Inforum Economic Update

Fall 2015

Current Economic Environment

The U.S. economy posted yet another year of modest growth in 2015, the sixth in a row. The private sector generally did well after a sluggish first quarter when bad weather hampered construction and other activity. Figure 1 shows that quarter-on-quarter growth in real (inflation-adjusted) GDP reached 3.8% in the second quarter and 2.1% in the third, following a slight 0.6% gain in the first. Despite significant headwinds and worrisome news from abroad, both private and public sectors of the economy continue to plod ahead. We expect real (inflation-adjusted) GDP to increase about 2.5% in 2015, slightly ahead of the 2.4% performance of 2014 and stronger than the (sequester-influenced) 1.5% growth of 2013. Overall growth was slightly lower than most analysts expected, primarily because of weak net exports and a sharp contraction of energy exploration.

The best news in 2015 was real disposable income growth of about 3.5%. Higher employment levels and a modest rise in wage rates, along with low consumer inflation, spurred this real income growth. Figure 2 shows that nominal wages are creeping upward, with recent year-to-year growth above 2.0% both for production and nonsupervisory employees and for all workers. Real compensation per hour for the nonfarm business sector, a broader measure of compensation and adjusted for inflation, has been above 3.0% for the past two quarters. This helped to boost real consumption spending by 3.1% in 2015, well above the 2.7% growth of 2014 and rates of about 1.6% in 2011 and 2012.

Figure 1: Quarterly Growth in Real GDP
(Percent)

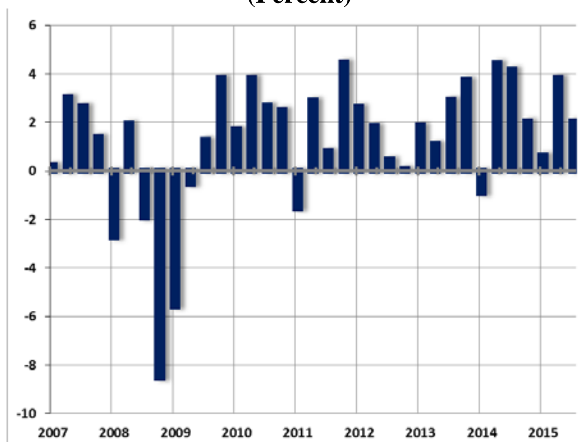
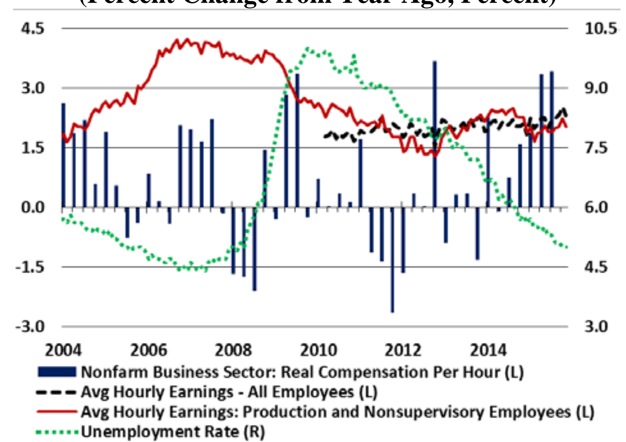


Figure 2: Wage Growth and Unemployment
(Percent Change from Year Ago, Percent)



Growth momentum is helped by stabilizing government spending. Inflation-adjusted government consumption and investment spending (which includes goods and services but not entitlements) rose for the first time since a slight increase in 2010. Federal non-defense expenditures rose 1.1% in 2014 after a 0.1% decline in 2014. Federal defense spending fell about 1.4% during 2015 after

falling 3.8% in 2013. Inflation-adjusted state and local spending rose 1.8%. The increase of overall real government spending was 0.9%, which followed a 0.6% drop in 2014.

Figure 3 shows the contribution to GDP growth of its major components. In contrast to government spending following 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.

The biggest disappointment of 2015 was a sudden but persistent drop in net exports at the end of 2014 and beginning of 2015 (Figure 4), as weakness in the economies of major U.S. trading partners in Asia and Europe continued. The associated strengthening of the dollar left domestic producers at a disadvantage, so it is not surprising that real exports grew by a slight 1.2% in 2015 following 3.4% growth in 2014. Healthy income growth, a strong dollar, and low import inflation are supporting a new surge of spending on foreign goods and services. Import growth rose to about 4.9%, compared to 3.8% in 2014.

Figure 3: Real Government Expenditures
(Index (Recession Trough = 100))

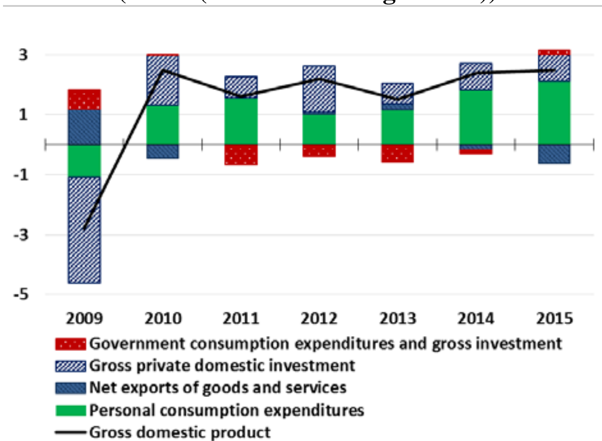
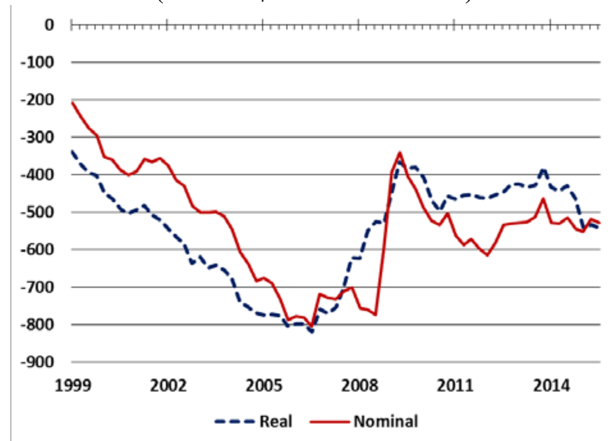


