6	4.8	-4.9	3.7
Single family	264.2	405.5	169.5	357.4	4.4	-8.4	7.7
Multifamily	27.6	52.0	40.2	50.0	6.5	-2.5	2.2
Other	217.5	356.7	287.5	298.5	5.1	-2.1	.4
Change in business inventories	75.4	71.4	70.6	50.5	-.5	-.1	-3.3
Residual[2]	-172.4	7.9	20.5	-33.2	—	—	—

Notes:

See footnotes at end of table.

(1) Ten-year compound average annual rate.

(2) The residual is the difference between the first line and the sum of the most detailed lines.

Note: Dash indicates data not computable or not applicable.

Sources: Historical data, U.S. Bureau of Economic Analysis; projected data, U.S. Bureau of Labor Statistics.

Nonresidential investment. The recession also took a toll on nonresidential investment, which tends to be one of the more volatile components of GDP. Total nonresidential investment grew rapidly before the recession, increasing by a strong 5.5 percent per year from 1994 to 2004. (See table 5.) While growth continued for a few years, peaking in 2007, it stalled in 2008 and suffered a year-on-year decline of over 15 percent through 2009. Since the end of the recession in 2009, growth has been fairly strong, with total nonresidential investment growing by more than 5 percent a year from 2009 to 2014. Growth in nonresidential structures has been relatively slow, however. BLS projects that nonresidential investment growth will be slightly higher than it has been in the last 10 years, averaging 2.9 percent per year between 2014 and 2024. This stronger growth is expected to fulfill latent demand after a long period of low investment.[20]

Investment in equipment and intellectual property products. Fixed investment in equipment, which includes computers and other equipment, is a highly cyclical GDP component that can drop dramatically during recessions and provide a strong boost to growth during recoveries. Overall, equipment investment suffered year-on-year declines of 6.9 percent in 2008 and almost 23 percent in 2009. Investment in computers fared better, with a year-on-year increase of 5.9 percent in 2008, and was relatively stable in 2009. Still, growth for this category was stronger in other periods. From 1994 to 2004, investment in computers grew at a torrid 26.5 percent, on average, as businesses incorporated modern information technology in their operations. From 2004 to 2014, computer investment slowed down dramatically, but its growth remained rapid, 6.1 percent. BLS projects that investment in computers will increase slightly and grow at 6.2 percent through 2024. The category of other equipment includes various types of business assets, from communication equipment to autos, airplanes, and construction machinery. Communication equipment is the largest category in other equipment, while medical instruments and mining machinery were two of the fastest growing categories from 2004 through 2014. Communication equipment and mining equipment are projected to be two of the fastest growing categories through 2024.

With the 2014 comprehensive revision of the National Income and Product Accounts, the U.S. Bureau of Economic Analysis added a new category to fixed investment: intellectual property products (IPP). This new category includes software, research and development (R&D), and artistic originals. IPP grew rapidly, at 7.2 percent per year, from 1994 to 2004, but its growth slowed to only 3.5 percent per year between 2004 and 2014. Software is both the largest and fastest growing component of IPP and will be the main driver of growth over the projection period. R&D is the second-largest IPP component and is expected to serve as a brake on growth over the next decade. BLS projects that IPP, as a whole, will continue to slow down, growing only 2.6 percent per year from 2014 to 2024.

The categories of communication equipment, software, and R&D are interesting for their impact on productivity and long-term growth. Some research indicates that these information technology categories have played an integral role in productivity growth over the last few decades.[21] However, the long-term impacts of information technology are uncertain. Some economists believe that initial investments in such technology will pave the way

for stronger productivity growth in the future.[22] Others think that the importance of the information revolution has been overstated and that productivity growth will slow down, regardless of the level of initial investment.[23]

Foreign trade. Foreign trade represents an increasingly large and volatile component of final demand. As a percentage of nominal GDP, the absolute value of total trade has increased from 21.0 percent in 1994 to 29.9 percent in 2014. Over the last 20 years, barriers to trade, such as tariffs, fell dramatically throughout the world. The average tariff rate on goods imported into the United States dropped from 3.8 percent in 1993 to 1.5 percent in 2013, a 61-percent reduction.[24] This drop in protectionism is global, with weighted average tariff rates for the entire world dropping from 5.3 percent in 1997 to just 2.9 percent in 2012.[25] While reducing barriers to trade is an admirable goal for most economies, it does not come without dangers. Globalization is a highly polarizing subject, and many within the United States blame global competition for a host of macroeconomic maladies, from recessions and their "jobless recoveries" to wage stagnation.[26] In addition, the tendency of the United States to run persistent trade deficits raises questions about long-run U.S. economic stability and growth. The global nature of the Great Recession also highlighted the interconnectedness of globalized economies and raised concerns about negative spillovers from around the world. Debt crises within the Eurozone, emerging-market bubbles, and slowing growth in China all present real risks to the U.S. economy over the projection period.

U.S. exports and imports both grew rapidly from 1994 through 2004, with growth rates of 4.6 percent and 8.1 percent, respectively. (See table 6.) Over the same period, the relatively strong growth of imports caused the trade balance to decrease by more than sevenfold, from −$111.0 billion in 1994 to −$734.8 billion in 2004. The trade balance was roughly halved during the next 5 years, falling from −$734.8 billion in 2004 to −$395.5 billion in 2009. The majority of this decrease was due to relatively strong export growth, in addition to a small contraction in imports. BLS expects the U.S. trade position to revert to steady deficits through 2024, with exports growing at 4.0 percent per year and imports growing at 3.9 percent. The trade balance is expected to widen from −$452.6 billion to −$625.9 billion over the projection period.

Table 6. Exports and imports of goods and services, 1994, 2004, 2014, and projected 2024

Category	Billions of chained 2009 dollars				Annual rate of change[(1)]		
	1994	2004	2014	2024	1994– 2004	2004– 14	2014– 24
Exports of goods and services	$826.5	$1,300.5	$2,084.6	$3,090.8	4.6	4.8	4.0
Goods	553.0	904.5	1,438.9	2,146.5	5.0	4.8	4.1
Nonagricultural	487.5	824.9	1,323.3	2,018.9	5.4	4.8	4.3
Agricultural	69.4	80.4	117.2	137.5	1.5	3.8	1.6
Services	279.7	395.4	645.1	947.9	3.5	5.0	3.9
Residual[(2)]	-10.1	-.1	-1.1	-13.5	—	—	—
Imports of goods and services	937.5	2,035.4	2,537.3	3,716.7	8.1	2.2	3.9
Goods	747.7	1,704.1	2,072.4	3,120.6	8.6	2.0	4.2
Nonpetroleum	595.0	1,405.2	1,918.4	2,997.8	9.0	3.2	4.6
Petroleum	204.5	308.7	214.9	236.2	4.2	-3.6	.9
Services	193.8	326.4	464.4	595.5	5.4	3.6	2.5
Residual[(3)]	-55.7	-5.0	-60.4	-112.9	—	—	—
Trade surplus/deficit	-111.0	-734.8	-452.7	-625.9	20.8	-4.7	3.3

Notes:

See footnotes at end of table.

