The Inforum Economic Outlook

The U.S. economy expanded about 2.3% in 2017, the eighth consecutive year of moderate gains. The economy was led by growing labor markets, relatively strong personal consumption, and recovering investment in energy exploration. These offset weak residential investment, a smaller inventory accumulation, and falling net exports. The unemployment rate fell to 4.4% and GDP inflation rose to 1.8%; the Federal Reserve likely will respond by raising rates three times in 2017.

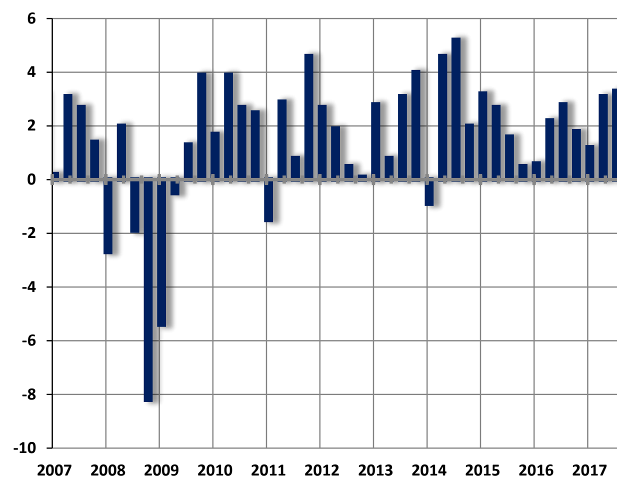
Growth accelerated through 2017, and the year ahead holds potential for somewhat better performance. According to Inforum's current projection, growth will rise to around 2.6%. The trade gap likely will widen further and personal spending will sustain a relatively high growth rate. Improved investment spending, especially residential construction and energy-related investment, should contribute to faster overall expansion. The unemployment rate will continue to fall, and inflation will rise to about 2.0%.

The Current Economic Environment

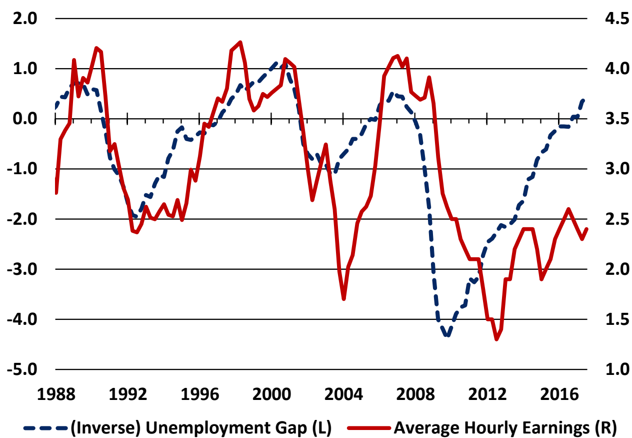
The U.S. economy strengthened in 2017, with GDP accelerating through the first three quarters to provide annual growth of about 2.3% over the anemic 2016 performance. The economy once more was led by growing labor markets and sluggish but rising personal income. Energy production began to recover, driving up nonresidential investment spending. A smaller inventory accumulation and falling net exports partially offset relatively strong personal consumption expenditures to produce an eighth consecutive year of moderate growth.

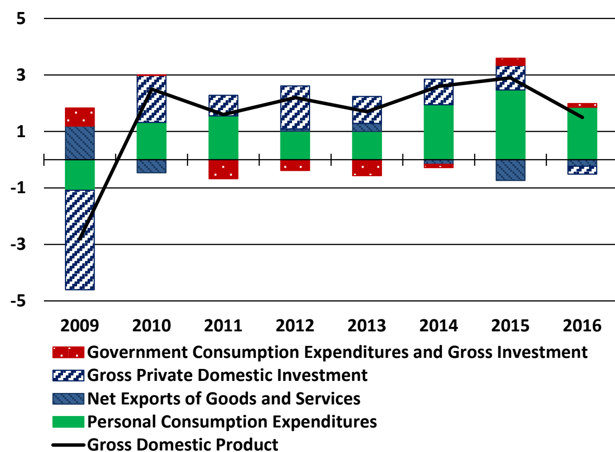
Private sector activity accelerated in 2017 after a slow winter season. Figure 1 shows that quarter-to-quarter growth in real (inflation-adjusted) GDP was 1.2% in the first quarter following Q4 2016 growth of 1.8%, but economic expansion reached 3.1% in the second quarter and 3.3% in Q3 2017. Improvement in 2017 was led by surging investment by the energy sector (in mining exploration, shafts, and wells), even as other sectors held back growth. Lagging performances included sluggish and uneven residential investment, sagging net exports, and flat government spending. Table 1 shows that real GDP increased 1.5% in 2016, falling short of the 2.9% performance of 2015 and the 2.6% growth of 2014. Expectations for overall growth in 2017 fell slightly during the year before improving again, and actual performance seems to confirm anticipations of moderate growth.

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



A bright spot in the U.S. economic record of the past several years was growth of real disposable personal income. Growth of 3.6% in 2014 and 4.2% in 2015 unfortunately could not be sustained, and income decelerated to 1.4% in 2016 and about 1.7% in 2017. In part, the slow rise of real income in 2017 was due to consumption price inflation that slowly is rising toward 2.0%; this





normalization of inflation rates is an indication of improving economic health.

Unemployment rates continue to fall, wages are trending higher, and consumption price inflation remains low, with all of these pushing real income higher. Figure 2 shows that recent year-over-year nominal wage growth has been above 2.0%. Wages began to climb as the unemployment rate moved back to its natural rate (NAIRU) of about 5.0%. Real compensation per hour for the non-farm business sector, a broader measure of compensation that is adjusted for inflation, grew faster than 3.0% in the second and third quarters of 2015 relative to compensation rates a year earlier, but it fell to 2.1% in the fourth quarter of 2016 and by about 0.7% each quarter through Q3 2017. In part, this deceleration and ultimate fall of real compensation was due to slowly rising consumer price inflation. Higher wages, especially among blue-collar workers, and full employment supported moderately strong real consumption spending growth of 2.7% in 2016 and again in 2017, though this was below the growth of 2.9% in 2014 and 3.6% in 2015. Consumer spending in Q1 2017 decelerated to 1.9%, but growth rose to 3.3% in the second quarter and together with surging nonresidential investment spending supported stronger GDP growth.

Figure 3 shows the contributions 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. Inflation-adjusted government consumption and investment expenditures (which includes goods and services but not entitlements) fell each year since 2010 until 2015 brought 1.4% growth, with another expansion of 0.8% following in 2016. Federal non-defense expenditure accelerated to 3.2% in 2015 after a slight gain in 2014, and 2016 expansion was a moderate 1.2%. Federal defense spending cuts have been subsiding, with reduction of 6.8% in 2013 slowing to just 0.7% in 2016. Inflation-adjusted state and local spending rose 2.3% in 2015 and another 1.2% in 2016. None of these sectors provided substantial growth in 2017, and total government real spending growth is likely to be small.

