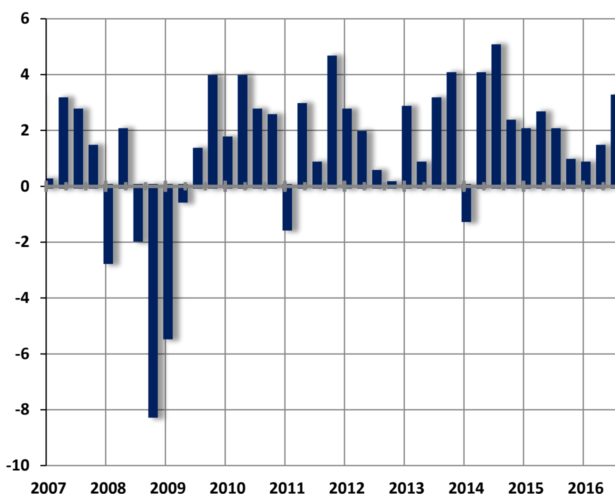
Current Economic Environment

Despite worldwide political turmoil and a sluggish start to the year, the U.S. economy still stubbornly displayed significant signs of strength in 2016, led by persistently-growing labor markets and recovery of personal income. These strengths were offset partially by continued weakness in energy development and net exports, with consequential decline in domestic investment, to produce a seventh consecutive year of moderate growth.

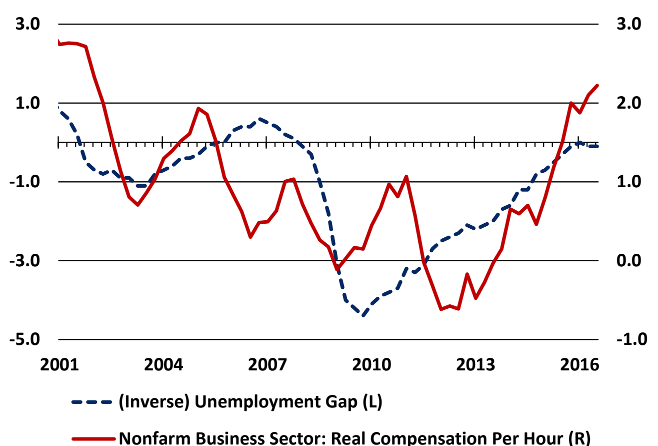
Private sector activity accelerated in 2016 after a disappointing first quarter. Figure 1 shows that quarter-to-quarter growth in real (inflation-adjusted) GDP was just 0.8% in the first quarter and 1.4% in the second quarter, but economic expansion reached 3.1% in the third quarter. Weak performance in late 2015 and the first half of 2016 was led by weak investment in the energy sector and elsewhere, sluggish and uneven residential investment, weak net exports, and slowing personal and government spending. Table 1 (on page 8) shows that real (inflation-adjusted) GDP likely increased 1.6% in 2016, falling short of the 2.6% performance of 2015 and the 2.4% growth of 2014. Overall growth in 2016 was lower than most analysts expected, and expectations fell steadily throughout the year.

Figure 1: Quarterly Real GDP Growth
(Seasonally Adjusted Annual Rate)



The best news in 2016 was that real disposable income growth remained relatively strong at 2.2% or better, though this lagged the 3.5% annual expansions of 2014 and 2015. Higher employment levels and a modest rise in wage rates, along with low consumption price inflation, spurred this growth. Nominal wages are creeping upward, with recent year-to-year growth above 2.0%. Real compensation per hour for the nonfarm business sector, a broader measure of compensation that is adjusted for inflation, grew nearly 3.5% in the second and third quarters of 2015 relative to compensation rates a year earlier, then decelerated to 1.3% in the first quarter of 2016 before accelerating to 1.8% in the third quarter. Figure 2 shows that real compensation has been climbing as unemployment has moved back to its natural rate (NAIRU) of about 5.0%. Solid wage and employment growth supported real consumption spending growth of 2.6% in 2016, though this was below the 2.9% growth of 2014 and 3.2% in 2015.

Figure 2: Wage Growth and Unemployment
(Smoothed Growth and Inverse Unemployment Gap)

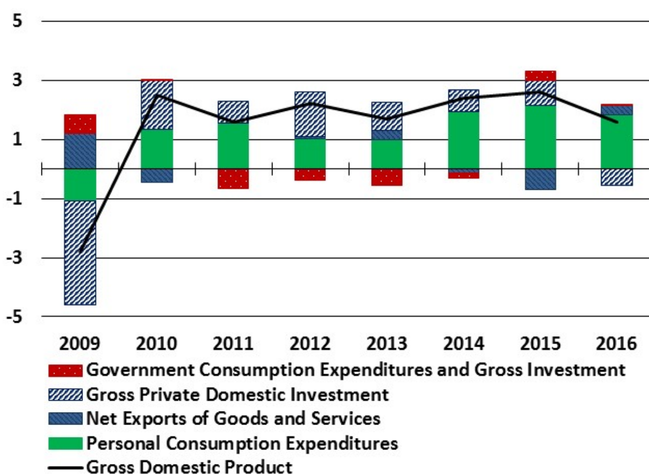


Economic expansion was helped by stabilizing government spending. Inflation-adjusted government consumption and investment expenditures (which includes goods and services but not

entitlements) rose in 2015 for the first time since a slight increase in 2010. Federal non-defense expenditures rose 3.3% in 2015 after a 0.1% decline in 2014. Federal defense spending fell 2.1% during 2015 after falling 4.1% in 2014. Inflation-adjusted state and local spending rose 2.9%. The increase of overall real government spending was 1.8%, which followed a 0.9% drop in 2014. Government consumption and investment likely will grow in 2016 but at a slower rate than in 2015, perhaps 0.5% or slightly better. Defense spending fell again. Real nondefense spending is shown in this preliminary forecast to fall slightly, though annual spending perhaps will increase at a moderate pace. State and local spending is projected to rise 1.5% in 2016.

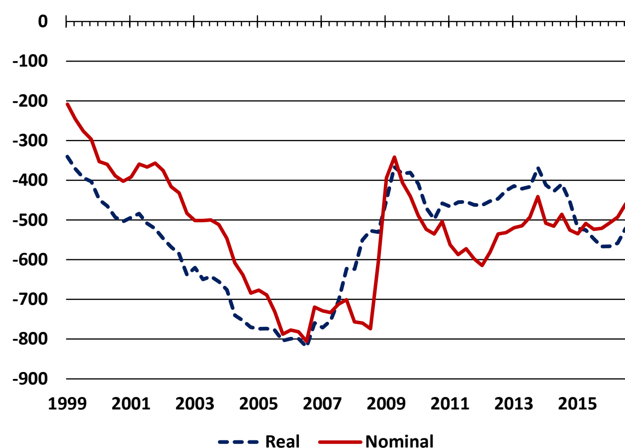
Figure 3 shows the contribution to real GDP growth of its major expenditure components. In contrast to government spending patterns that followed the troughs of other recessions in the past three decades, where fiscal policies typically were expansionary, overall fiscal policy following the Great Recession was contractionary. For the first time since federal stimulus spending began to wane, recent government consumption and investment spending has contributed to growth.