(1) Ten-year compound average annual rate.

(2) The residual is the difference between the aggregate for "exports of goods and services" and its detailed components.

(3) The residual is the difference between the aggregate for "imports of goods and services" and its detailed components.

Sources: Historical data, U.S. Bureau of Economic Analysis; projected data, U.S. Bureau of Labor Statistics.

These trade data are highly susceptible to fluctuations in the dollar exchange rate, which BLS projects will continue to strengthen against a broad trade-weighted basket of currencies. The dollar value exhibited very strong growth from 1994 to 2004—increasing at 2.3 percent per year—because of a relatively strong U.S. economy. Slow economic growth and the impact of the Great Recession caused the dollar to lose value, at 0.9 percent per year, between 2004 and 2014. BLS projects that stable growth and uncertainty abroad will cause the dollar's value to grow 0.7 percent per year through 2024. Indeed, BLS projects that the 2015 exchange rate will be almost 20 percent higher than its 2011 value, the lowest in recent history. As long as Europe struggles to recover from the recession and emerging markets such as China experience uneven growth, the United States will be seen as a safe haven for investors and the dollar will be in demand. This perception could place upward pressure on the exchange rate and adversely affect the U.S. net trade position.

Government. Government spending was a highly contentious issue during the Great Recession and remained so after it. Government spending is typically considered countercyclical, because "automatic stabilizers" (such as food stamps and unemployment benefits) are used relatively sparingly during economic expansions and more frequently during recessions (to help moderate economic slowdown). Unlike automatic government spending, tax revenues are procyclical, with high revenues during expansions and falling revenues during slowdowns. The combination of countercyclical and procyclical effects implies that government deficits tend to mirror the economy at large. The Great Recession pushed this thought to the extreme, as the U.S. government took urgent measures to mitigate the effects of the recession and then expanded the social safety net through extended unemployment benefits and greater access to health insurance.

These policies had implications for U.S. debt. The nominal debt-to-GDP ratio was 46.7 percent in 1994 and actually decreased to 34.7 percent in 2006. Between 2007 and 2014, however, the ratio more than doubled, reaching 73.5 percent in 2014. Some research suggests that economies are much more likely to suffer slow growth, and possibly future financial crises, at elevated debt-to-GDP ratios.[27] Stabilizing the debt has therefore been an important goal for the government. Policies such as the sequester have had an important role in restraining long-term debt increases. BLS projects that the debt-to-GDP ratio will stabilize and grow at only 0.1 percent per year from 2014 to 2024.

While BLS projects that the debt will stabilize, stabilization is likely to come at a cost. As the U.S. population ages and the labor force slowly recovers from the recession, the need to fund mandatory programs (such as Social Security and Medicare) while constraining deficits poses an increasingly large problem for the economy. Transfer payments, which include healthcare transfers and unemployment insurance benefits, are projected to continue to grow steadily from 2014 through 2024, at the expense of government consumption expenditures. (See tables 7 and 8.)

Table 7. Federal government receipts and expenditures, 1994, 2004, 2014, and projected 2024

Category	Billions of current dollars				Percent distribution				Annual rate of change[1]		
	1994	2004	2014	2024	1994	2004	2014	2024	1994–2004	2004–14	2014–24
Receipts	$1,326.7	$2,022.2	$3,300.8	$4,854.5	100.0	100.0	100.0	100.0	4.3	5.0	3.9
Tax receipts	781.4	1,154.0	2,024.5	2,957.3	58.9	57.1	61.3	60.9	4.0	5.8	3.9
Personal taxes	542.6	798.5	1,374.2	2,214.3	40.9	39.5	41.6	45.6	3.9	5.6	4.9
Corporate income taxes	156.7	250.3	497.3	536.7	11.8	12.4	15.1	11.1	4.8	7.1	.8
Taxes on production and imports	79.0	95.2	134.1	176.1	6.0	4.7	4.1	3.6	1.9	3.5	2.8
Taxes from the rest of the world	3.2	10.0	18.9	30.2	.2	.5	.6	.6	12.2	6.6	4.8
Contributions for social insurance	496.2	808.9	1,149.3	1,749.2	37.4	40.0	34.8	36.0	5.0	3.6	4.3
Income receipts on assets	23.6	25.3	37.5	49.7	1.8	1.2	1.1	1.0	.7	4.0	2.8
Interest receipts	20.0	16.6	27.9	34.5	1.5	.8	.8	.7	-1.8	5.3	2.2
Rents and royalties	3.5	8.6	9.7	15.2	.3	.4	.3	.3	9.3	1.1	4.6
Transfer receipts	21.6	29.1	68.5	84.0	1.6	1.4	2.1	1.7	3.0	9.0	2.1
From businesses	15.9	15.9	47.4	56.2	1.2	.8	1.4	1.2	.0	11.6	1.7
From persons	5.6	13.2	21.1	27.9	.4	.7	.6	.6	8.9	4.8	2.8
Surplus of government enterprises	4.1	4.9	-19.7	-6.5	.3	.2	-.6	-.1	1.9	—	-10.4
Expenditures	1,580.4	2,421.4	3,883.1	6,008.4	100.0	100.0	100.0	100.0	4.4	4.8	4.5
Consumption expenditures	427.3	681.4	965.2	1,156.6	27.0	28.1	24.9	19.2	4.8	3.5	1.8
Transfer payments	800.1	1,388.0	2,419.6	3,877.6	50.6	57.3	62.3	64.5	5.7	5.7	4.8
Government social benefits	613.2	1,025.6	1,882.8	3,071.1	38.8	42.4	48.5	51.1	5.3	6.3	5.0
Social Security benefits	312.2	485.5	834.7	1,443.3	19.8	20.1	21.5	24.0	4.5	5.6	5.6
Medicare benefits	164.4	304.4	587.8	955.8	10.4	12.6	15.1	15.9	6.4	6.8	5.0
Unemployment benefits	24.0	36.4	36.9	40.3	1.5	1.5	1.0	.7	4.3	.1	.9
Other benefits to persons	105.9	188.6	404.1	603.5	6.7	7.8	10.4	10.0	5.9	7.9	4.1
Benefits to the rest of the world	6.8	10.6	19.3	28.1	.4	.4	.5	.5	4.6	6.1	3.8
Other transfer payments	186.8	362.4	536.9	806.5	11.8	15.0	13.8	13.4	6.9	4.0	4.2
Grants-in-aid to state and local governments	166.9	332.2	501.0	749.1	10.6	13.7	12.9	12.5	7.1	4.2	4.1
Transfer payments to the rest of the world	20.0	30.2	36.0	57.4	1.3	1.2	.9	1.0	4.2	1.8	4.8
Interest payments	320.8	306.1	441.4	876.7	20.3	12.6	11.4	14.6	-.5	3.7	7.1
To persons and businesses	284.5	251.3	331.8	495.3	18.0	10.4	8.5	8.2	-1.2	2.8	4.1
To the rest of the world	36.3	54.8	109.5	381.4	2.3	2.3	2.8	6.3	4.2	7.2	13.3
Subsidies	32.2	46.0	56.9	97.5	2.0	1.9	1.5	1.6	3.7	2.1	5.5
Net federal government saving	-253.7	-399.2	-582.3	-1,153.8	—	—	—	—	4.6	3.8	7.1
Surplus or deficit as percentage of gross domestic product	-3.5	-3.3	-3.3	-4.3	—	—	—	—	-.6	.3	2.7