The U.S. dollar has maintained strength in recent years due to the comparative stability and relatively good health of the American economy. While cheaper prices of imported goods allow consumers to purchase greater quantities of goods and services, increased foreign competition

Figure 4: Quarterly Net Exports
(Billions of Dollars)

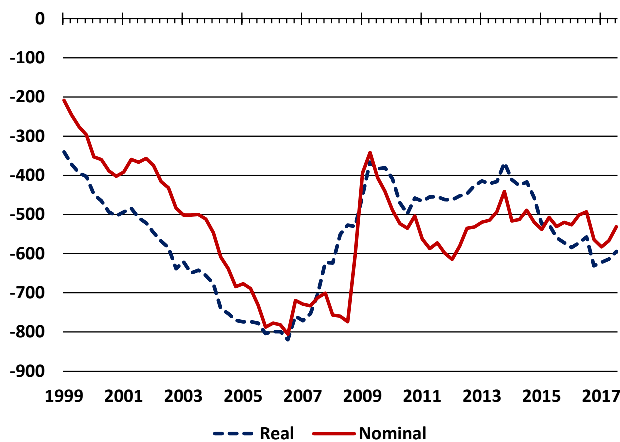
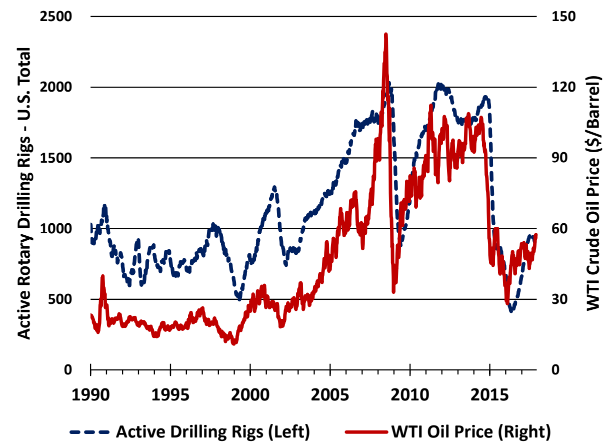


Figure 5: Drilling Activity and Oil Prices
(Sources: Baker Hughes and EIA)



leaves many American producers struggling to compete at home and abroad. Real net exports (Figure 4) dropped suddenly at the end of 2014 and beginning of 2015 and then remained stable, but the trade gap widened suddenly in the fourth quarter of 2016 when exports contracted and imports surged. Due partly to the strong U.S. dollar, the nominal trade balance mostly remained flat since 2014 despite the shift in trade volumes, though the nominal trade deficit also grew sharply late last year. Annual export growth fell slightly, to 0.3%, and imports volumes decelerated to 1.3% in 2016. The dollar weakened somewhat in 2017 following a December 2016 peak, though it remained high, and the trade deficit gradually narrowed through the year.

Oil prices dropped dramatically late in 2014 and quickly led to plunging 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 just two years earlier and more than 2,000 rigs in 2008. Oil prices recovered late in 2016 to above $50 per barrel (WTI), bringing more than 750 rigs to active service in February 2017. Although prices slipped below $50 again by mid-2017, the rig count reached 952 in July. Prices rose to $57 in December 2017, and following a brief dip, the rig count again has been climbing late in the year. Crude oil and natural gas production also began to wane when prices fell in 2014, and following months of decline, production volumes finally began to rise again in the final quarter of 2016 (Figure 6). Reduced operating costs and new technology allowed production to remain high despite low prices, and increased efficiencies will boost profits as output rises. The collapse of domestic exploration was the primary reason for a fall in real nonresidential construction spending by 4.1% in 2016 (Figure 7). Most other nonresidential construction sectors fared better in 2016 before weakening in 2017; the recent spending surge for energy development brought overall growth of about 5.6% in 2017.

Figure 6: Industrial Production of Oil and Gas – Well Drilling and Extraction
(2012=100)

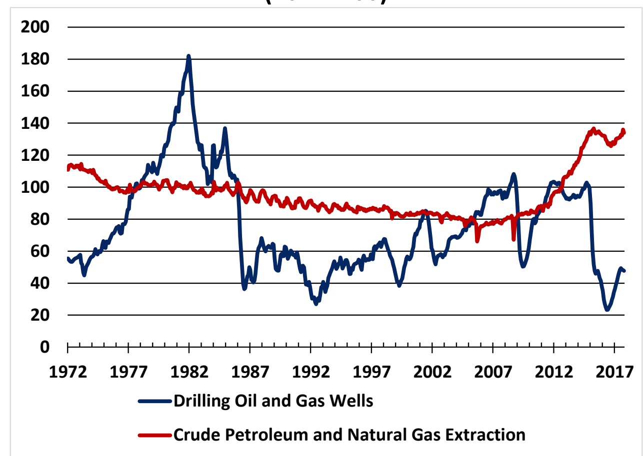
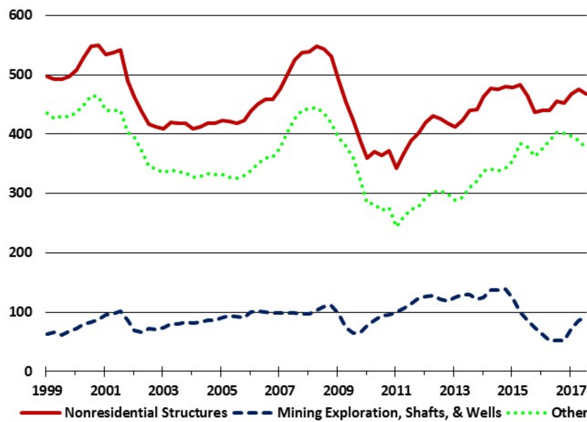
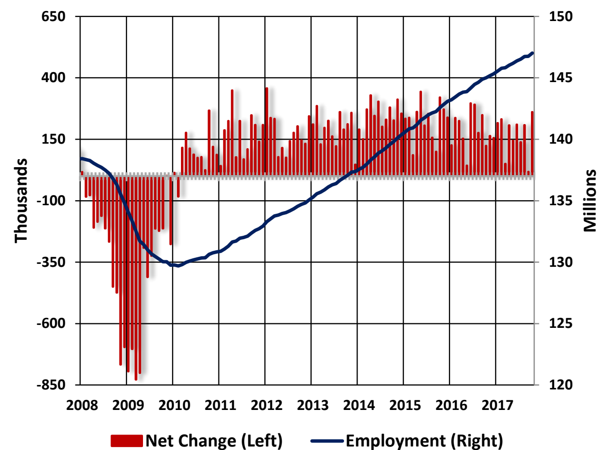


Figure 7: Nonresidential Construction
(Billions of 2009 Dollars)