Figure 4: Quarterly Net Exports
(Billions $2009 and Billions)



Also, the collapse of oil prices led to a plunge in exploration activity in the oil and gas industry (Figure 5), though crude oil and natural gas production has continued to grow but at a decelerating pace (Figure 6). The collapse of domestic exploration is the primary explanation for a fall in real nonresidential construction spending of 0.5% in 2015 compared to an 8.1% rise in 2014. Most other construction sectors fared better.

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

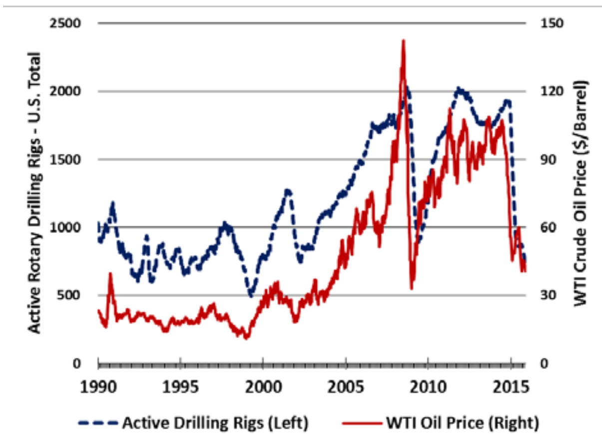


Figure 6: Industrial Production of Oil and Gas – Well Drilling and Extraction
(Percent Change from One Year Ago)

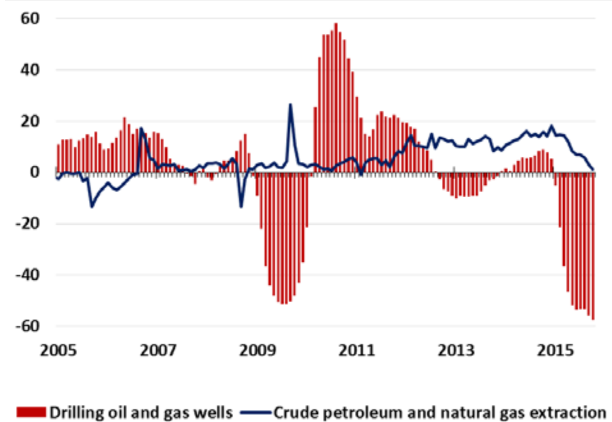


Figure 7 shows that in the 12 months from December 2014 to November 2015 non-farm payroll employment expanded by an average of 214,000 jobs per month. Although the pace of hiring was lower than the 2014 average of 260,000 jobs per month, it was sufficient to bring the unemployment rate down to 5.0% in November. With October hiring at 298,000 and November at 211,000, employment and economic growth have momentum going into the end of 2015.

Figure 7: Nonfarm Employment
(Levels and Net Change)

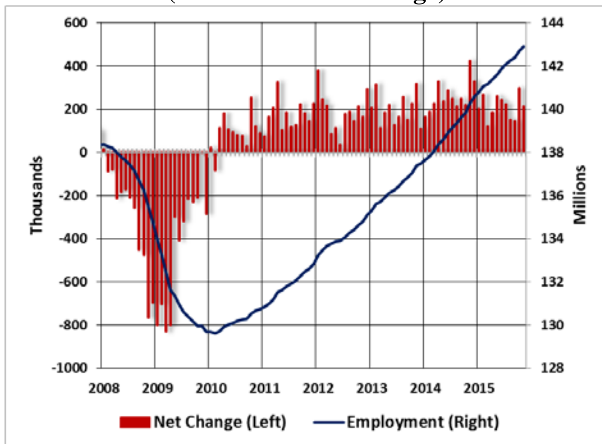
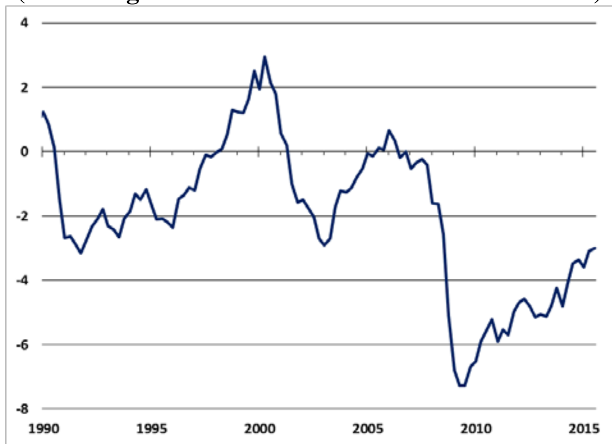


Figure 8: GDP Gap
(Percentage Deviation of GDP from Potential GDP)



Despite impressive quarters of growth in 2014 and 2015 and potential for continued growth in 2016, it is important to remember that the economy still displays symptoms of post-recession distress. In particular, we can point to three indicators of continuing problems in the economy.

First, while real GDP finally is well above its previous peak in 2007, Figure 8 shows that it remains about 3.0% below its potential level as measured by the Congressional Budget Office (CBO). In other words, there remains large and persistent productive slack in the U.S. economy.