Figure 3: Final Demand Expenditures
(Contributions to GDP Growth)



Net exports dropped suddenly at the end of 2014 and beginning of 2015 (Figure 4) as weakness continued in the economies of major U.S. trading partners in Asia and Europe. The associated strengthening of the dollar left domestic producers at a disadvantage, so it is not surprising that real exports grew by a slight 0.9% in 2016 following 0.1% growth in 2015. Healthy income growth, a strong dollar, and low import inflation supported spending on foreign goods and services. Import growth rose to 1.0% in 2016, compared to 4.6% in 2015. Due partly to the strong U.S. dollar, the nominal trade balance remained flat since 2014 despite the shift in trade volumes.

Figure 4: Quarterly Net Exports
(Billions of Dollars)



The collapse of oil prices late in 2014 led to a plunge in exploration activity in the oil and gas industry (Figure 5). The number of active drilling rigs fell to 404 in late May 2016, down from 1,866 two years earlier. Oil prices recovered somewhat in recent months to above $50 per barrel in December 2016, and nearly 600 rigs were in service at the beginning of December. Crude oil and natural gas production continued to grow for much of 2015 but at a decelerating pace (Figure 6); by late 2015, production also began to wane. The collapse of domestic exploration is the primary reason for a fall in real nonresidential construction spending of 4.4% in 2015, and growth remains weak in 2016. Most other construction sectors fared better.

Figure 5: Drilling Activity and Oil Prices

(Sources: Baker Hughes and EIA)

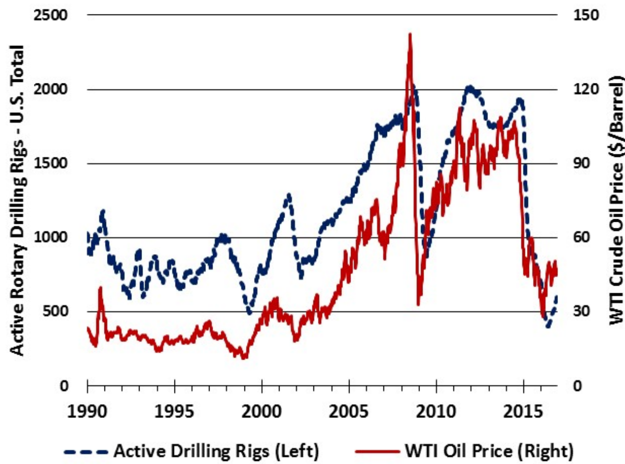
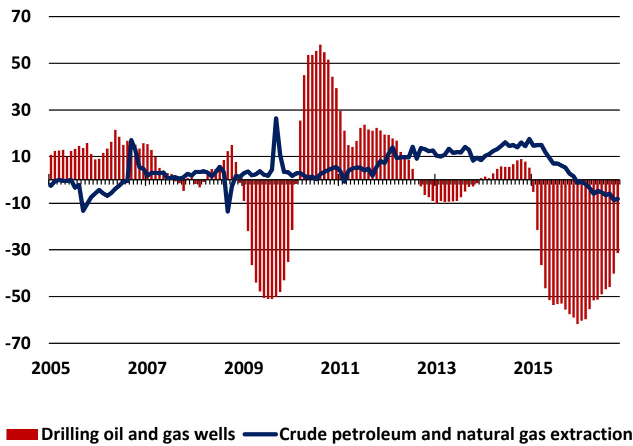


Figure 6: Industrial Production of Oil and Gas – Well Drilling and Extraction

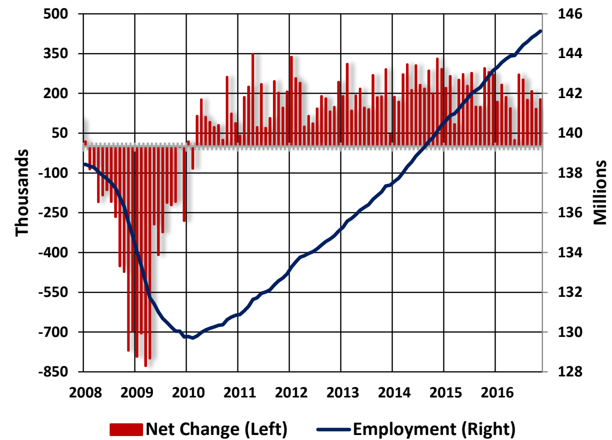
(Percent Change from One Year Ago)



The Federal Reserve had its eyes on more promising indicators when it raised rates in December 2015. Increasing strength in such indicators was expected to spur additional rate increases in 2016, but the December Fed meeting presents their last opportunity to act this year; most economists believe that they finally will raise the Federal Funds rate by 0.25%. Figure 7 shows that in the 12 months from March 2015 to February 2016 non-farm payroll employment expanded by an average of 222,000 jobs per month. Although the pace of hiring was lower than the 2014 average of 251,000 jobs per month, it was sufficient to bring the unemployment rate down to 4.9% in January 2016. Following a February 2016 increase of 233,000 jobs, net hiring fell to just 24,000 jobs in May. This apparent weakening of labor markets encouraged the Fed to postpone the additional rate hike that many had expected by June. Still, monthly job gains averaged 180,000 over the first 11 months of the year and unemployment fell to 4.6%; this now encourages Fed action.

Figure 7: Nonfarm Employment

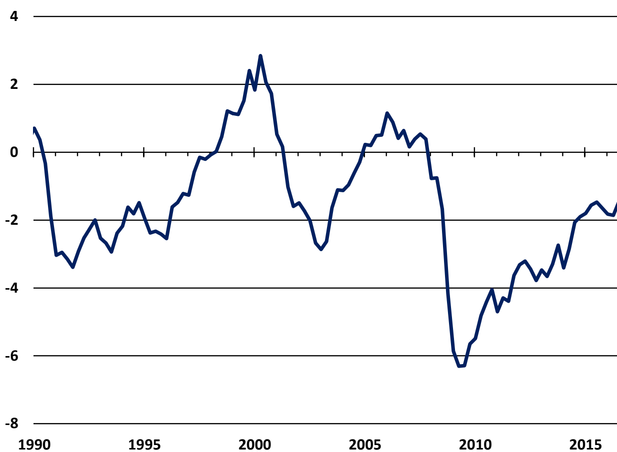
(Levels and Net Change)



The U.S. economy expanded seven consecutive years through 2016. Though recovery has come slowly, many measures suggest that the losses of the Great Recession largely have been recovered. Three indicators, however, reveal lingering effects of the recession.