Notes:

See footnotes at end of table.

[1] Ten-year compound average annual rate.

Note: Dash indicates data not computable or not applicable.

Sources: Historical data, U.S. Bureau of Economic Analysis; projected data, U.S. Bureau of Labor Statistics.

Table 8. Government consumption expenditures and gross investment, 1994, 2004, 2014, and projected 2024

Category	Billions of chained 2009 dollars				Annual rate of change[1]		
	1994	2004	2014	2024	1994–2004	2004–14	2014–24
Government consumption expenditures and gross investment	$2,245.6	$2,808.2	$2,889.7	$3,124.6	2.3	0.3	0.8
Federal government consumption and investment	844.8	1,017.1	1,123.5	1,117.6	1.9	1.0	-.1
Defense consumption and investment	565.5	652.7	702.4	698.7	1.4	.7	-.1
Consumption expenditures	466.9	520.0	567.8	545.9	1.1	.9	-.4
Compensation, military	144.4	140.3	141.4	141.0	-.3	.1	.0
Compensation, civilian	91.1	69.9	79.0	80.0	-2.6	1.2	.1
Consumption of fixed capital	128.9	118.5	154.7	142.8	-.8	2.7	-.8
Intermediate goods and services purchased	129.9	211.1	216.5	207.2	5.0	.3	-.4
Less own-account investment	13.3	16.2	20.0	21.3	2.0	2.1	.6
Less sales to other sectors	7.3	3.1	3.3	2.9	-8.1	.6	-1.5
Gross Investment	101.1	133.2	134.1	153.3	2.8	.1	1.3
Own-account investment	13.3	16.2	20.0	21.3	2.0	2.1	.6
Other investment	87.7	117.0	114.0	132.0	2.9	-.3	1.5
Nondefense consumption and investment	280.3	364.5	421.0	419.0	2.7	1.5	.0
Consumption expenditures	210.3	270.4	315.8	308.8	2.5	1.6	-.2
Compensation	133.2	133.6	148.0	147.9	.0	1.0	.0
Consumption of fixed capital	54.5	71.8	95.1	105.8	2.8	2.9	1.1
Commodity credit corporation purchases	-.6	-1.0	-.2	.0	5.2	-17.7	—
Other intermediate goods and services purchased	50.4	85.7	91.5	73.3	5.5	.7	-2.2
Less own-account investment	14.8	15.2	12.9	13.0	.2	-1.6	.1
Less sales to other sectors	6.8	4.1	5.4	4.3	-5.0	2.8	-2.1
Gross investment	70.9	94.2	105.0	110.3	2.9	1.1	.5
Own-account investment	14.8	15.2	12.9	13.0	.2	-1.6	.1
Other investment	56.6	79.0	92.1	97.3	3.4	1.5	.5
State and local government consumption and investment	1,394.5	1,792.8	1,765.2	2,000.9	2.5	-.2	1.3
Consumption expenditures	1,152.6	1,431.8	1,460.0	1,638.2	2.2	.2	1.2
Compensation	960.4	1,102.9	1,118.7	1,205.4	1.4	.1	.7
Consumption of fixed capital	95.9	141.6	173.4	204.0	4.0	2.0	1.6
Intermediate goods and services purchased	394.5	575.3	592.5	659.2	3.8	.3	1.1
Less own-account investment	22.5	32.0	33.4	38.8	3.6	.4	1.5
Less sales to other sectors	270.0	356.7	391.5	394.1	2.8	.9	.1
Gross investment	242.7	361.6	304.4	361.6	4.1	-1.7	1.7
Own-account investment	22.5	32.0	33.4	38.8	3.6	.4	1.5
Other investment	220.3	329.9	271.0	322.7	4.1	-1.9	1.8

See footnotes at end of table.

Table 8. Government consumption expenditures and gross investment, 1994, 2004, 2014, and projected 2024

Category	Billions of chained 2009 dollars				Annual rate of change[1]		
	1994	2004	2014	2024	1994–2004	2004–14	2014–24
Residual[2]	37.2	68.3	97.3	113.1	—	—	—

Notes:

See footnotes at end of table.

(1) Ten-year compound average annual rate.

(2) The residual is the difference between the first line and the sum of the most detailed lines.

Note: Dash indicates data not computable or not applicable.

Sources: Historical data, U.S. Bureau of Economic Analysis; projected data, U.S. Bureau of Labor Statistics.

Defense spending also will be affected by the need to limit increases in government spending. Total defense consumption and investment expenditures slowed down in the last decade, growing at only 0.7 percent per year from 2004 to 2014, in contrast to 1.4 percent annually from 1994 to 2004. Defense spending is projected to decrease at a rate of 0.1 percent per year over the projection period.

State and local consumption and investment is another important component of final demand. Many states are statutorily prohibited from running deficits, so increased automatic spending and decreased tax revenue during recessions typically lead to dramatic cuts in the category of other services. From 2009 through 2014, growth in real consumption expenditures averaged only 1.4 percent, whereas transfer payments averaged more than 4.5 percent. This shift in spending is not limited to the postrecession period—the composition of state and local expenditures has been shifting toward transfer payments for decades. In 1994, transfer payments accounted for only 21.5 percent of nominal state and local expenditures, while consumption expenditures accounted for 71.0 percent. (See table 9.) By 2014, transfer payments accounted for more than 25 percent and consumption expenditures for almost 67 percent. BLS projects that, as the economy stabilizes, the distribution of state and local spending will also stabilize, with transfer payments and consumption in 2024 accounting for roughly the same percentages of nominal spending as in 2014.