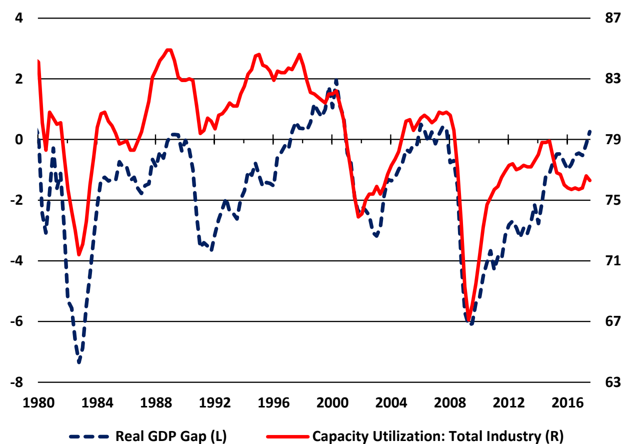
Although performance proved mixed in following months, the Federal Reserve considered more promising indicators when it raised interest rates in December 2015. Increasing strength in such indicators was expected to spur additional rate increases in 2016, but the Fed deferred such action until their December meeting when they finally raised the Federal Funds rate to 0.75%. Figure 8 shows that in the 12 months from March 2015 to February 2016, nonfarm 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% by 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 Federal Reserve to postpone the additional rate hike that many had expected by June 2016. Still, unemployment ultimately fell to 4.6% in November 2016, with monthly job gains averaging nearly 200,000 over the 12-month period, and; this supported the December 2016 Federal Reserve action. In the first six months of 2017, hiring remained strong at 180,000 per month, supporting another rate hike, to 1.25%, in June 2017. Employment gains were slight in September 2017, in part due to hurricane disruptions, but October brought 261,000 hires.

Figure 8: Nonfarm Employment
(Levels and Net Change)



The U.S. economy expanded eight consecutive years through 2017. Though recovery has come slowly and unevenly, by many measures it seems the losses of the Great Recession largely have been regained. Three indicators, however, reveal lingering effects of the recession.

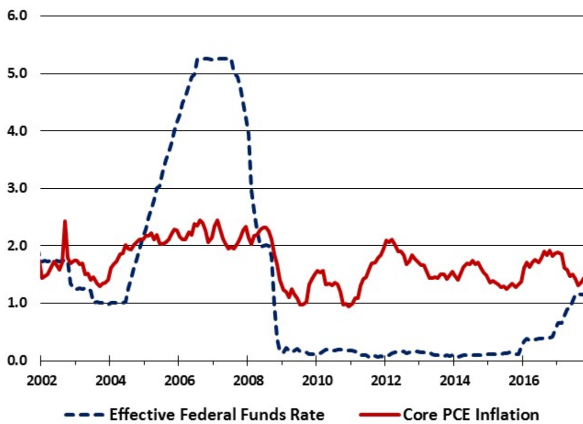
Figure 9: GDP Gap and Capacity Utilization
(Percentage Deviation of GDP from Potential GDP)



First, substantial productive slack remains. Although real GDP has been well above its previous peak seen in 2007, Figure 9 shows that it remained below its potential level as measured by the Congressional Budget Office (CBO), despite downward revisions to earlier estimates of potential output. The current estimate of growth for Q3

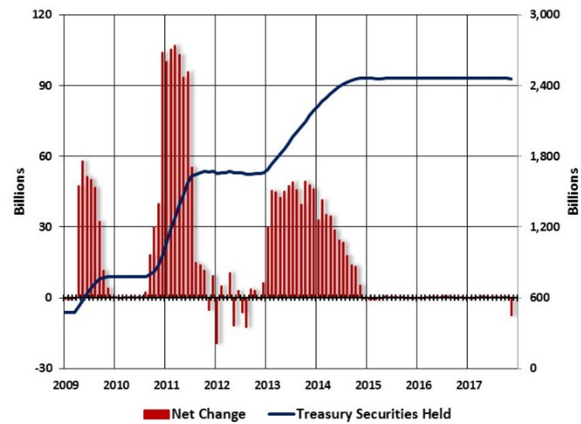
2017 shows that the gap finally has closed for the first time since Q4 2007. Capacity utilization for manufacturing, mining, and utilities industries was 78.2% in 2014; it fell to 75.7% in Q4 2016. Although this was far above the 2009 average of 68.5%, it remains about 5.0% below rates seen in 2007 and indicates that these industries have unused capacity.

Figure 10: Core Inflation and the Federal Reserve Policy Interest Rate
(Percent)



Second, this economic slack contributes to low general inflation, as is shown in Figure 10. Year-over-year core consumer price (Personal Consumption Expenditure deflator) growth since 2009 persistently remained below the Federal Reserve's target rate of 2.0%. Even extraordinary Federal Reserve efforts to raise inflation and spur growth seemed to have little effect, including policy interest rates near zero for seven years and "quantitative easing" (QE). The QE program ended in October 2014, and the Federal Reserve began to "normalize" monetary policy by increasing its policy rate in December 2015. Price and wage growth rose through 2016 and approached target rates, though prices decelerated again in 2017 as policy interest rates rose. Persistent weakness in trading partners led much of the world to loosen monetary policy, and raising interest rates too quickly could intensify the low inflation problem by strengthening the U.S. dollar. After rate hikes in December 2016 and in March and June 2017, most economists anticipate one additional increase in December 2017. The Federal Reserve also recently began reduction of its $4.5 trillion holdings of Treasury and mortgage securities; while the pace will be slow, the action could lead to higher long-term rates. Figure 11 shows the level and changes of U.S. Treasury securities held by the Federal Reserve. For the first time since 2012, net holdings fell substantially in November 2017, though the level remains high.

Figure 11: U.S. Treasury Securities Held by the Federal Reserve
(Billions of Dollars)



Finally, overall labor participation remains at a 30-year low of under 63%. Figure 12 shows that the rate is down from 66% before the Great Recession and 67% in 2000, though rates seem to have stabilized since 2013. 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. Attention recently has been drawn to the effects of the opioid epidemic on labor participation. A 2017 study by Alan Krueger suggests that rising opioid prescription levels account for 20% of the labor force participation rate reduction among men since 1999. Full employment and rising wage rates might pull some back into the labor force and allow those

Figure 12: Labor Force Participation Rate
(Percent)

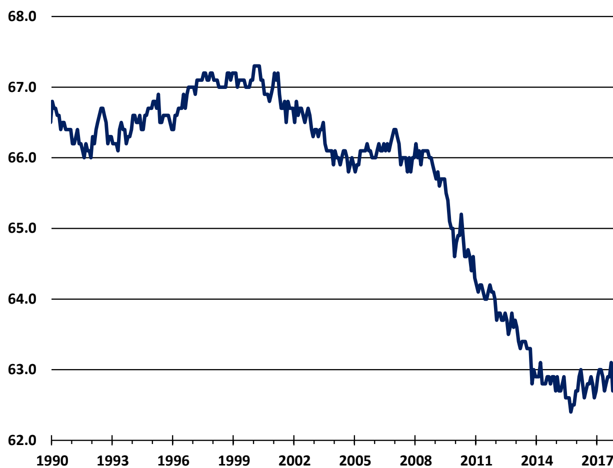
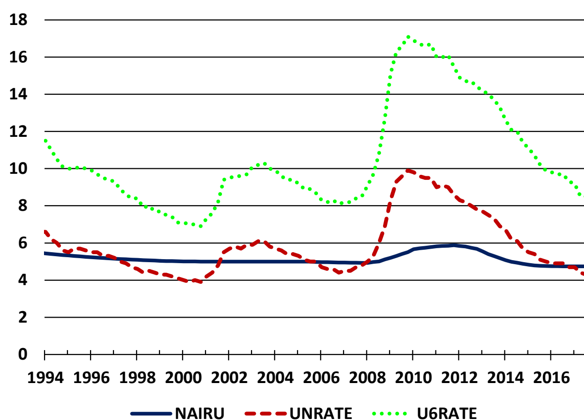
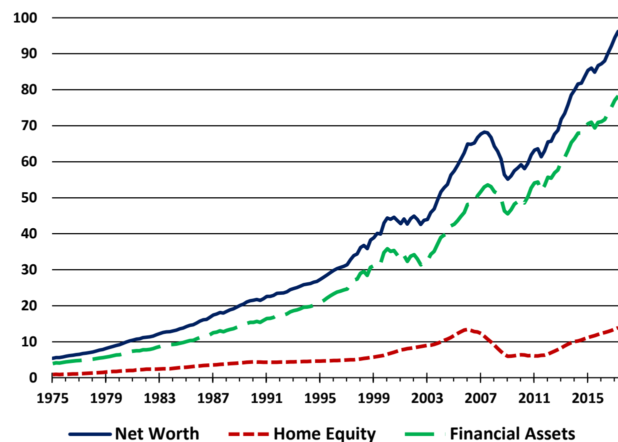