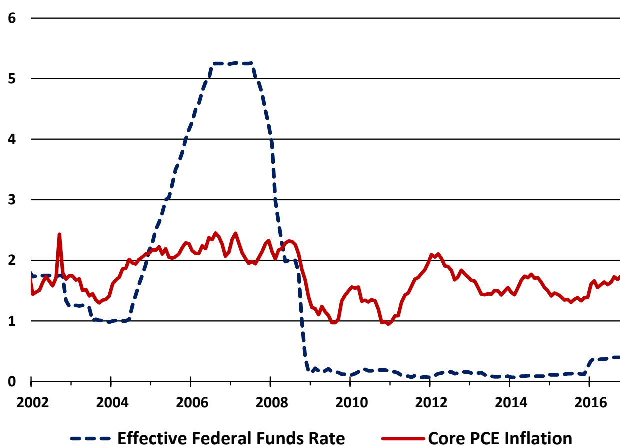
First, substantial productive slack remains. Although real GDP is well above its previous peak seen in 2007, Figure 8 shows that it remains about 1.5% below its potential level as measured by the Congressional Budget Office (CBO), despite downward revisions to estimates of potential output. Capacity utilization for manufacturing, mining, and utilities industries was 76.7% in 2015; it fell to 75.2% in the second quarter of 2016 before recovering slightly to 75.6% in the third quarter. Although this was far above the 2009 average of 68.7%, it remains about 3.0% below rates seen in 2007 and indicates that these industries have unused capacity.

Figure 8: GDP Gap
(Percentage Deviation of GDP from Potential GDP)



Second, this economic slack contributes to low general inflation, as is shown in Figure 9. With few exceptions, year-to-year core consumer price (Personal Consumption Expenditure (PCE) deflator) growth since 2009 consistently has remained below the Federal Reserve's target rate of 2.0%. This was true despite Federal Reserve attempts to raise inflation and spur growth that included policy interest rates near zero for seven years and "quantitative easing" (QE) that reached its zenith in 2013. The QE program ended in October 2014, and the Fed began to "normalize" monetary policy by increasing its policy rate in December 2015. Price and wage growth finally are rising, but rates remain low. Moreover, weakness in Europe and China is leading much of the world to loosen monetary policy. Raising interest rates too quickly in these conditions could intensify the low inflation problem by strengthening the dollar.

Figure 9: Core Inflation and the Federal Reserve Policy Interest Rate
(Percent)



Finally, overall labor participation remains at a 30-year low of under 63%. Figure 10 shows that the rate is down from 66% before the recession and 67% in 2000. A substantial proportion—about half—of this reduction was occurring anyway, given the general aging of the workforce and other demographic changes. Some pursue education and other opportunities, but many simply have given up hope of finding jobs. Full employment and rising wage rates might pull some back into the labor force and allow those who are underemployed to move to better jobs, but the number of people who have been unemployed for long periods remains high.

These three indicators—a large GDP gap, low inflation, and low labor participation—show that the economy still exhibits lingering effects of financial crisis. During 2008–2010, the collapse of asset prices, and home prices in particular, resulted in a steep loss in net worth for households and businesses. A massive effort to reduce private debt followed, and together with fiscal contraction, this deleveraging slowed economic recovery from 2011 through 2013.

Figure 10: Labor Force Participation Rate
(Percent)

Deleveraging efforts generally were successful, even if they produced costly side effects of reducing demand for goods and services. Figure 11 shows the net worth of households and nonprofit institutions and its two major components—home equity and financial assets (stocks, bonds, businesses, etc.). Since 2009, net financial worth has risen steadily, driven mostly by rising financial asset prices. Growth of home prices and a slow recovery of the residential construction industry began to push up net home equity toward the end of 2012. This rise in equity continues in 2016.

Figure 11: Household Net Worth
(Trillions of Dollars)

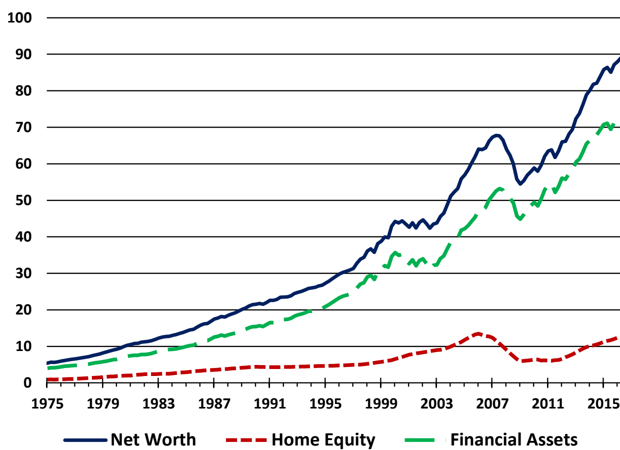


Figure 12 shows the course of housing prices over the last 18 years, displaying the monthly Zillow home value index and the year-over-year growth in that index since 1998. For the first time since the middle of 2007, the 12-month growth of housing prices turned positive in July of 2012. Housing prices decelerated in 2014 but accelerated again in 2015, and home prices are rising ahead of general inflation. In October 2016, national housing prices were 25.3% higher than in June 2012 and just 2.7% below the high of April 2007.

The strength of the household balance sheet complements the much-improved debt service ratio shown in Figure 13. Consumer debt payments, including mortgage payments, fell from more than 13% in 2008 to about 10% of disposable income in 2012, and the ratio has remained at that level. This is the lowest rate in more than three decades. The deleveraging that followed the recession and historically low interest rates allow these lower payment levels. Figure 14 shows that short-term Treasury rates remain near zero, despite rising slightly following the Federal Funds increase in December 2015, and 10-year rates are about 2.0%; mortgage and auto loan rates are similarly low, though they have risen in recent months.

Figure 12: Zillow Home Prices
(Index (Jan 2009 = 100) and Year-on-Year Percent Change)

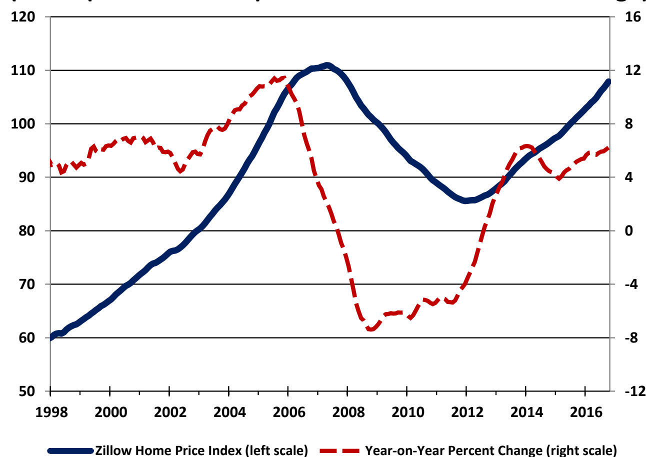


Figure 13: Household Debt Service Payments
(Percentage of Disposable Personal Income)