Table 9. State and local government receipts and expenditures, 1994, 2004, 2014, and projected 2024

Category	Billions of current dollars				Percent distribution				Annual rate of change[1]		
	1994	2004	2014	2024	1994	2004	2014	2024	1994–2004	2004–14	2014–24
Receipts	$934.1	$1,575.1	$2,205.9	$3,464.1	100.0	100.0	100.0	100.0	5.4	3.4	4.6
Tax receipts	644.2	1,057.9	1,495.1	2,408.7	69.0	67.2	67.8	69.5	5.1	3.5	4.9
Personal taxes	148.0	247.4	368.7	596.3	15.8	15.7	16.7	17.2	5.3	4.1	4.9
Corporate income taxes	30.0	41.7	57.3	88.2	3.2	2.6	2.6	2.5	3.4	3.2	4.4
Taxes on production and imports	466.3	768.7	1,069.1	1,724.2	49.9	48.8	48.5	49.8	5.1	3.4	4.9
Sales taxes and other	266.9	442.5	618.7	972.3	28.6	28.1	28.0	28.1	5.2	3.4	4.6
Property taxes	199.4	326.2	450.4	751.8	21.3	20.7	20.4	21.7	5.0	3.3	5.3
Contributions for social insurance	14.5	24.6	17.6	25.0	1.6	1.6	.8	.7	5.4	-3.3	3.6
Income receipts on assets	63.5	76.9	81.0	102.6	6.8	4.9	3.7	3.0	1.9	.5	2.4
Interest receipts	58.2	66.4	63.7	77.2	6.2	4.2	2.9	2.2	1.3	-.4	1.9
Dividends	.8	2.0	4.0	5.5	.1	.1	.2	.2	10.2	7.2	3.4
Rents and royalties	4.5	8.5	13.3	19.8	.5	.5	.6	.6	6.5	4.6	4.1
Transfer receipts	204.1	422.5	626.8	927.8	21.8	26.8	28.4	26.8	7.5	4.0	4.0
Federal grants-in-aid	166.9	332.2	501.0	749.1	17.9	21.1	22.7	21.6	7.1	4.2	4.1
From businesses (net)	11.9	36.5	52.2	79.2	1.3	2.3	2.4	2.3	11.8	3.6	4.3

See footnotes at end of table.

Table 9. State and local government receipts and expenditures, 1994, 2004, 2014, and projected 2024

Category	Billions of current dollars				Percent distribution				Annual rate of change[1]		
	1994	2004	2014	2024	1994	2004	2014	2024	1994–2004	2004–14	2014–24
From persons	25.3	53.8	73.7	99.6	2.7	3.4	3.3	2.9	7.9	3.2	3.1
Surplus of government enterprises	7.8	-6.7	-14.5	.0	.8	-.4	-.7	.0	—	8.0	—
Expenditures	961.0	1,683.4	2,430.7	3,686.3	100.0	100.0	100.0	100.0	5.8	3.7	4.3
Consumption expenditures	682.2	1,187.6	1,620.4	2,438.1	71.0	70.5	66.7	66.1	5.7	3.2	4.2
Government social benefit payments to persons	206.7	385.0	615.1	982.5	21.5	22.9	25.3	26.7	6.4	4.8	4.8
Medicaid	144.9	300.1	503.0	818.3	15.1	17.8	20.7	22.2	7.6	5.3	5.0
Other	61.8	84.9	112.1	164.1	6.4	5.0	4.6	4.5	3.2	2.8	3.9
Interest payments	71.8	110.5	194.8	265.2	7.5	6.6	8.0	7.2	4.4	5.8	3.1
Subsidies	.3	.4	.5	.6	.0	.0	.0	.0	2.1	2.3	1.6
Net state and local government saving	-27.0	-108.4	-224.8	-222.2	—	—	—	—	14.9	7.6	-.1

Notes:

See footnotes at end of table.

[1] Ten-year compound average annual rate.

Note: Dash indicates data not computable or not applicable.

Sources: Historical data, U.S. Bureau of Economic Analysis; projected data, U.S. Bureau of Labor Statistics.

BLS projects that total government spending will have a limited effect on GDP growth over the projection period. Federal spending, both defense and nondefense, will be a small drag on growth and will shrink less than 0.1 percent per year through 2024. Real state and local expenditures will grow slowly, at about 1.3 percent per year, and allow total government spending to provide a small boost to GDP growth.

GDP from the income side

GDP can be measured both through a demand approach, covered in the previous section, and through an income approach. By definition, purchases by final users are equivalent to incomes earned plus costs of production. Reviewing economic growth through an income approach allows us to observe additional underlying trends in the behavior of the U.S. economy. The annual growth rate of personal income has been trending downward, from 6.1 percent in 1984–94 to 3.9 percent in 2004–14. Income growth is expected to stay relatively stable over the coming decade, averaging 4.4 percent annually. (See table 10.) As the labor market tightens, wage pressures are expected to strengthen. Compensation growth over the projection period will be faster than the growth experienced between 2004 and 2014, but not as fast as that seen in previous decades.

Table 10. Personal income, 1994, 2004, 2014, and projected 2024

Category	Billions of current dollars				Percent distribution				Annual rate of change[1]		
	1994	2004	2014	2024	1994	2004	2014	2024	1994–2004	2004–14	2014–24
Sources:											
Personal income	$5,934.7	$10,048.3	$14,728.6	$22,685.1	100.0	100.0	100.0	100.0	5.4	3.9	4.4
Compensation of employees	4,010.1	6,739.5	9,221.6	14,303.3	67.6	67.1	62.6	63.1	5.3	3.2	4.5
Wage and salary disbursements	3,236.6	5,421.9	7,446.0	11,581.8	54.5	54.0	50.6	51.1	5.3	3.2	4.5
Supplements to wages and salary	773.5	1,317.6	1,775.6	2,721.5	13.0	13.1	12.1	12.0	5.5	3.0	4.4
Proprietors' income	459.5	962.1	1,380.2	1,750.6	7.7	9.6	9.4	7.7	7.7	3.7	2.4
Rental income	117.4	255.4	640.3	894.6	2.0	2.5	4.3	3.9	8.1	9.6	3.4
Personal income on assets	1,029.3	1,503.8	2,125.3	3,407.0	17.3	15.0	14.4	15.0	3.9	3.5	4.8
Personal interest income	794.2	941.7	1,264.7	2,243.8	13.4	9.4	8.6	9.9	1.7	3.0	5.9
Personal dividend income	235.2	562.1	860.6	1,163.3	4.0	5.6	5.8	5.1	9.1	4.4	3.1
Personal current transfer receipts	826.4	1,416.7	2,522.7	4,094.9	13.9	14.1	17.1	18.1	5.5	5.9	5.0
Federal social benefits	606.5	1,014.9	1,863.5	3,043.0	10.2	10.1	12.7	13.4	5.3	6.3	5.0
State and local social benefits	206.7	385.0	615.1	982.5	3.5	3.8	4.2	4.3	6.4	4.8	4.8

See footnotes at end of table.

