Economic Outlook

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- Growth in global industrial production has nearly ground to a halt in 2015. Industrial production in manufacturing has risen by less than 2% over the last year in the United States and the European Union and has been essentially flat in Japan. In only a few countries, such as Sweden, Poland, Hungary, Ireland, and Vietnam, has industrial production grown at a significantly faster rate. At the other extreme, production has contracted sharply in Russia and has collapsed in Brazil. Official data show strong growth in industrial production in China, but data on individual industrial products suggest that production has been essentially flat over the last year.

- U.S. real Gross Domestic Product rose at a 2.1% annual rate in the fourth quarter of 2014, but would have grown at a 2.9% rate if not for the impacts of slowing inventory investment and declining net exports. Domestic final demand – GDP minus inventories and net exports – has risen at at least a 2.9% rate in five of the last six quarters, suggesting that the domestic economy is doing reasonably well and that growth is being held back by slow growth abroad and a strong dollar that makes U.S.-produced goods less competitive in global markets. Because of these international influences, manufacturing is underperforming GDP. Industrial production in U.S. manufacturing (excluding computers, communication equipment, and semiconductors) rose in October to its highest level since 2008, but was up just 1.9% from year-earlier levels. Total industrial production, which includes mining and utilities as well as manufacturing, is being further held down by the decline in drilling activity caused by falling oil and gas prices and by declining demand for and production of coal.

- The European economy is doing better than many realize. Real GDP for the European Union rose 0.4% (1.5% annual rate) in the third quarter, the tenth straight quarterly increase. GDP was up 1.9% year-over-year. Real GDP in the Euro-Zone, which does not include the rapidly growing United Kingdom and some strong performers in Central Europe, rose 0.3% and was up 1.6% year-over-year. Industrial production in European Union manufacturing was up 1.9% year-over-year in September, but has been essentially flat on a seasonally adjusted basis since February. Purchasing Managers Indexes for all European economies except Greece are above the neutral level of 50, suggesting that growth in industrial production is likely to resume in coming months.

- Real GDP in Japan declined in both the second and third quarters, meeting the rule-of-thumb definition of a recession. However, industrial production in Japanese manufacturing rose in both September and October and is back above year-earlier levels, suggesting that the recession is over. The economies of Japan and Korea are being hurt by weak demand from China.

- China continues to report growth that is strong by global standards, but actual growth is much slower than official data indicate. Value Added of Industry, China's official measure of industrial production, was up 5.6% year-over-year in October, but my measure, based on production of 73 industrial products, was up just 1.0%.

- Industrial production in Brazilian manufacturing has fallen 19.2% from June 2013 to October 2015 and is close to its 2009 recession lows. With the possible exception of neighboring Venezuela, Brazil is the worst-performing economy in the world.

- Global real GDP is expected to rise 2.4% in 2015, about the same as in the three prior years. Growth is expected to accelerate just slightly to 2.7% in 2016. However, given low inflation around the world, nominal GDP growth, which is what determines growth in revenues and corporate profits, is much weaker in 2015 than in 2014. Global industrial production is expected to rise 1.6% in 2015, down considerably from the 3.3% growth of 2014. Growth of 2.4% is expected in 2016.

Global Macroeconomic Overview

- Global real GDP is expected to rise 2.4% in 2015, marking the fourth straight year of growth in the 2-4-2.7% range. Growth is expected to accelerate to 2.7% in 2016.

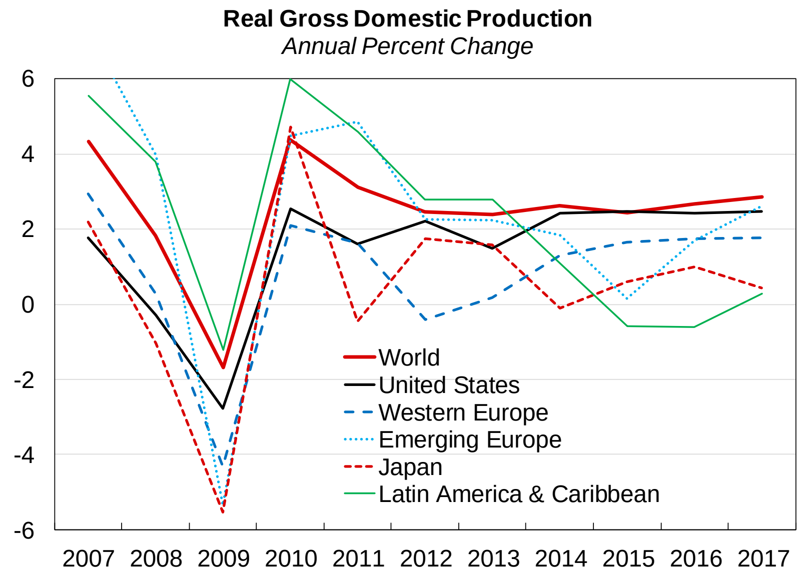
- There has been a significant but underappreciated acceleration in European growth since 2012.