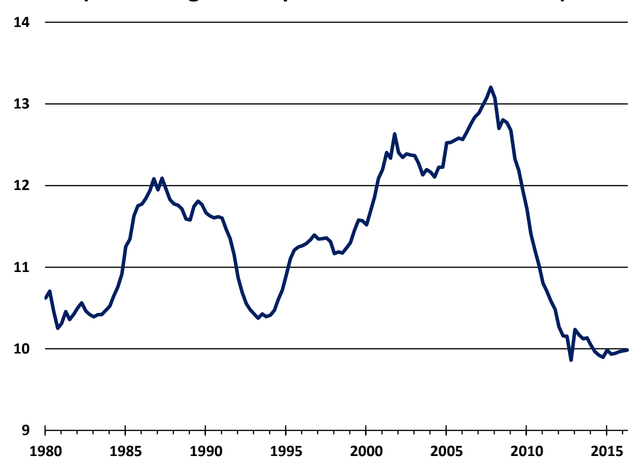
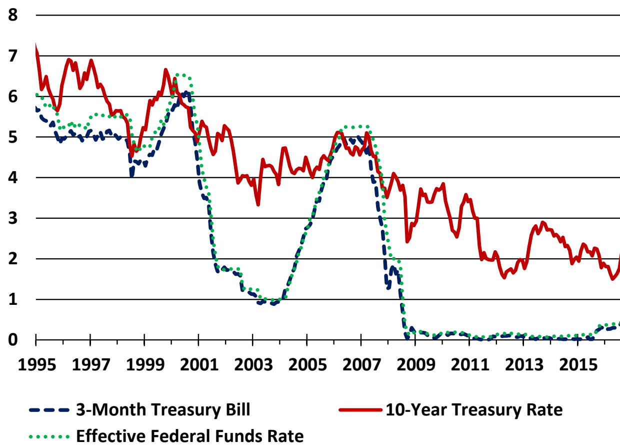


Figure 14: Interest Rates
(Federal Funds, 3-Month Treasury Bill, and 10-Year Treasury Constant Maturity, Percent)



Relatively low debt levels and low borrowing costs help to drive consumption spending such as auto sales and residential investment. In October and November 2015, new car and light truck sales topped an annual rate of 18 million units, a pace seen only twice since 2001 (Figure 15). After weakening to 16.9 million in August 2016, sales strengthened to 17.8 million in November. New home construction gradually gained strength since the recession (Figure 16), with demand for multi-family homes leading the way. Performance has been mixed, and recovery of residential construction markets remains far from complete. October 2016 brought 1.32 million starts, the highest level since August 2007.

Figure 15: Light Weight Vehicle Sales: Autos & Light Trucks
(Millions, Seasonally Adjusted Annual Rate)

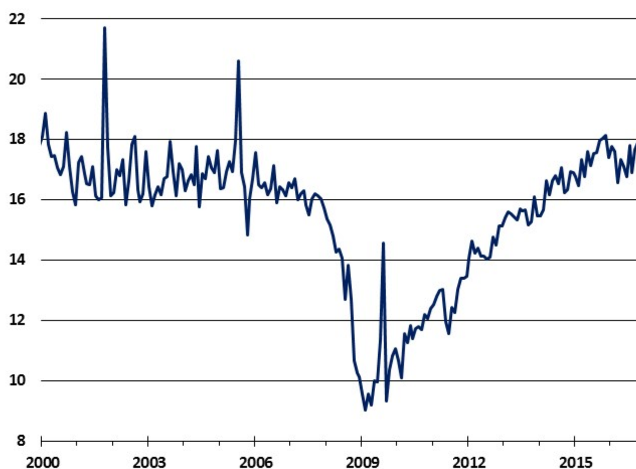


Figure 16: Housing Starts
(Thousands)

Robust auto sales and improving housing starts spurred industrial production growth in 2014, but the widening trade gap and low oil prices in 2015 brought weakness in many manufacturing and mining sectors. Figure 17 shows year-to-year growth rates of industrial production. Rates were about 4.0% early in 2015, but production was falling by late in the year. While losses slowed in 2016 and oil and gas exploration might be in early stages of recovery, expansion ultimately may depend on stabilization of the U.S. dollar.

Figure 17: Industrial Production
(Year-on-Year Percent Change)

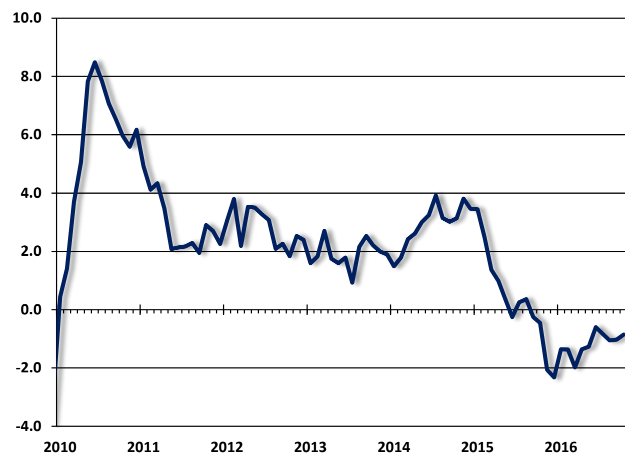


Figure 18 shows that real compensation is running ahead of productivity growth, which has been low in recent years, and the gap is widening despite a tendency for the two to move togeth-

er. It remains to be seen whether these low productivity growth rates present a worrisome new pattern, or whether they are a product of data measurement problems, or whether they simply are a symptom of continuing recovery from the Great Recession. In any case, the improvement seen in labor compensation is welcome.

Figure 18: Productivity and Compensation
(Year-over-Year Growth, 2-Year Moving Average)

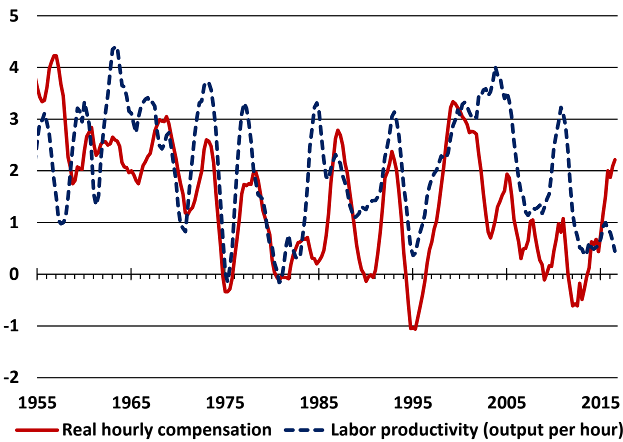
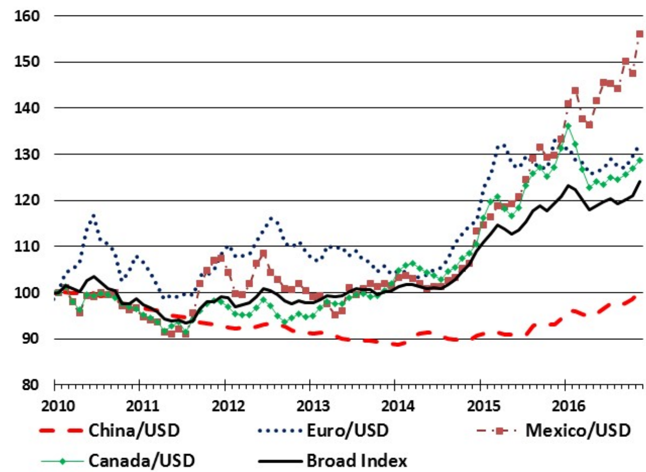