Table 10. Personal income, 1994, 2004, 2014, and projected 2024

Category	Billions of current dollars				Percent distribution				Annual rate of change[1]		
	1994	2004	2014	2024	1994	2004	2014	2024	1994–2004	2004–14	2014–24
Other, from businesses (net)	13.3	16.8	44.2	69.5	.2	.2	.3	.3	2.4	10.2	4.6
Less social insurance contribution	510.6	833.6	1,167.0	1,774.2	8.6	8.3	7.9	7.8	5.0	3.4	4.3
Uses:											
Personal income	5,934.7	10,048.3	14,728.6	22,685.1	100.0	100.0	100.0	100.0	5.4	3.9	4.4
Personal consumption	4,741.0	8,260.0	11,930.3	18,235.3	79.9	82.2	81.0	80.4	5.7	3.7	4.3
Personal taxes	690.5	1,046.0	1,742.9	2,810.6	11.6	10.4	11.8	12.4	4.2	5.2	4.9
Personal interest payments	121.9	221.8	256.8	483.1	2.1	2.2	1.7	2.1	6.2	1.5	6.5
Personal transfer payments	49.8	110.5	170.3	231.6	.8	1.1	1.2	1.0	8.3	4.4	3.1
To government	30.9	67.0	94.8	127.4	.5	.7	.6	.6	8.0	3.5	3.0
Federal	5.6	13.2	21.1	27.9	.1	.1	.1	.1	8.9	4.8	2.8
State and local	25.3	53.8	73.7	99.6	.4	.5	.5	.4	7.9	3.2	3.1
To the rest of the world (net)	19.0	43.6	75.6	104.2	.3	.4	.5	.5	8.7	5.7	3.3
Personal savings	331.4	410.0	628.3	924.4	5.6	4.1	4.3	4.1	2.2	4.4	3.9
Addenda:											
Disposable personal income	5,244.2	9,002.3	12,985.8	19,874.5	—	—	—	—	5.6	3.7	4.3
Disposable personal income, chained 2009 dollars	7,010.6	10,035.6	11,939.5	15,108.2	—	—	—	—	3.7	1.8	2.4
Per capita disposable income	19,900.7	30,709.4	40,698.0	57,791.4	—	—	—	—	4.4	2.9	3.6
Per capita disposable income, chained 2009 dollars	26,603.3	34,233.8	37,418.4	43,931.3	—	—	—	—	2.6	.9	1.6
Savings rate (percent)	6.3	4.5	4.8	4.7	—	—	—	—	-3.3	.7	-.4

Notes:

[1] Ten-year compound average annual rate.

Note: Dash indicates data not computable or not applicable.

Sources: Historical data, U.S. Bureau of Economic Analysis; projected data, U.S. Bureau of Labor Statistics.

Compensation as a share of personal income fell from 67.1 percent in 2004 to 62.6 percent in 2014. The decline was attributable to an increasing number of retirees as well as cyclical factors (such as a growing pool of discouraged workers). These factors resulted in increased transfer payments from the federal government to individuals. The share of compensation is projected to remain relatively stable over the next decade, reaching 63.1 percent in 2024. Proprietors' income is expected to decline as a share of total income by nearly 2 percentage points, dropping to a level similar to that seen in 1994. Meanwhile, the share of personal current transfer receipts is projected to rise by 1.0 percentage point over the projection period. Federal social benefits—including unemployment insurance, Social Security, Medicare and Medicaid, and other social programs—are projected to grow by nearly 1 percentage point as a share of income, as baby boomers retire and put more pressure on these

programs. The share of obligations for social insurance contributions from individuals is expected to remain relatively stable from 2014 to 2024.

While some changes are expected in the sources of income over the projection period, the uses of income are not anticipated to change dramatically. Taxes are projected to increase slightly as a share of income, from 11.8 percent in 2014 to 12.4 percent in 2024, as wages post a modest recovery and individuals move into higher tax brackets. The share of personal interest payments also is expected to recover to prerecession levels, in response to rising interest rates.

After averaging 11.5 percent through the 1960s and 1970s, the personal savings rate started a long and steady fall, to 2.5 percent in 2005. At this point, home values started declining and access to credit tightened. Consumers responded by increasing their savings rate to a high of 7.2 percent in 2012. However, once household balance sheets improved, the savings rate again dropped, to 4.8 percent in 2014. The MA/US model relies on a life-cycle model of consumption, in which individuals save during their earning years and dissave during their retirement years. As more baby boomers retire over the next decade, they are expected to start drawing on their personal savings. Furthermore, they will receive more transfer payments from the federal government. The marginal propensity to consume for this type of income is thought to be higher than that for other types of income. These trends will put downward pressure on the savings rate. By contrast, the wealth-to-income ratio is expected to peak in 2015 and then fall over the projection period, putting upward pressure on the savings rate through wealth effects. The two trends offset each other and, on net, the savings rate stays stable over the projection period, with levels of 4.8 percent in 2014 and 4.7 percent in 2024.

Labor force and employment

BLS starts its projections process with an in-house model of the labor force participation rates of 136 age, gender, race, and ethnicity groups. To arrive at its labor force projection, BLS combines projected participation rates with U.S. Census Bureau midrange population forecasts. The estimates for population, labor force participation rates, and the labor force are brought into the macroeconomic model as exogenous data. The labor force outlook then serves as a critical supply-side constraint for the employment and output projections. Moreover, the labor force and its changing composition affect many macroeconomic variables, including housing starts, prices, and the personal savings rate.