Figure 13: Unemployment Rates
(Percent)



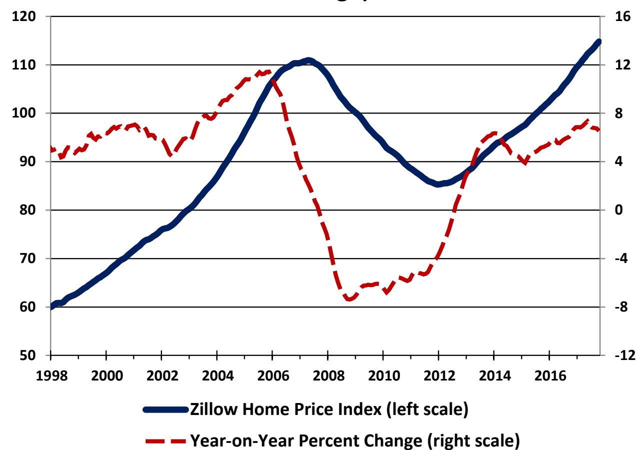
who are underemployed to move to better jobs, but the number of people who have been unemployed for long periods was slow to return to historic norms. Figure 13 shows the natural rate of unemployment (NAIRU) together with the standard unemployment rate and a broader measure of unemployment (U6) that includes marginally attached workers (discouraged workers who are not actively looking for jobs) and those who work part-time for economic reasons. In the past year, the standard rate finally slipped below NAIRU, indicating full employment, and the broader measure of unemployment returned to rates seen in the mid-1990s. Remaining slack in labor markets is more evident in participation rates than in unemployment rates.

Figure 14: Household Net Worth
(Trillions of Dollars)



These three indicators—excess production capacity, low inflation, and apparent slack in labor markets—show diminishing but still lingering effects of the financial crisis. Home and other asset prices collapsed during 2008–2010, and net worth dropped dramatically for households and businesses. The sluggishness of subsequent economic recovery was due in part to efforts to reduce private and public debt.

Figure 15: Zillow Home Prices
(Index (Jan 2009 = 100) and Year-on-Year Percent Change)



Though they were painful, these efforts ultimately were effective. Figure 14 shows the net worth of households and nonprofit institutions and its two

Figure 16: Household Debt Service Payments
(Percentage of Disposable Personal Income)

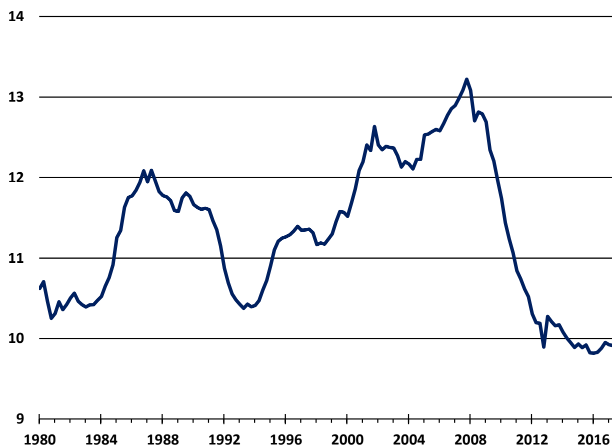
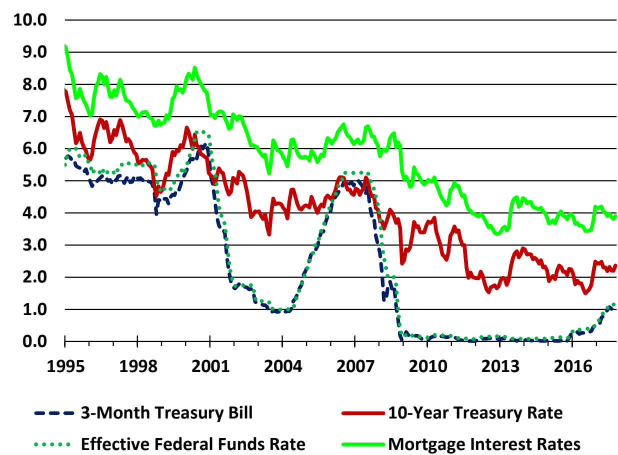


Figure 17: Interest Rates
(Federal Funds, 3-Month Treasury Bill, 10-Year Treasury, and 30-Year Mortgage, Percent)



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, and this rise in equity continued into 2017.

Figure 15 shows that housing prices indeed sank between 2007 and 2012, according to the Zillow home value index. Housing prices decelerated in 2014 but accelerated since then, and home prices are rising far ahead of general inflation. In March 2017, home prices finally regained to peak levels of April 2007. In October 2017, national housing prices were 33.7% higher than in June 2012 and surpassed the high of April 2007 by 3.4%. Still, recovery remains uneven, and prices in many parts of the country continue to lag.

The deleveraging that followed the Great Recession, improved labor and asset income, and low interest rates allowed the much-improved debt service ratio as shown in Figure 16. The ratio of household debt to GDP fell from 99.2% in Q1 2008 to about 80.0% in recent years. Consumer debt payments, including mortgage payments, fell from more than 13% in 2008 to about 10% of disposable income in 2012. This is the lowest ratio in more than three decades, and these ratios now have been stable for five years. Figure 17 shows that short-term Treasury rates remain very low, despite rising slightly following the Federal Funds rate increases. Ten-year Treasury rates are about 2.3%; mortgage and auto loan rates are similarly low.

Improved creditworthiness and low interest rates helped to drive auto sales and residential investment. In late 2015, new car and light truck sales topped an annual rate of 18 million units, a pace seen only twice since 2001 (Figure 18). After weakening to 17.0 million in June 2016, sales strengthened to 18.1 million in December before decelerating to 16.0 million in August 2017; hurricane recovery brought stronger sales in September and October. New home construction recovered slowly from the Great Recession, with investment in multi-family homes rising faster than for single-family homes. Performance has been mixed, and recovery of residential construction markets remains far from complete, but the housing market is improving.