Figure 19 shows the dynamics of exchange rates over the past seven years for the currencies of several major U.S. trading partners. Between January 2015 and January 2016, the dollar strengthened 7.0% versus the euro, 17.2% versus the Canadian dollar, and 22.9% against the peso. Between January and November 2016, the Canadian dollar reduced its losses (up 5.4% since January 2016) and the Euro was stable (down 0.6%), but the peso weakened further (down 10.8%); the peso dropped 5.9% between October and November alone, partly in response to the U.S. presidential election. The Chinese renminbi mostly has strengthened along with the dollar, though the first eleven months of 2016 brought depreciation of 4.1% versus the greenback. These currency realignments have important implications for the U.S. economy. Current conditions resemble the late 1990s, when the U.S. economy was expanding but most other major economies were struggling. Capital surged into the United States, and the dollar appreciated strongly against all major currencies from 1995 through 2002. The U.S. eventually experienced a relatively mild recession in 2001, but the effects of capital inflow and dollar appreciation had lasting consequences. U.S.-based manufacturing contracted sharply and generally failed to recover even after subsequent dollar depreciation. Cheap capital also fueled sub-prime lending that led to collapse of construction and other markets in the financial crisis of 2008.

Figure 19: Foreign Exchange Rates
(2010 Q1 = 100)



Because the global economy is quite fragile, and because the American economy increasingly depends on trade with its partners despite the failure of some politicians to recognize this reality, projections of U.S. growth must account carefully for the risks to foreign economies. U.S. farmers, oil producers, manufacturers, and other trade-dependent firms are working against a strong U.S. dollar that makes American products relatively expensive both at home and abroad. Recovery elsewhere could boost the U.S. economy substantially, but continued global weakness provides substantial risk to the American economy as well.

Table 1: Forecast for Economic Aggregates, Average Annual Percentage Growth Rate

	14-15	15-16	16-17	17-18	18-19	19-25	25-35	35-45
Real (Inflation-Adjusted) Quantities, Average Annual Growth Rates, Percent								
Gross Domestic Product	2.6	1.6	2.4	2.3	2.2	2.1	2.1	2.1
Personal Consumption	3.2	2.6	2.5	2.4	2.3	2.1	2.1	2.1
Durable Goods	6.9	2.3	2.5	1.9	1.4	2.1	2.2	2.3
Nondurable Goods	2.6	2.0	1.9	2.0	1.4	1.3	1.5	1.6
Services	2.8	2.8	2.7	2.6	2.7	2.4	2.3	2.2
Gross Private Domestic Investment	5.0	-1.2	4.3	4.2	3.2	2.6	2.2	2.3
Gross Private Fixed Investment	4.0	1.7	3.3	4.3	3.1	2.6	2.2	2.2
Nonres. Fixed Investment	2.1	-0.1	3.2	3.7	3.5	2.6	2.3	2.3
Nonresidential Structures	-4.4	1.3	4.4	4.4	6.8	2.8	2.0	1.8
Equipment Investment	3.5	-0.7	2.6	3.4	1.9	2.4	2.5	2.5
Intellectual Property	4.8	0.4	1.5	3.3	2.0	2.4	2.5	2.5
Residential Investment	11.7	7.4	5.4	6.5	3.3	2.6	1.8	1.8
Exports	0.1	0.9	2.6	2.8	2.9	3.7	4.1	4.5
Imports	4.6	1.0	3.4	3.2	2.1	2.5	3.0	3.7
Government	1.8	0.5	1.0	0.4	0.4	0.7	0.9	1.0
Federal	0.0	-1.2	0.6	-1.0	-0.9	-0.2	0.6	0.7
Defense	-2.1	-1.9	0.8	-1.2	-0.6	-0.2	0.4	0.5
Nondefense	3.3	-0.2	0.3	-0.6	-1.2	0.0	0.9	1.1
State & Local	2.9	1.5	1.2	1.2	1.2	1.1	1.1	1.1
GDP Deflator	1.1	1.3	2.1	2.0	2.0	2.1	2.0	2.1
Consumption Deflator	0.3	1.3	1.9	2.2	2.2	2.2	2.1	2.1
Population	0.8	0.9	0.9	0.9	0.9	0.9	0.7	0.5
Labor Force	0.8	0.9	0.8	0.9	0.9	0.8	0.5	0.4
Employment	2.0	1.2	0.9	0.9	0.8	0.8	0.5	0.4
Labor Productivity	0.7	0.6	1.4	1.4	1.4	1.3	1.5	1.7
Potential GDP	0.0	1.6	1.6	1.6	1.8	2.0	2.0	2.1
Real Disposable Income (2009$)	3.5	2.2	2.4	2.7	2.6	2.3	2.1	2.2
	2015	2016	2017	2018	2019	2025	2035	2045
Unemployment Rate	5.2	4.9	4.9	4.9	5.0	5.0	4.9	5.0
Interest Rates								
Treasury Bills, 3-month	0.1	0.3	0.8	1.4	2.2	2.8	3.2	3.2
Yield, 10 yr. Treasury bonds	2.1	1.7	2.1	2.7	3.1	3.6	4.2	4.2
	2015	2016	2017	2018	2019	2025	2035	2045
Nominal Quantities, Billions of Dollars								
Current Account	-477.4	-467.0	-512.7	-569.4	-619.6	-694.8	-837.2	-1,157.6
(% of GDP)	-2.6	-2.5	-2.6	-2.8	-2.9	-2.6	-2.1	-1.9
Federal Net Borrowing	-578.0	-544.6	-544.7	-554.8	-567.8	-934.5	-1,372.7	-2,487.5
(% of GDP)	-3.2	-2.9	-2.8	-2.7	-2.7	-3.4	-3.4	-4.1

While the year 2017 holds potential for solid performance, Table 1 shows growth of just 2.4%, ahead of the 2016 expansion but below the performance of 2015, as the trade gap widens further and as personal spending continues to stabilize after rapid expansion in 2015. Such growth is just above the potential GDP growth rate of about 2.0%, indicating that economic slack continues to dissipate slowly.

Strong job growth supported overall economic expansion. In 2015, total employment rose by 2.0%, following annual gains of 1.7% in 2013 and 2.2% in 2014. Employment rose another 1.3% between January and November 2016. Unemployment fell gradually, from 5.7% in January 2015 to 4.9% in January 2016 and 4.6% in November. Job gains of 190,000 per month since July is encouraging, and employment is projected to grow 1.2% in 2016, a net increase of 1.4 million jobs, followed by gains of about 1.0% in the following two years. Unemployment likely will average 5.0% or below in 2017 and beyond.

The income flowing from new jobs improves household balance sheets and will continue to boost purchases of new vehicles, housing, and other goods and services. In turn, improved final demand encourages businesses to invest in capital equipment and facilities. Finally, fiscal contraction appears to have ended in 2014, with 2015 and 2016 bringing modest gains in real government consumption and investment expenditures. The coming years likely will bring similar positive, albeit low, fiscal expansion.