According to U.S. Census Bureau projections, growth in the U.S. civilian noninstitutional population is expected to continue its downward trend, slowing from 1.0 percent annually in 2004–14 to 0.8 percent in 2014–24. (See table 11.) The U.S. Census Bureau assumes that fertility rates will continue to decline over the coming years and that the rate of immigration will decline modestly. After increasing for decades, the labor force participation rate peaked at 67.1 percent in 1997–2000. Stabilizing participation rates for women, declining participation for men and youths, and the transitioning of aging baby boomers into lower participation cohorts all contributed to reversing the trend. After the turn of the century, the labor force participation rate slowly started to fall, reaching 66.0 percent in 2008. Over the next 6 years, this trend picked up pace and the participation rate decreased an additional 3.1 percentage points, to 62.9 percent in 2014. BLS projects that the labor force participation rate will continue to decline, albeit at a slower rate, falling another 2.0 percentage points, to 60.9 percent in 2024. Given expectations of slower population growth and a declining participation rate, labor force growth also is expected to slow over the coming

decade. The labor force grew only 0.6 percent annually from 2004 through 2014. Growth over the 2014–24 period is projected to be slightly slower, 0.5 percent annually.

Table 11. Labor supply and factors affecting productivity, 1994, 2004, 2014, and projected 2024

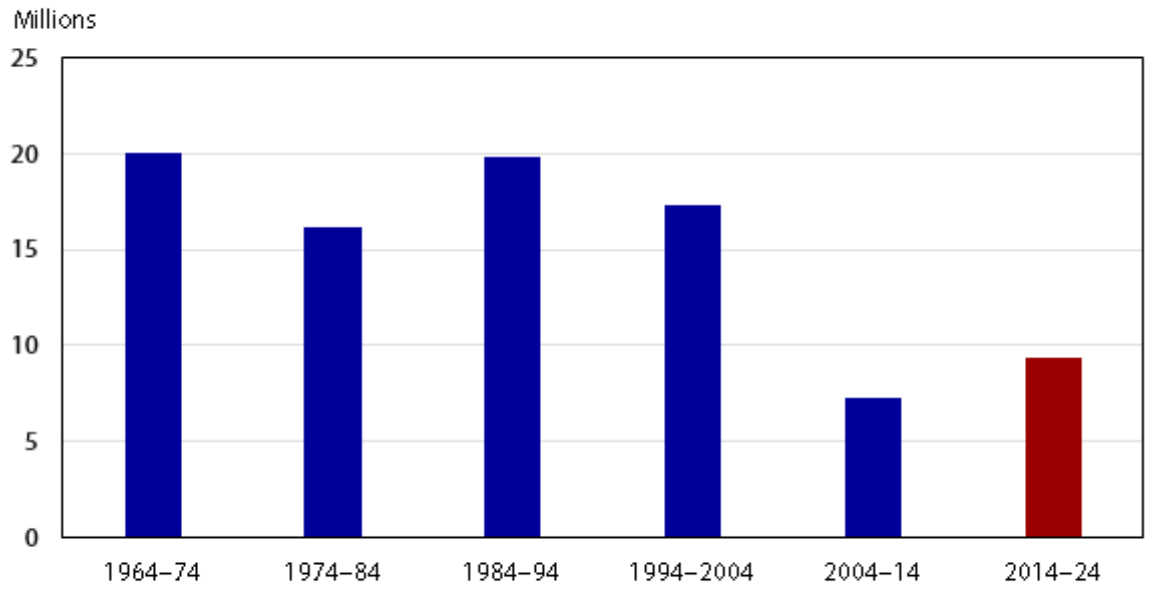
Category	Levels				Annual rate of change[1]		
	1994	2004	2014	2024	1994– 2004	2004– 14	2014– 24
Labor supply (in millions, unless otherwise noted):							
Total population	263.5	293.1	319.1	343.9	1.1	0.9	0.8
Civilian noninstitutional population ages 16 and older	196.8	223.4	247.9	269.1	1.3	1.0	.8
Civilian labor force	131.0	147.4	155.9	163.8	1.2	.6	.5
Civilian labor force participation rate (percent)	66.6	66.0	62.9	60.9	-.1	-.5	-.3
Civilian household employment	123.1	139.2	146.3	155.3	1.2	.5	.6
Nonfarm payroll employment	114.4	131.7	139.0	148.3	1.4	.5	.7
Unemployment rate (percent)	6.1	5.5	6.2	5.2	-1.0	1.1	-1.7
Productivity:							
Private nonfarm business output per hour (billions of chained 2009 dollars)	40.6	53.8	62.1	74.6	2.8	1.5	1.8

Notes:

[1] Ten-year compound average annual rate.

Source: Historical data, U.S. Bureau of Economic Analysis, U.S. Census Bureau, U.S. Bureau of Labor Statistics; projected data, U.S. Bureau of Labor Statistics.

Figure 7. Nonfarm payroll employment change, 1964–2014 and projected 2014–24



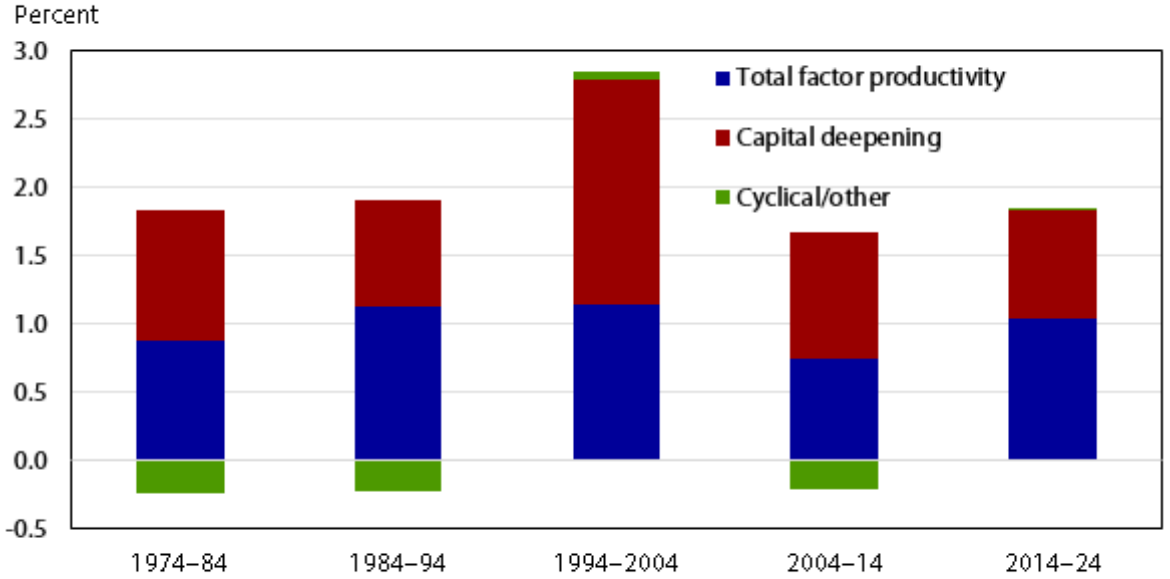
Sources: Historical data, U.S. Bureau of Economic Analysis, U.S. Bureau of the Census, U.S. Bureau of Labor Statistics; projected data, U.S. Bureau of Labor Statistics.