Figure 18: Vehicle Sales and Housing Starts
(Millions and Thousands)

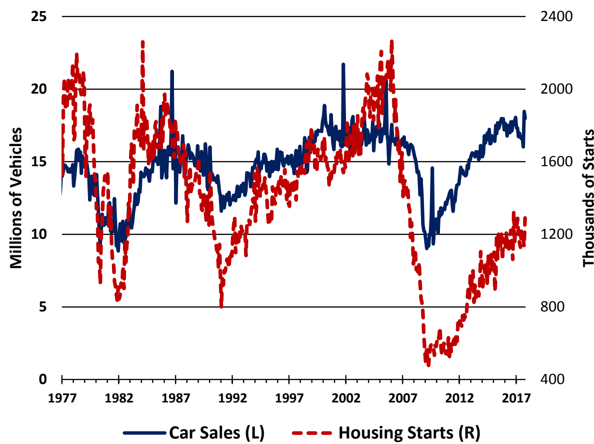
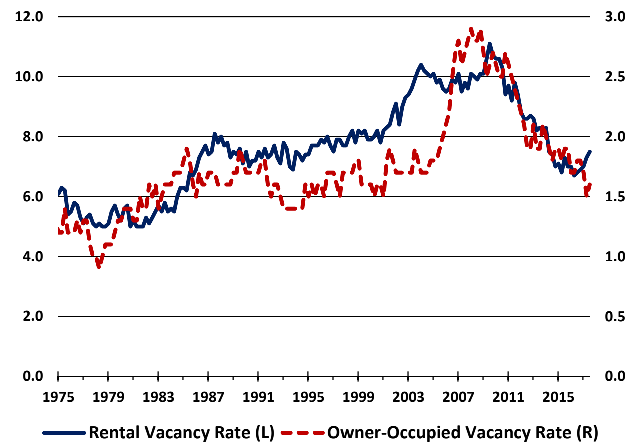


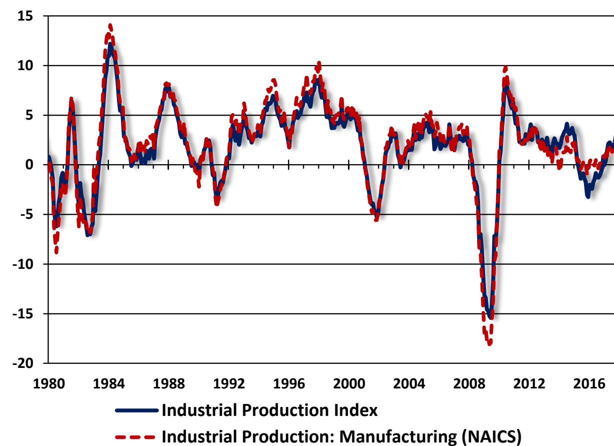
Figure 19: Residential Vacancy Rates
(Percent)



Housing starts in the fourth quarter 2016 were the highest since 2007. As a result, real residential investment in 2016 rose 5.5%. Despite continued historically low mortgage interest rates, spending growth was about 1.6% and the pace of starts was only marginally higher than the rate in 2016. Demand for new homes has been restrained by historically low population growth and slower household formation. Nevertheless, Figure 19 shows that vacancy rates for owner-occupied houses and for rental housing both have fallen considerably since the Great Recession. The fall in rental vacancy rates was particularly significant despite relatively rapid construction of multi-family housing units, and rental prices continue to climb well above overall inflation rates. Vacancy rates for owner-occupied housing have returned to the range typically seen from 1985 to 2006. Both suggest that substantial slack has been removed from housing markets, and this could spur residential construction investment in coming years. The recent rise in rental vacancies, and the drop in owner-occupied housing vacancies, suggests likely slowing in multifamily construction markets and acceleration of single-family home construction.

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 to many sectors, and to mining in particular. Manufacturing activity held up overall, though some industries were hit hard. Figure 20 shows year-over-year growth rates of industrial production and its manufacturing component. Rates for the overall index, including mining, utilities, and manufacturing, were about 4.0% early in 2015, but production was falling by late in the year. While year-to-year growth returned in December 2016 and oil and gas exploration activities are recovering rapidly, expansion ultimately may depend on stabilization of the U.S. dollar.

Figure 20: Industrial Production
(Year-on-Year Percent Change)



Productivity growth has been low since the Great Recession, both in the United States and in many other countries. Although productivity and real compensation tend to move together, Figure 21 shows that they recently have diverged. The fact that real compensation accelerated in 2015 after years of sluggish improvement was welcome news, but the higher compensation growth did not last. Moreover, the low productivity growth is puzzling and perhaps presents reason for concern. It remains to be seen whether these low productivity growth rates present a worrisome structural shift, whether average rates are pulled down by heavily indebted and inefficient "zombie" firms that survive only because of low interest rates, whether they are a product of data measurement problems, or whether they simply are a symptom of continuing recovery from the Great Recession.

Figure 21: Productivity and Compensation
(Year-over-Year Growth, 2-Year Moving Average)

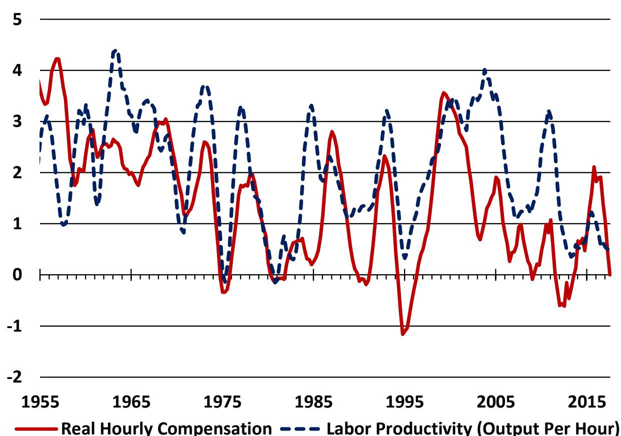
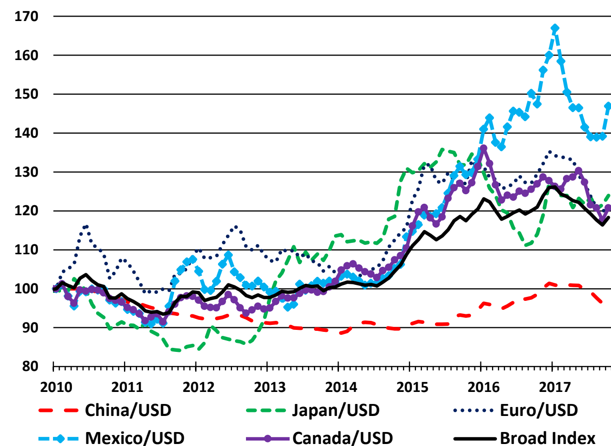


Figure 22 shows the dynamics of exchange rates over the past eight years for the currencies of several major U.S. trading partners. Between January 2015 and January 2016, the U.S. dollar strengthened 7.0% versus the euro, 17.2% versus the Canadian dollar, and 22.9% against the Mexican peso. Between January 2016 and January 2017, the dollar gained another 18.4% against the peso as the U.S. election cycle took its toll. This helped

Figure 22: Foreign Exchange Rates
(January 2010 Q1 = 100)



to boost the U.S. dollar 2.5% for the year, though the Canadian dollar and Japanese yen gained ground. Between January 2017 and October 2017, the Canadian dollar reduced its losses (up 4.4% since January 2017), the euro regained 9.5%, and the Japanese yen strengthened 1.7%. The peso gained ground in the first 10 months of 2017 (up 12.0%), despite a difficult month in October 2017. The Chinese renminbi mostly has strengthened along with the U.S. dollar, though January through October 2017 brought gains of 3.9% versus the U.S. dollar. Conditions in recent years have resembled 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 U.S. dollar appreciated strongly. The United States 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 U.S. dollar depreciation. Cheap capital also fed sub-prime lending that led to the collapse of construction and other markets in the financial crisis of 2008.