Oil prices plummeted from about $100 per barrel at the beginning of 2014 to $28 in February 2016 before recovering to above $50 in early December (WTI). Weak petroleum demand in Asia and Europe and steady production in OPEC nations largely brought this decline, aided by rapid expansion of U.S. production. The potential for effective action by OPEC and Russia to curtail production led to a price surge late in 2016. Average retail gasoline prices fell to $1.76 per gallon in February 2016 from $3.69 per gallon in June 2014, though they averaged $2.18 in November 2016. While low prices brought exploration to a standstill in many oil and gas fields, reducing jobs and investment spending in energy industries, consumers have been able to divert funds from their energy budgets to purchase other goods and services.

Indeed, the global energy market has changed markedly, and the implications for the US economy are substantial. U.S. production of crude oil rose quickly since 2008 and natural gas production sustained rapid growth since 2005; the nation became the top producer of both commodities. The energy sector saw consistent and strong capital investment since 2009, and new exploration, production, and ancillary activities created well-paid jobs. Plunging oil prices led to sharp declines in overall energy investment spending, but contraction of domestic oil and gas production of has been relatively moderate so far. The industry eventually will stabilize and perhaps already is beginning to recover, as the number of active drilling rigs has risen considerably in the second half of 2016, and the energy renaissance ultimately should prove durable and help to boost the U.S. economy.

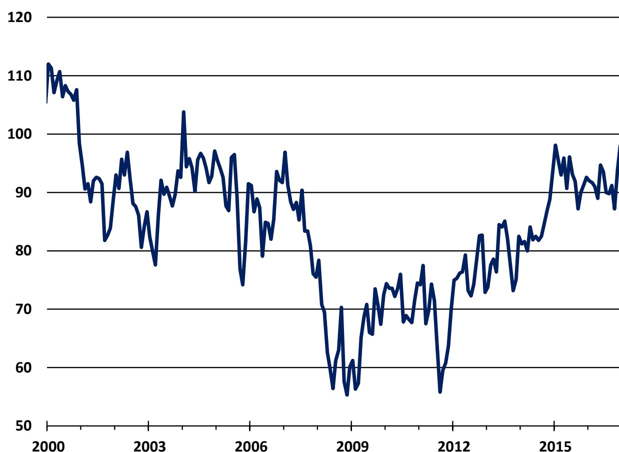
Stabilization in the energy sector will present less drag and ultimately will boost overall economic expansion. GDP growth in the next few years will be sustained by the consumer and private business sectors, as government expenditures will make only small contributions to growth in the foreseeable future. Net exports will continue to present a drag on the U.S. economy, as weak export and strong import demand leave a wide trade deficit. This will pose a challenge for man-

ufacturing and other goods-producing industries overall, though even now some sectors are finding ways to compete effectively.

Reduced household debt levels, increased employment, and low inflation will continue to encourage personal consumption spending. Figure 20 shows consumer sentiment in January 2015 at the highest level in more than a decade, and confidence surged in December 2016 to the highest level since January 2004. Following growth of 3.2% in 2015 and 2.6% in 2016, inflation-adjusted consumer spending will expand about 2.5% in 2017. Spending is paced by moderate growth for nondurables and services, with higher spending growth for automobiles and other durable goods. Personal consumption will continue to grow in 2018 and 2019, expanding at about 2.4% per year. Spending for consumer durables will remain strong but will decelerate.

Figure 20: University of Michigan Index of Consumer Sentiment

(1966 = 100)



Residential investment activity boosted a sluggish economy with 13.5% growth in 2012, but the pace slowed to 3.5% in 2014 before strengthening again to 11.7% in 2015. Housing decelerated in 2016 but continued to lead the economy; 2017 likely will bring a similar result. Sustained employment and income growth, better creditworthiness, and low but slowly rising mortgage rates will support recovery, particularly for the single-family construction market that has continued to lag.

After expanding by 10.3% in 2014, real spending for non-residential structures fell by 4.4% in 2015. Weakness was concentrated primarily in drilling and other oil field development while investment growth continued for many other types of nonresidential structures. Spending on commercial and health care buildings has done much better, and as oil field activity stabilizes overall growth should follow, with modest expansion in 2016 leading to stronger growth 2017 and 2018. Private equipment spending rose by 3.5% in 2015 but fell in 2016. Investment in intellectual property products, including spending on software and intangible assets, rose 4.8% in 2015, with additional gains following in 2016. Investment growth for equipment and intellectual property will strengthen in 2017.

Exports growth slipped to just 0.1% in 2015 and remained under 1% in 2016 due to weakness in Europe, Asia, and elsewhere. Export growth in coming years is dependent on substantial and sustained recovery in these markets. Continued strength of the dollar and potential disruptions to relationships with U.S. trading partners, however, makes rapid demand growth for U.S. goods unlikely next year.

Figure 21 reveals a downward (depreciating) trend in the Federal Reserve's Broad Currency Index from 2001 to 2011, but the dollar strengthened considerably since 2014. Although the dollar continues to gain strength in December 2016, other major currencies ultimately should regain ground as their economies strengthen. A moderate increase in export volumes of 2.6% is expected in 2017. The strong dollar also drove real import growth to 4.6% in 2015, substantially widening the trade deficit, though import volumes decelerated in 2016. The trade gap remained stable but large in 2016 as

Figure 21: Federal Reserve Broad Currency Index
(1997 = 100)

imports remain high compared to exports, and the gap may widen again in 2017. Later years should bring accelerating demand for exports, though imports growth also will strengthen with the U.S. economy.

Risks to the Outlook

Downside Risks

Recession: Before Britain's vote to leave the European Union, many U.S. economists reckoned the odds of recession in 2016 to be in the neighborhood of 15-20%. Many international forecasters, including those at the IMF and OECD, also were reducing their predictions for global growth in 2016. The pending split between Britain and continental Europe, and Scotland's renewed interest in leaving the United Kingdom, threaten economic turmoil in Europe and beyond. Political uncertainties in France and Italy, tensions over immigration in Germany, and turmoil elsewhere leave the future of the European Union and the economic performance of the continent in jeopardy. Despite some strength in parts of Asia and sub-Saharan Africa, growth in the EU, Latin America, and China has been disappointing. Adverse balance sheet effects of the strong U.S. dollar and tightening monetary policy, increased global aversion to risk and market volatility, and low commodity prices particularly hurt emerging markets and exacerbate existing debt problems. U.S. exports of manufactured goods and other commodities have suffered from weak investment and consumption expenditures in these economies, particularly as construction and other capital spending has slowed. Persistent weakness in the global economy and feeble oil and gas investment and production could bring stock market losses and undermine consumer and business confidence. This could lead to recession; many economists now put the odds of U.S. recession in 2017 at about 20%. Recent agreement by OPEC and other nations to restrict oil production already has brought higher prices; while this should help U.S. oil and gas production and investment, a sudden and substantial energy-price surge could hurt economic growth.