Table 1: Forecast for Economic Aggregates, Average Annual Percentage Growth Rates[1]

	13-14	14-15	15-16	16-17	17-18	18-20	20-30	30-40
Real (Inflation-Adjusted) Quantities, Average Annual Growth Rates, Percent								
Gross Domestic Product	2.4	2.5	2.7	2.6	2.6	2.6	2.3	2.2
Personal Consumption	2.7	3.1	2.8	2.5	2.4	2.2	2.1	2.0
Durable Goods	5.9	6.1	3.5	2.9	2.9	2.4	2.3	2.3
Nondurable Goods	2.1	1.9	2.6	2.0	1.8	1.6	1.6	1.8
Services	2.4	3.0	2.8	2.5	2.4	2.3	2.2	2.1
Nonresidential Structures	8.1	-0.5	6.5	7.0	5.4	5.2	3.1	2.9
Equipment & Intangibles Investment	5.6	4.4	4.5	3.5	3.6	4.1	3.7	3.9
Residential Investment	1.8	8.3	8.8	5.4	6.0	6.4	3.0	2.8
Exports	3.4	1.2	1.9	3.0	3.7	4.3	4.1	3.6
Imports	3.8	4.9	3.0	2.6	2.5	2.5	3.0	3.2
Government	-0.6	0.9	1.0	0.9	1.0	0.9	1.1	1.4
Federal	-2.4	-0.4	-0.7	-0.3	-0.2	-0.1	0.6	1.2
Defense	-3.8	-1.4	-1.8	0.0	-0.1	-0.1	0.5	1.1
Nondefense	-0.1	1.1	1.0	-0.7	-0.3	-0.1	0.6	1.3
State & Local	0.6	1.8	2.1	1.6	1.6	1.5	1.3	1.5
GDP Deflator	1.6	1.0	1.8	1.9	1.9	2.1	2.1	2.2
Consumption Deflator	1.4	0.4	1.8	1.8	2.0	2.2	2.3	2.4
Population	0.7	0.8	0.8	0.8	0.8	0.8	0.7	0.6
Labor Force	0.3	1.2	0.8	0.8	0.8	0.8	0.8	0.6
Employment	1.9	1.6	1.2	0.8	0.8	0.8	0.8	0.6
Labor Productivity	0.3	0.7	0.9	1.3	1.7	1.7	1.3	1.5
Potential GDP	1.5	1.7	1.8	2.0	2.2	2.2	2.2	2.2
	2014	**2015**	**2016**	**2017**	**2018**	**2020**	**2030**	**2040**
Unemployment Rate	6.2	5.3	5.0	5.0	5.0	5.0	5.0	5.0
Interest Rates								
Treasury Bills, 3-month	0.0	0.1	0.8	1.7	2.8	3.4	3.4	3.4
Yield, 10 yr. Treasury bonds	2.5	2.3	2.8	3.7	4.0	4.2	4.3	4.3
	2014	**2015**	**2016**	**2017**	**2018**	**2020**	**2030**	**2040**
Nominal Quantities, Billions of Dollars								
Current Account	-546.3	-594.0	-623.7	-600.0	-638.9	-569.1	-639.5	-1137.3
(% of GDP)	-3.1	-3.3	-3.3	-3.1	-3.1	-2.5	-1.8	-2.1
Federal Net Borrowing	-681.4	-538.7	-468.0	-463.9	-483.2	-431.5	-191.3	-238.0
(% of GDP)	-3.9	-3.0	-2.5	-2.4	-2.4	-1.9	-0.5	-0.4

Second, partly due to this economic slack, general inflation remains stubbornly low, as is shown in Figure 9. Since 2009, except for a short stretch in 2012, year-on-year core consumer price (Personal Consumption Expenditure (PCE) deflator) growth consistently has remained below the Federal Reserve's target rate of 2.0%. This is true despite extraordinary monetary policy: a Fed

[1] Billions of chain-weighted $2009, unless otherwise specified.

policy interest rate stuck at zero for the sixth straight year and "quantitative easing" (QE) that reached its zenith in 2013 with the Federal Reserve buying $85 billion a month of Treasuries and other securities. The QE program ended in October 2014, and it is likely that the Fed will begin to "normalize" monetary policy by increasing its policy rate starting in December. Unfortunately, there are few signs of rising inflation or vibrant wage growth. Circumstances remain consistent with a "liquidity trap" in which overleveraged consumers and cautious businesses continue to restrain their spending despite low interest rates and ample credit availability. Moreover, weakness in Europe and China mean that the rest of the world is loosening monetary policy. Many economists believe that interest rate increases in these conditions will intensify the low inflation problem by strengthening the dollar.

Finally, and perhaps most distressing from the point of view of long-term economic health, overall labor participation is 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. Nonetheless, participation among the 25 to 54 age group fell by over 2.0 points, and income foregone by losing several years of working life for this group will be costly both to them and to the economy. Also, a big part of the labor force reduction is a result of younger people (19 to 24) not working. Some pursue education, but others still stay home for lack of opportunity.

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

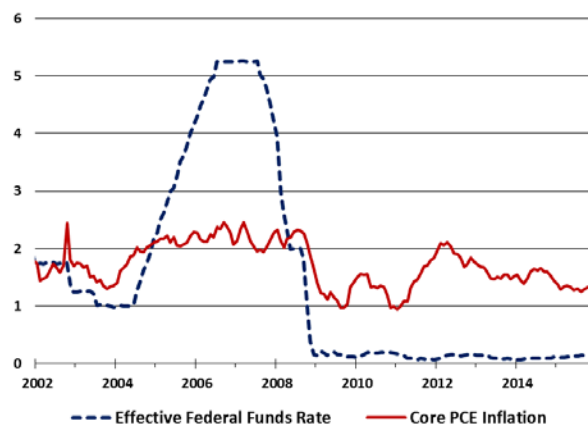


Figure 10: Labor Force Participation Rate
(Percent)

Three indicators—a large GDP gap, low inflation, and low participation—are symptoms of an economy still struggling with the repercussions of financial crisis. During 2008–2010, the collapse of asset prices, particularly the prices of homes, resulted in a steep loss in net worth across the economy and especially in the household sector. Consumers and businesses thus embarked on massive deleveraging to rebuild wealth by reducing expenditures and eschewing new debt. Combined with fiscal contraction, this deleveraging held back economic recovery from 2011 through 2013.