Sluggishness proved persistent not only in the U.S. but across much of the global economy. Only recently has world-wide growth begun to improve.

Because the American economy increasingly depends on trade with its partners, projections of U.S. growth must account for the risks to foreign economies and trading relationships. U.S. producers of agricultural commodities, energy products, manufactured goods, and other trade-dependent firms are working against exchange rates that make American products relatively expensive both at home and abroad. Recent economic indicators point to a hope of a synchronized worldwide economic expansion. Recovery in Europe, Japan, and major emerging economies could support stronger U.S. expansion. However, the Trump Administration's trade policies have the potential to incite trade wars that would be disastrous for U.S. exporters even as foreign economies begin to recover and otherwise might purchase increasing volumes of American products.

The Macroeconomic Outlook

Inflation-adjusted GDP accelerated this year to about 2.3%. According to Inforum's current forecast shown in Table 1, growth will rise in 2018 to around 2.6%. The trade gap likely will widen further and personal spending will sustain a relatively high growth rate but not accelerate after relatively rapid expansion in 2015 and 2016. Nonetheless, improved investment spending, especially residential construction and energy-related investment, should contribute to faster overall expansion.

Strong job growth boosted personal income and consumer spending. In 2016, total employment rose by 1.4%, following annual gains of 2.0% in 2015. Employment rose another 2.0% in 2017. Unemployment continued to fall gradually, from 5.7% in January 2015 to 4.8% in January 2017 and 4.1% in October 2017. This represents the lowest unemployment rate since December of 2000. Job gains of 193,000 per month in the second half of 2016 and 168,500 per month through the first 10 months of 2017 were encouraging. Annual gains of about 2.0% and 1.3% are anticipated in 2017 and 2018, respectively. Unemployment likely will average below 4.5% for the next several years.

These new jobs boost personal income and will continue to spur purchases of new vehicles, housing, and other goods and services. This spending, in turn, encourages businesses to invest in capital equipment and facilities. Finally, years of government cuts appear to have ended in 2014, with 2015 and 2016 bringing modest gains in real government consumption and investment expenditures. Increases in government spending were slight in 2017, and the coming years likely will bring similar positive but low fiscal expansion rates.

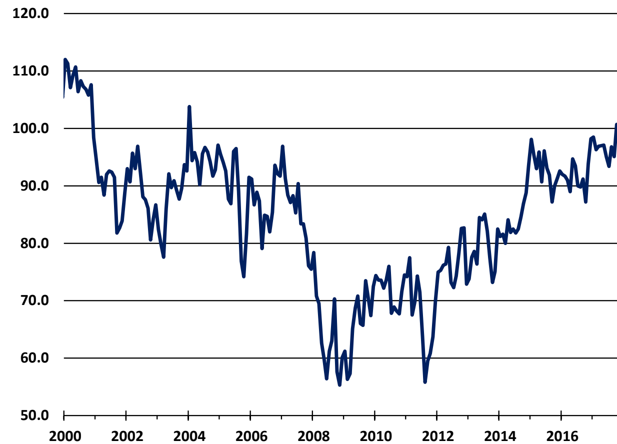
WTI oil prices plummeted from about $100 per barrel at the beginning of 2014 to $28 in February 2016 before recovering to about $50 in the first half of 2017. Prices dipped to $45 in June but rose to $56 in November. Weak petroleum demand in Asia and Europe and steady production in OPEC nations largely brought the decline in 2014, aided by rapid expansion of U.S. production. 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, and they averaged $2.56 in November 2017. Low prices brought exploration to a standstill in many oil and gas fields by 2016, reducing jobs and investment spending, but consumers have been able to divert funds from their energy budgets to purchase

other goods and services. Recovery in energy exploration now is boosting employment and investment, even while prices remain relatively low.

Indeed, the global energy market has changed markedly, with substantial effects on the American economy. U.S. production of crude oil rose quickly since 2008 and natural gas production sustained rapid growth since 2005; for a time, 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 and moderate contraction of domestic oil and gas production. The first ten months of 2017 brought dramatic recovery for the industry, as the number of active drilling rigs has risen sharply since the middle of 2016. The oil and gas industry renaissance ultimately should prove durable and help to boost the U.S. economy. While coal producers continue to face uncertainty, the Trump Administration appears to be supportive of the coal industry. The commitment to wind and solar electricity generation, to improved energy efficiency, and to development and adoption of electric vehicles is less clear. Still, rapid technological developments and falling prices for solar and other advanced technologies suggest that investment spending will remain strong for these sectors.

Recovery in the energy sector will boost overall economic expansion this year if oil and gas prices remain stable as predicted. 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 improving but still weak export and strong import demand leave a wide trade deficit. This will pose a challenge for manufacturing and other

Figure 23: University of Michigan Index of Consumer Sentiment
(1966 = 100)



goods-producing industries overall, though even now some agricultural and other sectors are finding ways to compete effectively and new markets are opening for exports of natural gas and petroleum.

Reduced household debt levels, increased employment and income, and moderate inflation will continue to encourage personal consumption spending. Figure 23 shows consumer sentiment in October 2017 at the highest level since January 2004. Inflation-adjusted consumer spending expanded about 2.7% 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, but decelerate to about 2.1% by 2020.

Residential investment activity boosted a sluggish economy with 13.5% growth in 2012, but spending has been volatile. Housing investment decelerated to 1.6% in 2017, behind the overall economy. Residential investment growth will improve to about 3.6% in 2018 and will continue to accelerate over the next several years. Sustained employment and income growth, better creditworthiness, and low but slowly rising mortgage rates

will support continued recovery, particularly for the single-family construction market.

After expanding by 10.5% in 2014, real spending for nonresidential structures fell in 2015 and 2016. Weakness was concentrated primarily in drilling and other oil field development while investment growth continued for many other types of nonresidential structures, particularly for commercial and health care buildings. Overall nonresidential construction activity improved in 2017 as oil field activity stabilized, and growth of 5.6% in 2017 should improve to 6.7% in 2018. Expansion should remain robust at over 5.0% through 2020. Private equipment spending, which slipped 4.0% in 2016, will rise by about 4.5% in both 2017 and 2018. Investment in intellectual property products, including spending on software, research and development, and other intangible assets, rose 6.4% in 2016 and 4.4% in 2017; similar annual growth should continue through 2020.