The recovery in nonfarm payroll employment after the recession of 2007–09 took more than 6 years—the slowest recovery since the Great Depression. Employment finally surpassed its prerecession peak, reaching 139 million in 2014. The growth of nonfarm payroll employment has been slowing historically and is expected to continue this

trend, increasing by 0.7 percent annually over the coming decade. The macroeconomic model's estimate of nonfarm payroll employment is an important variable, because it is used as a constraint for the employment and occupational projections. Nonfarm payroll employment is projected to add just 9.3 million jobs over the coming decade, much less than the jobs added in the decades before the Great Recession. (See figure 7.) This slower growth limits the increases expected in many industries and occupations. Over the coming decade, growth in household employment is expected to follow the trend projected for nonfarm payroll employment.[28]

Labor productivity

Figure 8. Growth in labor productivity and its components, 10-year compound average annual rate, 1974–2014 and projected 2014–24



Sources: Historical data, U.S. Bureau of Economic Analysis, U.S. Bureau of the Census, U.S. Bureau of Labor Statistics; projected data, U.S. Bureau of Labor Statistics.

Labor productivity is a highly volatile component of the U.S. economy and has important implications for economic growth and well-being. Productivity can be disaggregated into total factor productivity, capital deepening, and cyclical and other components. Growth in labor productivity averaged 1.7 percent annually from 1984 to 1994 and, then, spurred by the information technology revolution, increased to 2.8 percent in the next decade. (See figure 8.) This upward trend began to slow in 2004, before the Great Recession. BLS projects that labor productivity will resume a healthy 1.8-percent annual growth between 2014 and 2024. For this level to be reached, total factor productivity is assumed to return to 1.0-percent annual growth, equivalent to the long-run historical average.

Sensitivity analysis

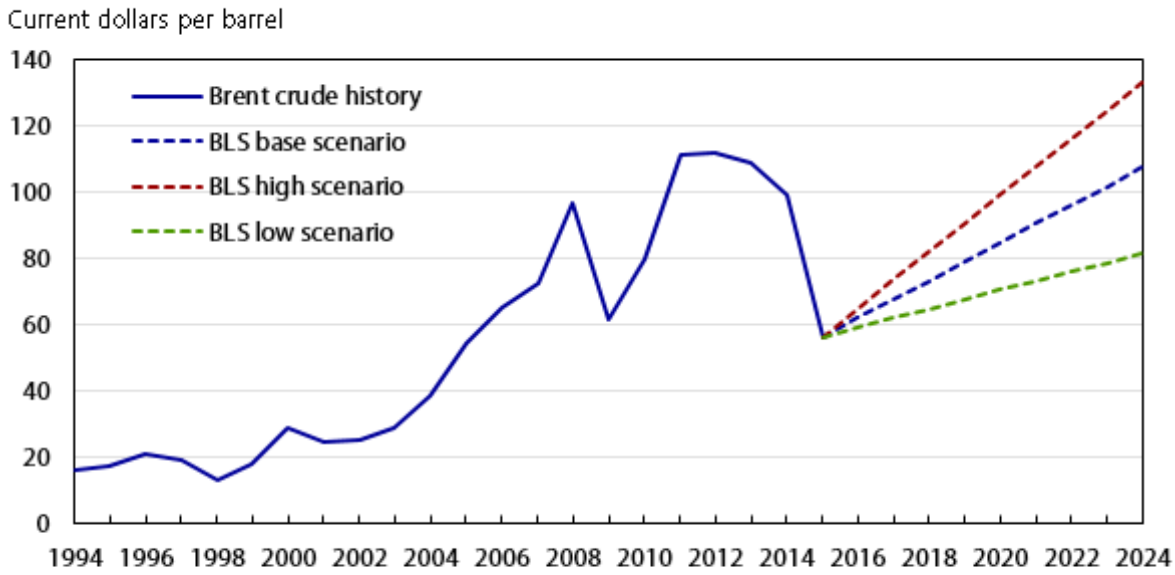
While the macroeconomic projections provide important insight into the future composition of output and employment, they are not definitive predictions about the economy. BLS projections represent a likely economic scenario that could play out under a specific set of assumptions (discussed earlier) about important macroeconomic variables. It should be stressed that any changes to these assumptions would entail fundamental

changes to the economic scenario that BLS is projecting. To enhance the discussion, this section presents a sensitivity analysis that explores how changes to a few key assumptions alter the overall macroeconomic scenario.

Productivity projections are highly sensitive to alternative assumptions. Some economists believe that we are in the midst of a global productivity slowdown.[29] Adherents of this viewpoint assert that we should plan for slower total factor productivity (TFP) growth than that experienced in the past. Lower TFP growth would, by extension, lower labor productivity. Assuming full employment, lower labor productivity leads to lower GDP growth. Lowering the TFP annual growth rate from 1.0 percent to 0.9 percent leads to a 0.1-percentage-point decrease in the annual GDP growth rate, from 2.2 percent to 2.1 percent. Among the more interesting macroeconomic side effects of the TFP slowdown scenario are an increase in the government's fiscal deficit and a 1.2-percent increase in the nominal debt-to-GDP ratio. The path of causation here is straightforward: lower growth leads to lower tax receipts and higher transfer payments, which then lead to deficits and accumulating debt.

Oil prices, another supply-side constraint in the BLS projections, are also sensitive to alternative assumptions. The last 10 years have seen both high and low points for oil prices, with prices rising steeply in the first 8 years of the decade and then almost halving from 2014 to 2015. Because oil prices can be highly volatile, they present a challenge to any exercise in economic projections, especially one with a long time horizon. Given this challenge, the long-term impacts of higher or lower oil prices should be considered. From a consumer perspective, lower oil prices noticeably boost disposable income. Oil demand is inelastic, so higher prices have relatively little impact on consumption in the short run. Lower oil prices therefore provide an inherent boost to incomes and tend to increase demand for items in other expenditure categories.

Figure 9. Brent crude oil prices, 1994–2015 and projected 2024



Source: Historical data, U.S. Bureau of Labor Statistics; 2015 data, Federal Reserve Bank of St. Louis, Federal Reserve Economic Data database; projected data, U.S. Energy Information Administration, U.S. Bureau of Labor Statstics.