The Fed has its eyes on other more promising indicators, however. 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 equity prices. Because most financial wealth is held by the relatively wealthy and in retirement accounts, this recovery did not boost current spending very much. More recent growth of home prices, however, means that net home equity edged up toward the end of 2012 and continued to grow through 2015.

Figure 11: Household Net Worth
(Trillions of Dollars)

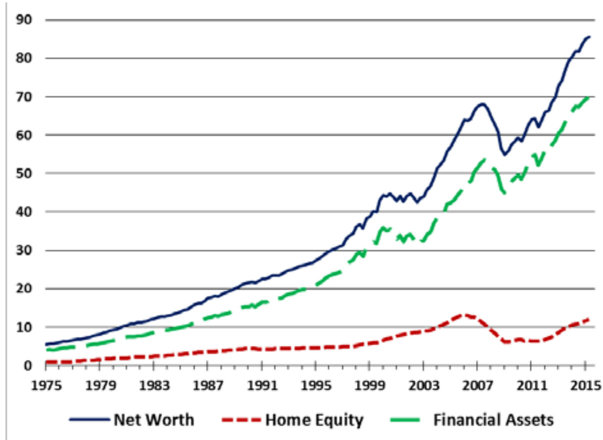


Figure 12: Zillow Home Prices
(Index (Jan 2009 = 100) and Year-on-Year Percent Change)

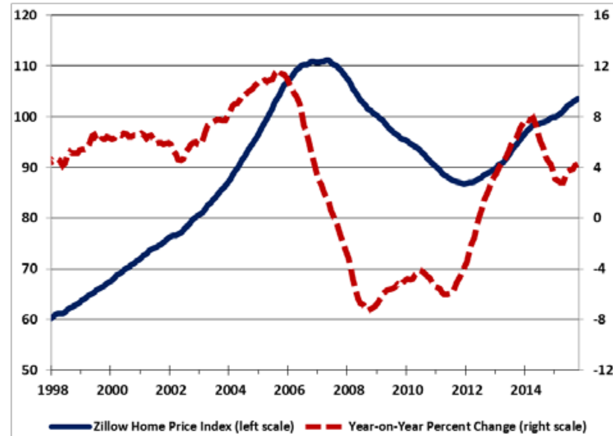


Figure 12 shows the course of housing prices over the last 18 years, displaying the monthly Zillow home value index and the year-over-year growth in that index since 1998. For the first time since the middle of 2007, the 12-month growth of housing prices turned positive in July of 2012. Housing prices have decelerated in the past 18 months but recently have accelerated again, and home price growth easily exceeds general inflation. In October 2015, national housing prices were 17.9% higher than in June 2012.

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

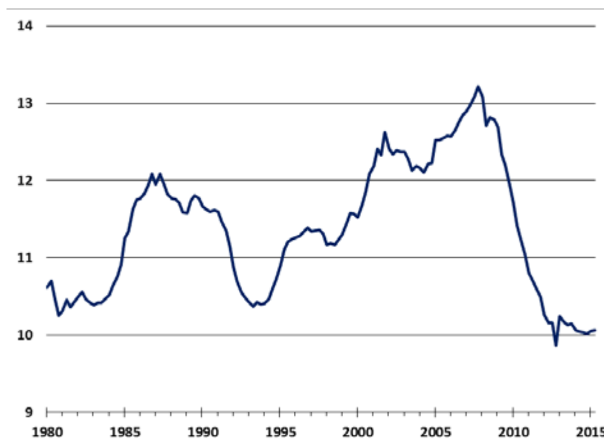
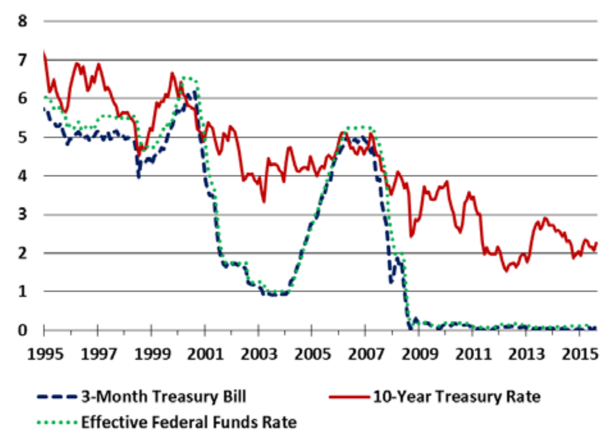


Figure 14: Interest Rates
(Federal Funds, 3-Month Treasury Bill, and 10-Year Treasury Constant Maturity, Percent)



The strength of the household balance sheet complements a much-improved debt service ratio, which is shown in Figure 13. After falling from more than 13% in 2008, consumers now devote only about 10% of disposable income to payment of debts, including mortgage payments. This is the lowest rate in more than three decades. These lower payment levels are supported both by the deleveraging that followed the recession and by historically low interest rates. Figure 14 shows that short-term Treasury rates remain near zero and 10-year rates are just above 2.0%; mortgage and auto loan rates are similarly low.

Relatively low debt levels, low borrowing costs, and low import prices drive consumption spending. A clear demonstration of consumer enthusiasm is found in new car sales. In September, October, and November 2015, new car and light truck sales topped an annual rate of 18 million units, a rate seen only twice since 2001 (Figure 15). Demand for new homes also has recovered significantly since the depths of the recession, with housing starts surging from 2010 through 2013 (Figure 16). Performance in 2014 and 2015 was mixed, and even with years of improvement the number of housing starts is similar to levels seen during the recessions of earlier decades. October 2015 brought 1.06 million starts. This was slightly below the 1.2 million starts seen in June, though starts in June were the highest since October 2007.