Real exports contracted 0.3% in 2016 as demand suffered due to unfavorable exchange rates and weakness in Europe, Asia, and other emerging countries. Stabilization of the dollar and strengthening international growth brought export growth to about 3.5% in 2017. Export growth in coming years is dependent on substantial and sustained recovery in foreign markets. Continued strength of the U.S. dollar and potential disruptions to relationships with U.S. trading partners, however, makes the likelihood of sustained demand growth for U.S. goods particularly uncertain.

Figure 24: Federal Reserve Broad Currency Index
(1997 = 100)

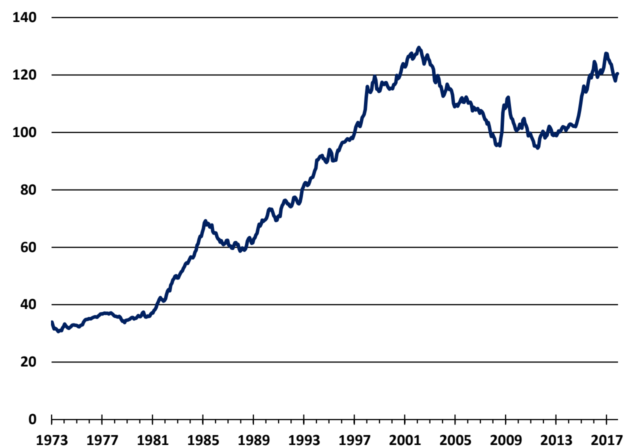


Figure 24 reveals a downward (depreciating) trend in the Federal Reserve's Broad Currency Index from 2001 to 2011, but the U.S. dollar regained these losses since 2014. The U.S. dollar continued to strengthen through the end of 2016, but it weakened between January and November 2017. Other major currencies ultimately should recover as their economies strengthen.

The strong U.S. dollar drove real import growth to nearly 5.0% in 2015, substantially widening the trade deficit, though import volumes decelerated to 1.0% in 2016. Imports growth of about 4.0% in 2017 was offset by strong exports growth, leading to a moderate increase in the trade deficit. Later years should bring accelerating demand for exports, though imports growth also will strengthen with the U.S. economy. Net exports will remain a drag on GDP growth in coming years.

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

	15-16	16-17	17-18	18-19	19-20	20-25	25-35	35-45
Real (Inflation-Adjusted) Quantities, Average Annual Growth Rates, Percent								
Gross Domestic Product	1.5	2.3	2.6	2.4	2.3	2.1	2.0	2.0
Personal Consumption	2.7	2.7	2.5	2.3	2.1	2.0	1.9	1.9
Durable Goods	4.9	5.8	3.1	2.3	2.3	2.6	2.6	2.4
Nondurable Goods	2.8	2.8	2.3	1.9	1.5	1.4	1.7	1.8
Services	2.3	2.2	2.5	2.4	2.2	2.1	1.9	1.8
Gross Private Domestic Investment	-1.6	3.1	4.9	4.7	5.0	3.8	3.0	2.6
Gross Private Fixed Investment	0.5	3.9	4.6	4.3	5.1	3.8	3.0	2.6
Nonres. Fixed Investment	-0.9	4.6	4.8	4.2	4.6	3.4	3.0	2.8
Nonresidential Structures	-4.1	5.6	6.7	5.2	5.8	3.1	2.3	2.0
Equipment Investment	-4.0	4.4	4.5	3.5	3.7	3.0	2.8	2.6
Intellectual Property	6.4	4.4	4.0	4.5	4.8	4.3	3.7	3.4
Residential Investment	5.5	1.6	3.6	4.7	7.0	5.1	3.2	2.2
	2016	2017	2018	2019	2020	2025	2035	2045
Inventory Change (billion 2009$)	41.4	19.2	29.1	40.1	37.8	41.9	51.8	63.0
Net exports (billion 2009$)	-577.4	-611.0	-631.4	-650.1	-665.0	-766.0	-900.6	-897.0
	15-16	16-17	17-18	18-19	19-20	20-25	25-35	35-45
Exports (% change)	-0.3	3.5	3.6	2.8	2.9	3.1	3.3	3.5
Imports (% change)	1.0	4.0	3.6	2.8	2.8	3.0	2.9	3.0
Government	0.7	0.2	0.8	0.7	0.7	0.7	0.9	1.0
Federal	0.0	0.2	0.2	-0.1	-0.2	0.0	0.6	0.8
Defense	-0.8	0.0	0.3	0.1	-0.1	-0.2	0.5	0.7
Nondefense	1.2	0.5	-0.1	-0.5	-0.3	0.1	0.7	0.9
State & Local	1.2	0.2	1.2	1.2	1.2	1.0	1.0	1.1
GDP Deflator	1.3	1.8	2.1	1.9	2.1	2.1	2.0	2.0
Consumption Deflator	1.3	1.7	1.9	2.0	2.1	2.1	2.1	2.1
Population	0.9	0.9	0.9	0.9	0.9	0.9	0.7	0.5
Labor Force	1.3	1.3	0.9	0.9	0.9	0.8	0.5	0.5
Employment	1.4	2.0	1.3	0.7	0.7	0.7	0.6	0.4
Labor Productivity	0.3	0.3	1.2	1.6	1.5	1.3	1.4	1.5
Potential GDP	1.6	2.5	1.3	1.7	2.0	2.3	2.0	2.0
Real Disposable Income (2009$)	1.7	1.7	2.6	3.1	2.9	2.4	2.1	1.9
	2016	2017	2018	2019	2020	2025	2035	2045
Unemployment Rate	4.9	4.4	4.0	4.2	4.4	4.8	4.6	4.8
Interest Rates								
Treasury Bills, 3-month	0.3	0.9	1.7	2.2	2.6	2.8	3.0	3.1
Yield, 10 yr. Treasury bonds	1.8	2.4	2.8	3.2	3.5	3.7	4.1	4.4
	2016	2017	2018	2019	2020	2025	2035	2045
Nominal Quantities, Billions of Dollars								
Current Account	-451.5	-505.8	-528.5	-567.9	-596.8	-752.0	-1072.0	-1298.9
(% of GDP)	-2.4	-2.6	-2.6	-2.7	-2.7	-2.8	-2.6	-2.2
Federal Net Borrowing	-724.7	-749.7	-730.6	-763.6	-829.0	-1080.1	-1860.7	-2969.0
(% of GDP)	-3.9	-3.9	-3.6	-3.6	-3.7	-4.0	-4.6	-5.0

Downside Risks

Recession: Political uncertainties, including Great Britain's exit from the EU and the remaining discontent of populists, leave economic performance of European nations in jeopardy. Asia is not immune, as China faces slower growth as it attempts to rebalance its economy. The North Korean regime's missile testing both threatens an ever-widening area and strains the United States' relations with China. In a continued effort to raise petroleum prices, OPEC and partner countries voted to extend production restrictions until the end of 2018. The OPEC production cuts, which began in January 2017, helped to revive shale gas development in the United States. While this helped U.S. oil and gas production and investment, any sudden shift in policy by OPEC could disrupt business planning, delay mining investment, and potentially hurt economic growth. Aggressive spending on infrastructure, defense, and other programs with tight labor markets could drive inflation, push up interest rates, and lead to an even stronger U.S. dollar. Additional strengthening of the U.S. dollar could leave American producers with less demand at home and abroad, and profitability would suffer. The potential for trade disruption seems to abound, with an uncertain future for NAFTA, and growth could be constrained by tight restrictions on immigration and possible deportation of some already in this country. These and other possible problems could lead to economic deceleration. Many economists put the odds of a U.S. recession in 2018 at approximately 19%.