Political Paralysis: Long-standing political tensions only grew during the long 2016 election season, and the resulting election of Donald Trump and Republican control of Congress does little to settle discontent. Disagreement abounds even within the Republican Party, and their majority in the Senate is slight. Whether agreement can be reached on infrastructure spending, tax reform, Supreme Court appointments, and other important actions remains to

be seen. The lack of substantial Congressional action in recent years hampered business and consumer planning and spending; the new president and Congress have the opportunity to change this, but it will not be easy.

International Crises: Trouble in Syria, Ukraine, Nigeria, Venezuela, and elsewhere could flare up quickly to upset international energy markets and other trade flows. If tensions worsen so that Russian oil and natural gas exports become constrained, or if ISIS disrupts production in the Middle East or Africa, then world energy prices could rise substantially despite increased energy production in the U.S. Continued attacks by terrorists on Europe, the U.S., and elsewhere could undermine consumer and business confidence, and the ultimate governmental responses (fiscal and otherwise) to these attacks largely remain to be determined.

Upside Risks

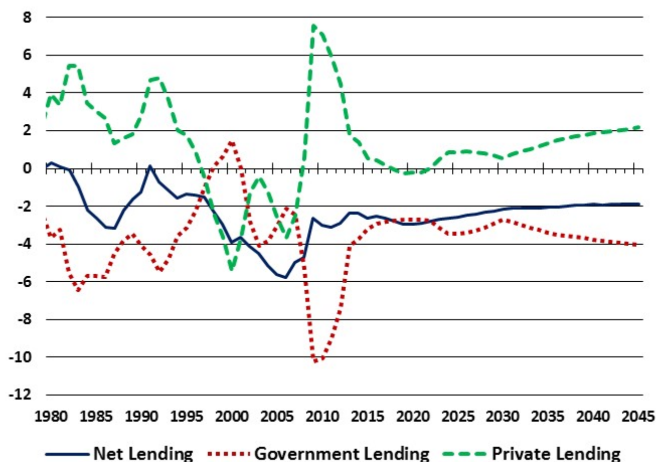
Higher Wages: Economists have predicted that labor market pressures will spark real wage increases that will act to stabilize and strengthen the economy. These pressures ultimately should offset the downward pressure on wages from the retirement of high-wage baby-boomers and the return to employment of low-wage workers who suffered unemployment disproportionately following the recession. With unemployment at 4.6% and strong gains in real disposable income, recent signs are encouraging, though the evidence is not completely convincing. If they do materialize and prove persistent, higher wage growth will support continued consumer spending growth, in part by helping to relieve the burden of household debt. Government revenues also are helped by higher incomes through income and sales taxes, and so tight budget constraints can be relaxed to support increased spending on infrastructure, education, and other public investment projects.

Greater private investment: Many corporations have built substantial cash reserves over the past few years, but little of this has been spent on new capital investment in the United States. Energy producers provided an important exception with spending on oil and gas field development, pipelines, and elsewhere, but recent low energy prices discouraged investment in that industry too. If recent recovery of energy prices proves durable, then oil and gas exploration once again could become profitable and drive higher nonresidential investment spending. Faster economic growth, helped by stabilization of energy markets and the dollar, will encourage domestic investment spending. An increase of foreign capital spending in the U.S. could provide an additional boost in expenditures on equipment and nonresidential structures.

Greater Public Investment: Despite widely varying claims by presidential candidates and current politicians, the federal deficit has fallen rapidly to 3.2% of GDP in 2015 from 10.2% in 2009. Congress recently approved a 5-year highway bill, and improved infrastructure investment reportedly is a high priority for the President-elect. A general expansion of overall federal nondefense and state and local expenditure lends hope that repairs and improvements will be made to roads and highways, airports, waterways, and other long-neglected infrastructure. These are important factors in private activity, and domestic producers would welcome a boost to their productivity as they face fierce competition from abroad.

We calibrate the LIFT forecast to exhibit long-run sustainability of the economy's basic nominal balances as a percentage of GDP. Figure 22 depicts the long-term trajectories for net lending (or borrowing) as a percentage of GDP for the private sector (including both household and corporate business sectors), the government sector (federal plus state and local), and for the economy as a whole. Each line shows the excess of income over consumption and capital investment expenditures for the sector as a percentage of GDP. The line marked "Net Lending" is equal to the current account deficit, or the economy's net lending abroad, which mostly has been negative over the past four decades. It is the sum of household, business, and government (including state and local governments) net lending.

Figure 22: Net Lending
(Shares of Nominal GDP)



Note the unique circumstances of the recession years. Recession meant that the current account deficit as a percent of GDP fell from more than 6% in 2006 to about 3% in 2011 and 2.6% in 2015. Substantial deleveraging in the private sector that took place among businesses as well as consumers drove this retrenching. In 2009, the private sector lent, on a net basis, nearly 7% of its current income relative to GDP. The ratio was negative throughout most of preceding decade.

Long-run forecasts of the real economy are guided by Social Security Administration projections of population growth and by labor force participation rates that are similar to, though slightly higher than, projections by the Bureau of Labor Statistics (BLS) and the Congressional Budget Office (CBO). Together, these largely determine the size of the labor force. The natural rate of unemployment (NAIRU) largely follows the CBO outlook. The labor force level and NAIRU together determine the full-employment level. Potential growth of real GDP follows CBO projections through the medium term and growth rates remain approximately constant in the long run. The long-run LIFT forecast of the real economy thus converges to these projections of full employment and potential real activity levels. Prices largely are guided by GDP inflation rates that converge to the Federal Reserve target of approximately 2.0%. Energy prices are guided by Energy Information Administration projections. Transfer spending follows projections by the Centers for Medicare and Medicaid Services, the Social Security Administration, and the Congressional Budget Office.

The Inforum International System of models (IS) and its Bilateral Trade Model (BTM) connect the U.S. forecast to the rest of the world. Exchange rates technically are exogenous in the IS forecast, which is made in conjunction with the formulation of the U.S. outlook. The exchange rates are endogenous, however, to the overall forecasting process. We first set an exogenous path for each exchange rate and observe the impact on the forecast across economies. If the results lead to implausible current account balances over time, then we modify the exogenous forecast. They incorporate exchange rate data through December 2016. Since the presidential election, the U.S. dollar has, on average, strengthened some five percent. We assume there will be some weakening of the dollar during 2017 but that more than half of this past month's recent gain will be retained. Exchange rate projections for major U.S. trading partners are shown in Table 2.