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

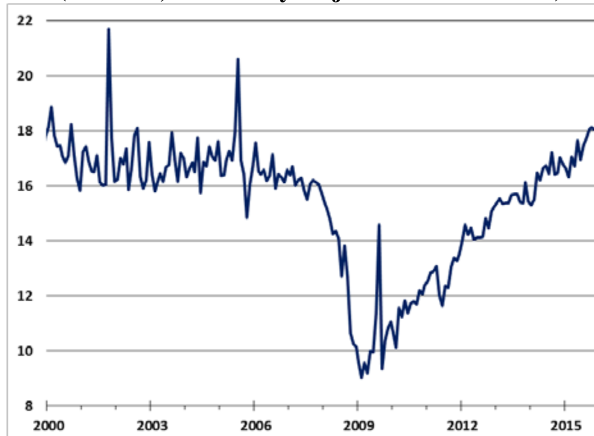


Figure 16: Housing Starts
(Thousands)

Surging auto sales and improving housing starts encouraged robust 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-on-year growth rates of industrial production. Rates were above 4.0% early in the year, but by November growth was slight.

Figure 18 shows that real compensation currently is running ahead of productivity growth, which has been low in recent years despite a tendency for the two to move together. Whether these low productivity growth rates present a worrisome new pattern, or whether they are a product of bad data, or whether they simply are a symptom of recovery remains to be seen. Meanwhile, the improvement seen in labor compensation is welcome.

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

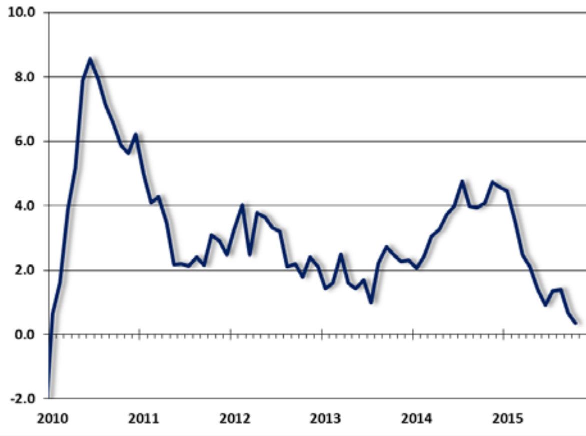


Figure 18: Productivity and Compensation
(Year-over-Year Growth, 2-Year Moving Average)

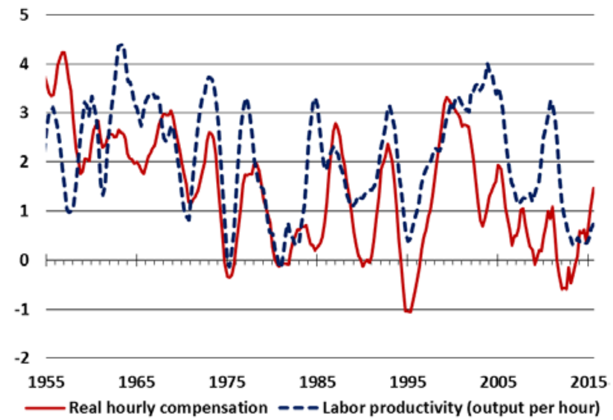
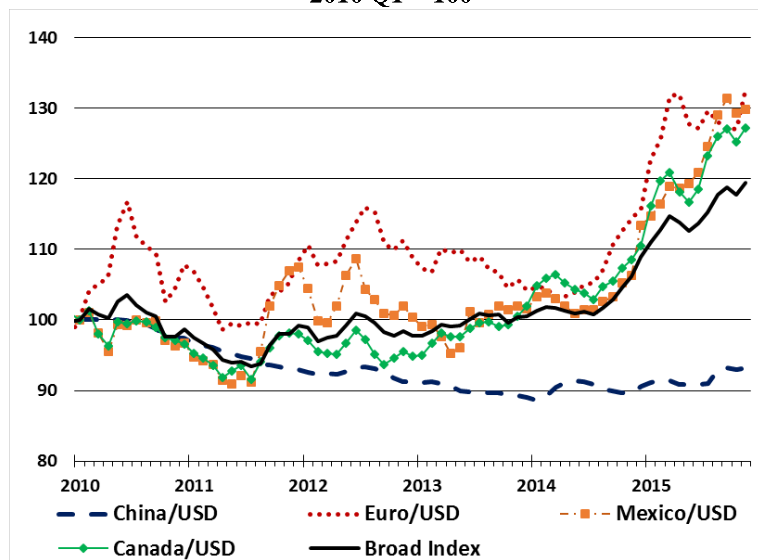


Figure 19 shows the evolution of exchange rates over the past six years. Between December 2014 and November 2015, the dollar has strengthened 14.7% versus the euro, 15.1% versus the Canadian dollar, and 14.5% against the peso. Interestingly, the Chinese renminbi mostly has followed the dollar upward, depreciating only 2.8% versus the greenback. These currency realignments, in turn, have important implications for the U.S. economy. Indeed, the current relative fortunes of the large global economies greatly resemble the last few years of the 1990s. At that time, the United States was the only major economy growing briskly. Asia, which had expanded sharply in the first part of the decade, descended into financial crisis. Europe, particularly Germany, was preoccupied with integrating much of central and southern Europe, not only in the political union but also into the common currency area. Japan was simply depressed. Capital flew into the United States, and the dollar appreciated strongly against all major currencies from 1995 through 2002.