Political Paralysis: Despite Republican control of the both the White House and Congress, Washington remains in a state of paralysis. Disagreement between factions of the GOP and fierce opposition from Democrats thus far has prevented any major legislative victories for the Trump administration. While the Senate recently approved a tax reform bill, reconciliation work with the House remains, and progress on health policy and infrastructure spending remains elusive. The lack of substantial Congressional action in recent years hampered business and consumer planning and spending. The President and Congress seek to pass major bills before the midterm elections, but their performance fails to inspire optimism.

Costs of Doing Business: Wages are rising despite low productivity growth, pushing up costs of doing business in America. Corporate tax rates are among the highest in the world, and while corporations find ways to cut tax bills, doing so is expensive and disruptive. Many firms already have yielded to the pressures imposed by tax and other policies by moving production elsewhere, inverting their corporate structures by moving headquarters to other countries, and by recording profits in nations with low tax rates. This could change, however, as legislation currently before Congress would cut the corporate rate to 20%. If differences between the House and Senate bills can be reconciled, tax reform could be passed before the end of 2017. GOP politicians argue that passing the bill would help American workers and boost economic growth. With rising employment costs adding to the pressure, failure to complete sensible federal reform could prove particularly damaging.

Upside Risks

Higher Wages: Tightening labor markets ultimately will push real wages higher, and increased income will strengthen the economy. These pressures 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 Great Recession. With unemployment well below 5.0%, recent signs are encouraging. Higher wage growth will support additional 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, so tight budget constraints can be relaxed to support increased spending on infrastructure, education, and other public investment projects. Higher productivity growth could make higher wage rates sustainable.

Greater private investment: Many corporations built substantial cash reserves over the past few years, but avoidance of U.S. corporate taxes and too few investment opportunities at home left much of the money overseas, and cash that was spent went to buy back equity or was parked in safe places. Capital investment in the United States suffered, though energy producers provided an important exception with spending on oil and gas field development, pipelines, and elsewhere until low energy prices also discouraged spending in that industry in 2014 and into 2016. If energy prices remain sufficiently high for exploration and production to remain viable, then oil and gas exploration once again could lead the way to higher nonresidential investment spending, as has happened in 2017. While past investment in oil and gas field development initially may allow significant increases in production, substantial additional investment will be required to sustain higher production levels. If permission is granted to build new oil and gas pipelines, then this activity could drive employment in the construction industry and improve competitiveness by lowering energy production costs. Furthermore, if Congress passes a tax reform bill that reduces the corporate tax rate and allows immediate deduction of business investment expenses, and if deregulation progresses as the Administration intends, private investment could increase more than predicted.

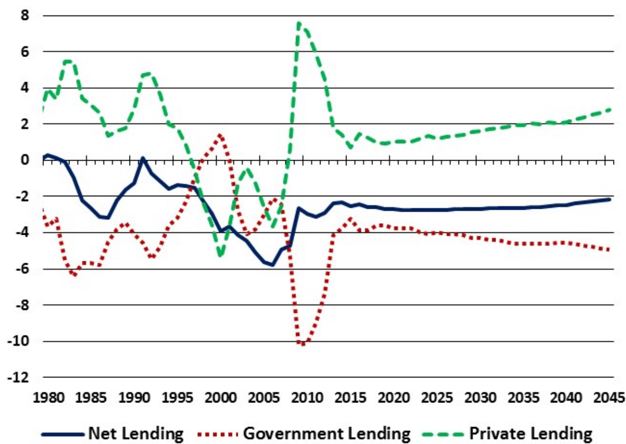
Greater Public Investment: Despite widely varying claims by political candidates and office holders, the federal deficit fell rapidly to 3.9% of GDP in 2016 from 10.2% in 2009. In recent years Congress approved a 5-year highway bill, and the President repeatedly has called for $1 trillion to be spent over ten years to improve infrastructure. 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. If the federal government joins state and local governments in rebuilding aging equipment and structures, it could provide a substantial boost to GDP.

Long-Run Macroeconomic Assumptions

We calibrate the LIFT forecast to exhibit long-run sustainability of the economy's basic nominal balances as a percentage of GDP. Figure 25 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 25: 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 2016. 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.

Overview of the Sectoral Outlook

Recovery from Recession Remains Incomplete While the U.S. economy has grown consistently, though slowly, worldwide economic growth only recently has begun to improve. Years of sluggishness hampered U.S. growth, particularly as the strong dollar left American goods and services expensive relative to their foreign alternatives. Rising wages and improved household balance sheets will help personal consumption to grow steadily in the coming years. Following slow growth in 2017, residential construction activity will accelerate in 2018. Nonresidential construction should strengthen further in 2018, thanks in large part to oil and gas exploration. Overall government spending in real terms is rising very slowly, as mild expansion in state and local expenditures are expected to outweigh flat or slightly falling federal spending.

Expansion in the Health Care Industry Spending on health care services sectors has risen in recent years as newly-insured persons take advantage of new benefits. However, uncertainty over health policy leaves much in doubt. While an outright repeal of Obamacare failed, a GOP-led Congress sought to repeal specific facets of the law, including elimination of the individual mandate. Even so, the aging population will continue to raise demand for health care products and services.

Most Private Sectors are Hiring, But Manufacturers Are Struggling Most private-sector services industries experienced job growth in 2016, 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 have struggled as the strong dollar weakened exports demand and made imported goods more attractive. Durables manufacturing, machinery, transportation equipment, and metals manufacturing generally will begin to see recovery in the coming years. Recovery of European and other markets ultimately will bring stronger exports growth. Production in food manufacturing sectors continues modest growth.

The Top Performers Several mining-related industries, including crude oil extraction, mining support activities, and pipeline transportation, are expected to grow rapidly between 2016 and 2020. Other strong performers are concentrated in the health sector. As the nation's baby boomers age, output of home health care services, medical equipment manufactures, and health practitioners are expected to rise. However, recent changes in health policy could affect health care spending.

Bringing Up the Rear The bottom tier includes commodities that have been trending downwards. These include Printing services and Tobacco manufacturing, with output flat or falling through the forecast period. Federal nondefense expenditures are expected to endure continued cuts as the current administration seeks to streamline operations. Current projections show contraction or mild growth in defense-related output, including aerospace product manufacturing. That could change, as the FY 2018 President's Budget called for substantial increases in funding for the Department of Defense. The Administration also has been relatively friendly to the coal industry, and while the industry welcomes the support it is not clear whether political favor will be sufficient to counter natural gas and other alternatives.