Table 2: Exchange Rates Assumptions – Foreign Currency Per U.S. Dollar
(Negative values signify dollar depreciation)

	13-14	14-15	15-16	16-17	17-18	18-19	19-20	15-20	20-25	25-35
Euro	0.1	19.5	0.2	3.2	-1.0	-0.5	0.0	0.4	0.5	-0.7
Canadian dollar	7.3	15.7	3.6	0.0	0.3	0.7	1.0	1.1	0.8	-0.4
Mexican peso	4.2	19.2	17.8	5.0	3.0	2.6	2.3	6.0	1.2	-0.8
Japanese yen	8.5	14.3	-10.3	4.0	-1.0	-0.5	0.2	-1.6	0.4	-0.8
Chinese yuan	0.2	2.0	5.7	2.0	0.0	-0.3	-0.5	1.4	-0.5	-1.3
British pound	-5.2	7.7	13.1	1.0	1.3	1.7	2.0	3.7	0.5	0.0
South Korean won	-3.7	7.4	2.5	1.0	0.0	0.3	0.5	0.8	0.7	-0.5

Table 3 presents projections of GDP growth for many of the countries featured in the BTM model. World GDP growth and especially world trade has slowed significantly since the economic crisis of 2008-2009. We project economic growth to rise in North America over the next couple of years, then slip back to just over two percent per year. [1]

Growth in Europe and East Asia is projected to slow in the coming year. The United Kingdom will not feel the full impact of the Brexit vote until 2018. The formal declaration of Brexit by the British government is expected in March of 2017, followed by intense negotiations with the remaining European Union countries. Therefore, we conclude that the full negative effects will appear in 2018 when investment in particular falls. Growth will remain sluggish elsewhere in Europe, perhaps below current rates, until 2020. We project negligible growth for Japan over the forecast horizon. The South Korean economy, meanwhile, is expected to gain momentum in the near-term if the current political crisis can be resolved. Significant deceleration in Chinese economic growth is forecasted, largely due to the slowdown in world trade. However, there will be some modest recovery over the longer term as inland provinces expand rapidly and the economy is rebalanced to serve a domestic market.

World trade volumes will continue to decline in the next few years before accelerating modestly after 2020. This is in stark contrast to the past when international trade grew at nearly twice the rate of GDP due to the deepening of interna-

[1] These rates for U.S. growth are slightly different than those shown in Table 1. The projections will be reconciled in the final Inforum Fall 2016 Outlook.

tional ties. An ongoing recession in Brazil, a slowdown in India, and tensions with Russia contribute to a pessimistic outlook.

Table 3: International Growth Projections[2]

Percentage change from previous year

	14-15	15-16	16-17	17-18	18-19	19-20	20-25	25-30
Total All Listed Countries	2.4	2.0	2.2	2.0	1.9	2.1	2.0	2.4
United States	2.4	1.6	2.3	2.4	2.4	2.3	2.0	2.1
Canada	1.3	1.3	1.8	1.6	0.5	1.4	1.6	1.9
Mexico	5.2	1.8	2.4	3.1	1.8	2.1	2.3	3.2
North America	2.4	1.7	2.3	2.4	2.2	2.2	2.0	2.1
Austria	1.0	0.9	1.8	1.5	1.3	1.4	1.5	1.4
Belgium	0.1	1.7	0.4	0.2	1.3	1.2	1.8	1.2
France	1.8	0.7	1.2	0.9	0.9	1.2	1.7	2.0
Germany	1.7	1.4	0.8	0.4	0.9	1.1	1.7	1.5
Italy	-0.9	0.9	1.5	1.4	0.8	1.4	1.6	0.9
Spain	1.2	3.3	2.5	2.0	2.1	2.2	1.8	2.0
United Kingdom	1.6	1.2	1.5	1.6	-1.0	1.6	1.1	1.1
Europe	1.2	1.3	1.3	1.1	0.7	1.4	1.6	1.5
Japan	-0.4	0.1	0.2	0.2	0.6	-0.3	0.2	0.6
Korea	0.8	0.4	2.0	2.8	2.3	2.8	2.7	2.0
China	8.1	5.7	5.1	3.9	3.9	4.5	3.8	5.1
East Asia	3.7	2.8	2.9	2.3	2.5	2.6	2.5	3.4
World Trade (B2005 US$)	4.6	2.6	2.4	1.8	2.4	2.6	2.8	3.0
Oil demand (2005 = 100)	4.0	4.8	2.6	1.7	0.8	-0.6	0.3	1.9

[2] Sources: OECD Economic Outlook November 2016

Overview of the Sectoral Outlook

Recovery from Recession Remains Incomplete While the U.S. economy has grown consistently, though slowly, the world economy remains weak. This reduces U.S. growth, particularly as the strong dollar leaves American goods and services expensive relative to their foreign alternatives. Residential construction activity strengthened considerably in 2015 and was moderately strong in 2016, but declining oil and gas exploration dragged down overall nonresidential construction spending. Residential investment momentum should continue and nonresidential activity should improve. Although real defense spending continues to decline, overall government real spending is rising slowly.

Expansion in the Health Care Industry Spending strengthened in 2014 among health care services sectors, and production since has accelerated. Steady growth is expected as newly insured persons take advantage of new benefits. Health product manufacturing sectors have seen mixed performances. Nursing home spending is growing steadily.

Job Growth is Resuming in Most Private Service Sectors, But Manufacturers Are Struggling Most private-sector services industries experienced job growth in 2015, but many goods-producing sectors saw declines. Government employment continues to be weak, but overall government employment levels perhaps are stabilizing.

Manufacturing Besieged Many manufacturing sectors struggled in 2015 as the strong dollar weakened exports demand and made imported goods more attractive. Durables manufacturing, machinery, transportation equipment, and metals manufacturing generally will see recovery in the coming years, but growth will be sluggish. Recovery of European and other markets ultimately will bring exports growth, though this process will be slow. Production in food manufacturing sectors continues modest growth.

The Top Performers When ranking industries by output growth for 2015-2020, construction appears near the top. Growth recently weakened considerably for natural resource exploration and extraction, including oil and natural gas, but strength could be regained if energy prices continue to rise. High-tech, finance, and wholesale trade sectors, along with sectors that largely serve consumers such as health care, child care and social assistance, and movie recording lead most others.

Bringing Up the Rear The bottom tranche include commodities that have been in decline. These include Tobacco products, with output flat or falling through the forecast period. Some sectors suffer from continuing defense spending cuts, including Search, Detection, and Navigation Equipment manufacturing. Environmental concerns threaten domestic coal consumption, though Presidential favor and rising exports perhaps ultimately could stabilize production levels for Coal mining.

The Inforum LIFT U.S. Economic Model

This report summarizes the inauguration of the Inforum LIFT 3 model of the U.S. economy. This is the third generation of the primary Inforum U.S. model. It is similar to the previous generation that was in use from Fall 2012 through Spring 2016, but a variety of improvements have been made. Extensive changes were prompted by continual evolution of NAICS codes and corresponding industry data, structural changes to NIPA accounts, and other data developments. In addition, the model was revised to better suit the needs of Inforum research sponsors; for example, it offers expanded detail for health care production and for government activity.

Table 4 presents a brief summary of differences between the second and third generations of the LIFT models. Additional details will be made available upon request and presented in forthcoming documentation.

Table 4: The LIFT Model

The Second and Third Generations

	LIFT 3	LIFT 2
Commodity Sectors	121	110
Input-Output Transaction Matrix	121 x 121	110 x 110
Industries	71	65
Consumption Types	83	83
Construction Types	26	25
Equipment Purchasing Sectors	71	65
Intellectual Property Investment	✓	–
NAICS/IO Account Standards	2007	2002
NIPA Benchmark	2009	2005