Figure 19: Foreign Exchange Rates
2010 Q1 = 100



It was common then to refer to America as the only fully functioning driver for the global economy. Eventually, the U.S. experienced a relatively short and shallow recession in 2001. The effects of capital inflow and dollar appreciation, however, had far more durable consequences on the evolution of the economy. First of all, U.S.-based manufacturing contracted sharply, and most of those activities never returned even after years of subsequent dollar depreciation. Second, and even more tragically, the inflow of cheap capital was an important ingredient in the toxic soup of sub-prime lending that would underlay the financial crisis of 2008.

Therefore, any optimism for the U.S. economy over the next few years must be tempered with the knowledge that the rest of the global economy actually is quite fragile, and adverse developments there could undermine current momentum at any time. In any case, U.S. farmers, oil producers, manufacturers, and other trade-dependent firms are working against a strong U.S. dollar, especially versus the euro and our North American trading partners.

The Macroeconomic Outlook

The year 2016 still holds potential for solid growth, though uncertainty abounds. According to our current projection shown in Table 1, growth will be about the same as seen in 2015, or perhaps slightly better at 2.7%. Such growth is above potential growth rates of roughly 2.0% and therefore indicates that the economy finally but slowly is escaping the lingering effects of the Great Recession and the overhang of economic slack.

The biggest factor supporting a durable uptick in economic expansion is the momentum created by strong job growth. In 2015, total employment rose by 1.6%, following annual gains between 1.5% and 1.9% between 2012 and 2014. Unemployment continued to fall gradually, from 5.7% in January to 5.0% in November 2015. We project that employment will grow by another 1.2% in 2016, a net increase of 1.9 million jobs. The projections fall to about 0.8% for the following two years. Unemployment will average 5.0% or below in 2016 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 bringing a modest 0.9% gain in real government expenditures. The coming years likely will bring similar positive, albeit low, fiscal expansion.

The plunge of petroleum prices has been dramatic, with world oil prices plummeting from $100 per barrel at the beginning of 2014 to $55 by the end of the year, and 2015 brought further decline to under $40 in early December. This fall can mainly be attributed to weak petroleum demand in Asia and Europe and steady production in OPEC nations, but the surge in U.S. supply also is a contributing factor. In any case, average retail gasoline prices have fallen to below $2.05 per gallon in December 2015 from $3.31 per gallon in January 2014, freeing funds in the typical household's discretionary budget to spend on other goods and services.

Indeed, the global energy market has changed markedly, and the implications for the US economy will be substantial. U.S. production of crude oil has risen quickly since 2008 and natural gas production has sustained rapid growth since 2005. The nation now is the top producer of crude oil

and natural gas. The energy sector saw consistent and strong capital investment since 2009, and new exploration, development, production, and ancillary activities created well-paid jobs. Plunging oil prices have led to sharp declines in investment, but domestic production of oil and gas has contracted only slightly so far. Ultimately, the energy renaissance should prove durable and help to boost the U.S. economy.

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 exports and strong imports leave a wide trade deficit. This will pose a challenge for manufacturing and other goods-producing sectors.

Relatively low debt levels, an improved job market, and low prices will continue to drive robust growth for household consumption. Figure 20 shows consumer sentiment in January 2015 at the highest level in more than a decade, and after falling through October, consumer sentiment again improved somewhat in November. Following growth of about 2.7% in 2014 and 3.1% in 2015, inflation-adjusted consumer spending will expand at 2.8% in 2016. Spending is paced by moderate growth for nondurables and services, with spending decelerating but with higher growth remaining for automobiles and other durable goods. Personal consumption will continue to grow in 2017 and 2018, expanding at about 2.5% per year. Growth in consumer durables spending will remain strong, albeit with lower rates than seen in the recent past.

After years of contraction, housing investment led the economy by growing 13.5% in 2012, but it decelerated to 9.5% in 2013 and 1.8% in 2014 before strengthening again to 8.3% in 2015. Housing should lead again in 2016 with growth close to 9.0%. Job growth, pent-up demand, better creditworthiness, and continued low, though climbing, mortgage rates will support recovery.

After contracting by 8.1% in 2014, real spending for non-residential structures fell by 0.5% in 2015. This weakness mostly was seen in drilling and other oil field development, and investment growth continued for many other types of nonresidential structures. Categories such as commercial and health care buildings are doing much better, and so as oil field activity stabilizes overall growth will revive to around 7% for 2016 and 2017. Private equipment and software spending, which rose by 4.4% in 2015, will rise by 4.5% in 2016 and by about 3.5% in 2017 and 2018.

Export growth was 3.2% in 2014 but fell to 1.2% in 2015. Exports remain a positive contributor to overall expansion, but growth remains subdued due to continued weakness in Europe and Japan. Export growth in coming years is dependent on new and robust growth in European and Asian trading markets. Continued strength of the dollar, however, makes strong demand growth for U.S. goods unlikely in the year ahead.

Figure 21 displays the Federal Reserve's Broad Currency Index, revealing a depreciating trend over the decade from 2001 to 2011. (A downward move in the index represents depreciation.) Over the past 18 months, however, the dollar strengthened considerably and again is approaching the historic highs of 2002. Strengthening may continue in 2016. Nevertheless, a small increase in export volume to 1.9% in 2016 is projected. The strengthening dollar drove real import growth to

4.9% in 2015, substantially widening the trade deficit, and the deficit will widen again in 2016 as imports expand by about 3.0%. Later years should bring deceleration of imports demand and stronger demand for exports.