This overall benefit can be less clear over longer time horizons, however, because of how businesses respond to the opposing effects of lower oil prices and increased consumer demand. On the one hand, low oil prices—which tend to reduce returns on capital expenditure—can have a negative impact on business investment in the medium

term, as businesses cut back on energy investments. This low level of investment can then lead to low levels of productivity growth in the long run. Ultimately, lower oil prices can result in relatively lower GDP growth. On the other hand, business investment may increase in order to capitalize on increased consumer demand. The net effect of a change in oil prices is therefore a question of how businesses respond to the increase in demand and whether the benefit of increased consumption outweighs the negatives of possibly decreased investment. BLS projects that a 25-percent increase in the base-scenario target oil price would be a net drag for GDP growth, with growth decreasing 0.1 percentage point annually. (See figure 9.) In this "low scenario," both PCE and fixed investment would grow 0.2 percentage point slower. Gross disposable income would grow 0.1 percentage point slower and per capita disposable income 0.2 percentage point slower. In an alternative "high scenario," a 25-percent decrease in the base-scenario target oil price would affect the economy in a symmetric manner, with growth increasing across the board. While a 25-percent price differential may seem large, all three scenarios are plausible given the historical volatility of oil prices and their large changes in recent history.

At the time this article was written, immigration was a highly contentious political issue of great economic importance. From a macroeconomic standpoint, an increase in the assumed base-scenario immigration level would effectively be an increase in the projected labor force. Assuming the economy remains at full employment, higher labor force growth would lead to greater GDP growth. BLS sensitivity modeling supports this hypothesis, indicating that a labor force increase of 1.0 million would lead to a 0.1-percent increase in the growth rates of GDP, PCE, and business investment through 2024. Employment would increase by more than 0.9 million, and higher GDP growth would raise disposable income growth by 0.1 percentage point. Among the issues that make immigration controversial is its impact on income and wages. Whereas BLS projects increasing incomes, the MA/US model does not incorporate the skill or education level of immigrants. Research has shown that individual immigrant characteristics (such as schooling and job skills) are key determinants of how higher immigration affects the wages of domestic workers.[30]

As a particularly complex macroeconomic topic, international trade is the source of a great deal of uncertainty for the BLS projections. First, the real dollar exchange rate is a key determinant of trade flows, because it sets the relative price of domestic and foreign goods. All other things equal, a higher exchange rate makes imports cheaper for domestic consumption and makes exports more expensive. Therefore, a strong dollar tends to increase the trade deficit and pull down GDP growth. BLS projects that the dollar will appreciate roughly 7.5 percent from 2014 through 2024, causing trade to be a net drain on GDP growth. If the dollar's recent appreciation were to prove transitory, GDP growth could increase through higher net exports.

While the exchange rate affects output through relatively clear economic channels, other trade-related factors introduce more uncertainties for the BLS projections. The U.S. recovery may be steady, if unspectacular, but considerable downside risks remain throughout the global economy. The rapid economic slowdown of, and general uncertainty surrounding, the Chinese economy as of summer 2015 provides a good example of international risk.[31] The modern global economy is highly interconnected and disruptions in one country can have very serious economic consequences for trading partners and other stakeholders.[32] China is the second-largest economy in the world and the second-largest U.S. trade partner. Furthermore, emerging economies are increasingly reliant on China for raw materials and commodities, which means that a strong slowdown in Chinese growth could have negative and widespread impacts worldwide. While the likelihood of recession in the Eurozone has lessened, the recovery there is still anemic. Emerging markets also are proving to be very weak and a drag on global growth.[33]

Viewed in their totality, these developments indicate that the global economy is very fragile at this point. Any number of shocks could put it into recession, posing a risk for the U.S. economy.

Conclusion

While the causes of the Great Recession are still very much up for debate, the recession's legacy and its impacts are much clearer. These impacts exposed and amplified structural weaknesses in both the global and U.S. economies and fundamentally changed expectations for growth through 2024. BLS projects that, in the United States, PCE growth will slow down but still serve as a main engine for economic growth. In addition, changes in consumption patterns are likely to continue, as changing consumer preferences and an aging population propel a shift toward services. Investment growth will strengthen over the next 10 years, as the housing market recovers and businesses and households fill latent demand. Government expenditures will contribute little to net GDP growth, and their composition will shift toward increasing social welfare payments. Lower labor force participation will constrain growth from the supply side, making output and employment growth slower than previously projected. The sum total of these developments is an economy that will likely experience steady but moderate growth.

SUGGESTED CITATION

Kathryn J. Byun and Bradley Nicholson, "The U.S. economy to 2024," *Monthly Labor Review,* U.S. Bureau of Labor Statistics, December 2015, https://doi.org/10.21916/mlr.2015.51.

NOTES

1 Historical data come from the National Income and Product Accounts (as of June 2015) and are published by the Bureau of Economic Analysis. Data are available online at https://www.bea.gov/. Because the projections data are finalized well before publication, revised historical data were not incorporated. Unless otherwise noted, levels cited are measured in chain-weighted 2009 dollars. For a discussion of the uses and limitations of chain-type indexes, see J. Steven Landefeld and Robert P. Parker, "BEA's chain indexes, time series, and measures of long-term economic growth," *Survey of Current Business*, May 1997, https://www.bea.gov/scb/account_articles/national/0597od/maintext.htm. All references to growth rates refer to compound average annual growth, unless otherwise noted.

2 The federal funds rate is the Fed's target for the interest rate that banks charge other banks for overnight loans. For more information, see "What are the tools of U.S. monetary policy?" (Federal Reserve Bank of San Francisco, February 6, 2004), http://www.frbsf.org/us-monetary-policy-introduction/tools/.

3 For more information, see the Macroeconomic Advisers website, http://www.macroadvisers.com/.

4 Add factors represent changes made to the base result of a forecast or projection equation; see "Glossary of statistical terms" (Paris: Organisation for Economic Co-operation and Development, March 28, 2014), https://stats.oecd.org/glossary/detail.asp?ID=44.

5 For more information on BLS projections, see accompanying articles in this projections series of the *Monthly Labor Review*.

6 In a full-employment economy, the unemployment rate is equal to NAIRU. Labor supply and labor demand are in equilibrium; any existing unemployment is frictional.

7 For more information, see *Annual energy outlook 2015* (U.S. Energy Information Administration, April 2015), http://www.eia.gov/forecasts/aeo/.

8 As measured by the average monthly price of WTI crude oil; see "Crude oil prices: West Texas Intermediate—Cushing, Oklahoma," *FRED Economic Data* (Federal Reserve Bank of St. Louis, November 23, 2015), https://research.stlouisfed.org/fred2/series/DCOILWTICO.

9 See Carmen M. Reinhart and Kenneth S. Rogoff, "The aftermath of financial crises," *American Economic Review*, vol. 99, no. 2, May 2009, pp. 466–472.

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