Figure 20: University of Michigan Index of Consumer Sentiment,
(1966=100)

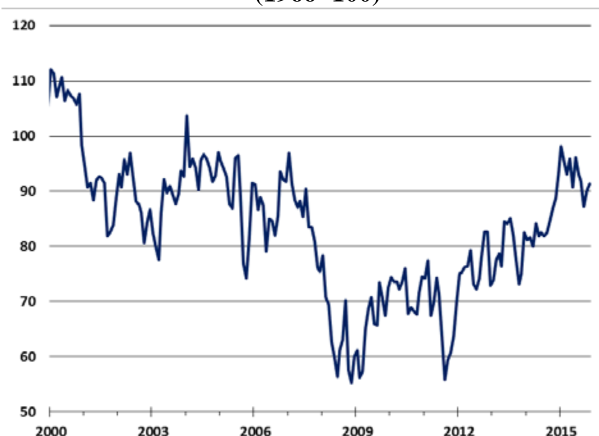


Figure 21: Federal Reserve Broad Currency Index
(100 = 1997)

Total inflation-adjusted government consumption and investment spending expanded in 2015, contributing to overall growth for the first time since 2010. Real federal defense spending will continue to fall in 2016, but growth of real non-defense spending will continue at about 1.0%. State and local government spending began to see positive real growth in 2014, at 0.6%, with growth reaching 1.8% in 2015. Continued expansion ranging between 1.5% and about 2.0% per year is anticipated. Growth of federal nondefense and state and local spending should continue to offset further declines of defense expenditure, and total government spending growth will be around 1.0% in coming years.

Risks to the Outlook

Downside Risks

Deflation. The biggest threat comes from deflation abroad. Deflation severely undermines economic growth because it induces consumers and businesses to put off expenditures and because it increases the burden of household, corporate, and government debt. More importantly, because of downward wage and price rigidities, low inflation distorts labor and product markets. While the Federal Reserve will move to "normalize" monetary policy with positive interest rates in the coming months, the risk is that it could act too quickly and undermine a still-fragile recovery.

Political Paralysis. Notwithstanding the November 2014 election results, Congress remains in a state of political paralysis. It is most likely that important policy imperatives on tax reform, discretionary spending levels and allocations, and entitlement reductions will not be debated meaningfully or acted upon until at least 2017. Business and consumer planning continues to be hampered by the uncertainties surrounding long-run federal fiscal policy, undermining capital investment and household financial stability.

International Crises. Trouble in the Ukraine, Syria, Nigeria, Venezuela, and elsewhere could flare up quickly to disrupt international energy markets and other trade flows. If tensions worsen in the Ukraine 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. China is another source of uncertainty. Unwinding years of financial excess will continue to depress domestic demand, and a sharp contraction of growth would spread problems throughout the global economy.

Upside Risks

Higher Wages. Economists have predicted that labor market pressures would spark real wage increases that would act as a salve for economic weakness. With unemployment at 5%, recent signs are encouraging, though the evidence is hardly convincing. If they do occur, higher wages will help to relieve the burden of household debt and to sustain household consumption. Higher wages also will help government revenues across the board, freeing funds to spend on infrastructure, education, and other public investment projects.

Greater corporate investment. Many corporations have realized healthy profitability over the past few years, but so far most have been reluctant to spend those profits on new capital investment in the United States. Energy producers were an important exception, but recent low energy prices discouraged investment there too. Faster economic growth will loosen wallets, and a quickening of domestic investment will improve U.S. growth and employment formation. An increase of foreign capital spending in the U.S. could push expenditures on equipment and nonresidential structures. As the world economy eventually stabilizes and recovers, even investments outside of the U.S. will drive the export of machinery and other goods.

Boosted Infrastructure Investment. Lost in the political theater in Washington is the fact that the federal deficit has fallen rapidly to around 3.0% of GDP in 2015 from 10.2% in 2009. Congress recently approved a 5-year highway bill, and a general expansion of overall federal nondefense and state and local expenditure lends hope for investments on long-neglected infrastructure, particularly for roads and highways. These are important factors in private activity, and domestic producers would welcome a boost to their productivity as they face fierce competition from abroad.

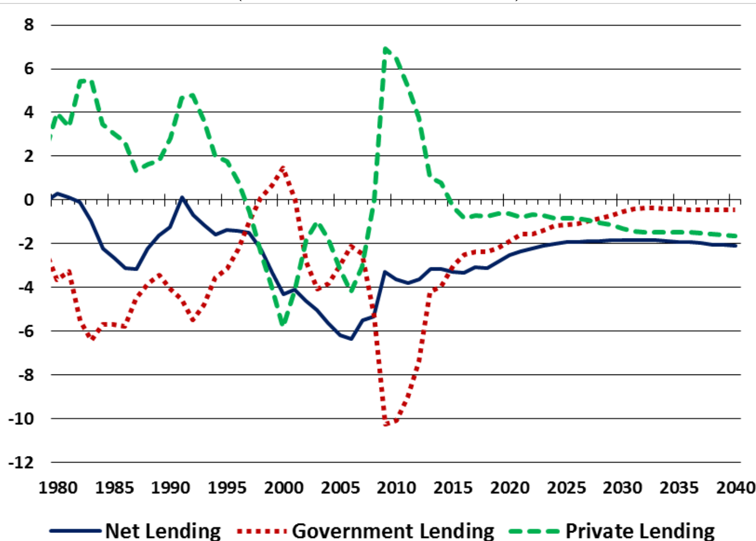
Long-Run Macroeconomic Assumptions

We calibrate the LIFT forecast to exhibit long-run sustainability of the economy's basic nominal balances as a percentage of GDP. Figure 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.[2] The line marked "Net Lending" is equal to the current account deficit, or the economy's net lending abroad, which mostly has been negative

[2] This figure is different than savings in that it includes expenditures for investment out of savings.

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)



The first principle to note is how unique was the recent environment. Recession meant that the current account deficit as a percent of GDP fell from almost 6% in 2006 to about 3% in 2011 and about 3.3% 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 8% 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 Census Bureau projections of population levels and 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) 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 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.

International Outlook

Inforum's 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 formulation of the US 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. Exchange rate projections for major U.S. trading partners are shown in Table 2.

Table 2: Exchange Rates Assumptions – Foreign currency per US Dollar
(Negative values signify dollar depreciation)

	2000-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2015-2020	2020-2025	2025-2035
Euro	-3.6	-4.8	8.2	-3.2	0.1	18.8	5.0	0.0	0.0	0.5	-0.7
Canadian dollar	-3.6	-4.0	1.0	3.1	7.3	15.1	5.0	0.6	0.7	0.8	-0.4
Mexican peso	2.9	-1.5	5.7	-2.9	4.2	18.9	5.0	0.5	1.4	0.5	-0.8
Japanese yen	-2.0	-9.2	0.1	22.2	8.5	14.0	0.5	0.3	0.5	0.7	-0.8
Chinese yuan	-2.0	-4.5	-2.4	-2.5	0.0	2.0	5.0	2.1	1.2	-0.5	-1.3
British pound	-0.2	-3.6	1.1	1.4	-5.2	7.6	5.0	0.0	0.0	0.5	-0.7
South Korean won	0.2	-4.2	1.7	-2.8	-3.7	7.1	5.0	1.6	1.2	0.7	-0.5

Table 3 presents projections of GDP growth for many of the countries included in the BTM model. Growth in Mexico and Canada will accelerate. Growth finally is beginning to take root in Europe, not least because fiscal austerity is tapering. Ireland, Italy, Spain, and Portugal are beginning a long climb out of depression. South Korea should realize strong growth, but despite earlier optimism Japan continues to struggle.

China will continue to decelerate, and there is much downside risk there. The slowdown long has been expected but nevertheless has caused extensive consternation both in China and for its main trading partners—especially now that import growth has turned negative, which is having a negative effect particularly on Japan.

Table 4 illustrates the threat of very low inflation abroad. According to the OECD, price growth of consumer goods and services are very low in several major European economies, and they are falling in Spain. While Japan is seeing just slight inflation, prices in China are falling. In North America, average price growth for U.S. consumers has be very low as well, though consumers in Mexico and Canada have seen higher rates. The situation is expected to improve only marginally over the next couple of years. Like the Federal Reserve, the European Central Bank (ECB) is targeting 2% inflation, but these forecasts indicate that few major developed economies will reach this target by the end of 2017.

As noted earlier, deflation severely undermines economic growth because it induces consumers and businesses to put off expenditures and because it increases the burden of debt; in addition, because of downward wage and price rigidities, low inflation distorts labor and product markets. With widespread weakness continuing, problems stemming from continued low inflation could prove quite damaging.

Table 3: International Growth Projections
Percentage change from previous year*

	2010	2011	2012	2013	2014	2015	2016	2017
Canada	3.4	3.0	1.9	2.0	2.4	1.2	2.0	2.3
Mexico	5.1	4.0	3.8	1.6	2.1	2.3	3.1	3.3
United States	2.5	1.6	2.2	1.5	2.4	2.4	2.5	2.4
Austria	1.8	3.0	0.7	0.3	0.5	0.8	1.3	1.7
Belgium	2.7	1.8	0.2	0.0	1.3	1.3	1.5	1.6
France	1.9	2.1	0.2	0.7	0.2	1.1	1.3	1.6
Germany	3.9	3.7	0.6	0.4	1.6	1.5	1.8	2.0
Italy	1.7	0.7	-2.9	-1.8	-0.4	0.8	1.4	1.4
Spain	0.0	-1.0	-2.6	-1.7	1.4	3.2	2.7	2.5
Euro area	2.0	1.6	-0.8	-0.3	0.9	1.5	1.8	1.9
United Kingdom	1.5	2.0	1.2	2.2	2.9	2.4	2.4	2.3
Japan	4.7	-0.5	1.7	1.6	-0.1	0.6	1.0	0.5
Korea	6.5	3.7	2.3	2.9	3.3	2.7	3.1	3.6
China	10.6	9.5	7.7	7.7	7.3	6.8	6.5	6.2
Russia	4.5	4.3	3.4	1.3	0.6	-4.0	-0.4	1.7
Total OECD	3.0	1.9	1.3	1.2	1.9	2.0	2.2	2.3

* Sources: OECD Economic Outlook November 2015

Table 4: OECD Private consumption deflators

	2014	2015	2016	2017
Germany	0.9	0.6	1.0	1.5
France	0.0	0.0	0.9	1.2
Italy	0.3	0.2	0.7	1.0
Spain	0.3	-0.1	0.7	0.9
Japan	2.0	0.3	0.9	2.3
China*	0.8	-0.4	-0.1	0.8
United States	1.4	0.3	1.3	1.7
Canada	1.9	1.2	1.9	2.1
Mexico	3.7	3.8	3.3	3.1

* GDP Deflator

Overview of the Sectoral Outlook

The recession cut deep, and recovery is not complete

Residential construction activity strengthened considerably in 2015, but declining oil and gas exploration dragged down overall nonresidential construction spending. Residential investment momentum should continue, and nonresidential activity should stabilize. Although real defense spending continues to decline, other government spending is growing, though slowly.

Expansion in the Health Care industry

Spending strengthened in 2014 among health care services sectors, and production accelerated in 2015. Steady growth is expected as newly insured persons begin using their benefits. Health product manufacturing sectors have seen mixed performances. Nursing home spending is growing steadily.

Job growth 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 might have stabilized.

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, 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 2014-2020, construction appears near the top. Growth recently has weakened for natural resource extraction, including oil and natural gas extraction, but strength could be regained if energy prices stabilized. High-tech sectors contribute four of the top 10, and although the two manufacturing sectors (Computers and peripherals and Communications and AV equipment) currently are struggling, the three service sectors (Information and data processing, Computer system design services, and Software) are faring better.

Bringing up the rear

The bottom ten include industries that have been in decline. Near the bottom of list is Tobacco products, with output falling through the forecast period. Some sectors suffer from defense spending cuts, notably Search and Navigation equipment. Though environmental concerns threaten domestic coal consumption, rising exports ultimately could raise production levels for Coal mining.