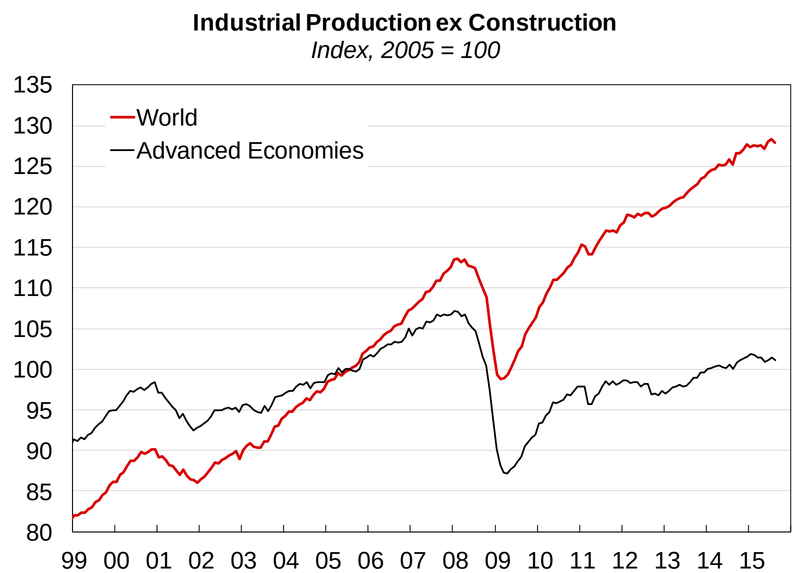
- Growth remains highest in the Asia/Pacific region, excluding Japan, but growth there has clearly downshifted in recent years. Asia/Pacific growth is not shown on the chart because it distorts the scale and because Chinese data are not credible.

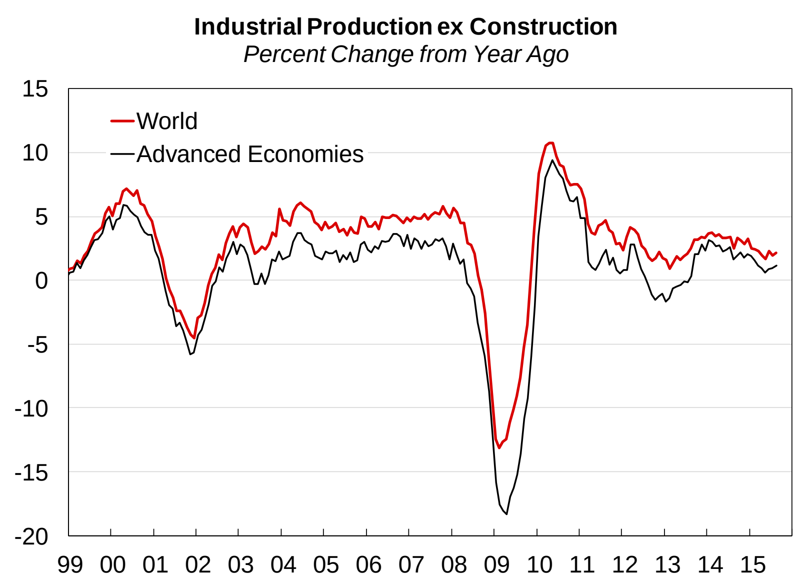
- Global industrial production has risen little since the end of 2014, even if data from China, which significantly overstate growth, are included.

- Although global industrial production is near an all-time high, production in the Advanced Economies remains below its early-2008 peak.

- Year-over-year growth in global industrial production may be firming after decelerating from early 2014 to mid-2015, but remains slow by historical standards.







Global Macroeconomic Overview

- Value Added of Industry, China's official measure of industrial production, was up just 5.6% year-over-year in October. This was the weakest growth rate since 2009, but still overstates growth in Chinese industrial production.

- My alternative index based on production of 73 industrial products was up just 1.0%, but is no longer in negative territory.

- The Markit PMI index for Chinese manufacturing stood at 48.6 in November, the ninth straight month below the neutral level of 50.

- Japan's economy fell back into recession again in 2015, with real GDP down in both the second and third quarters.

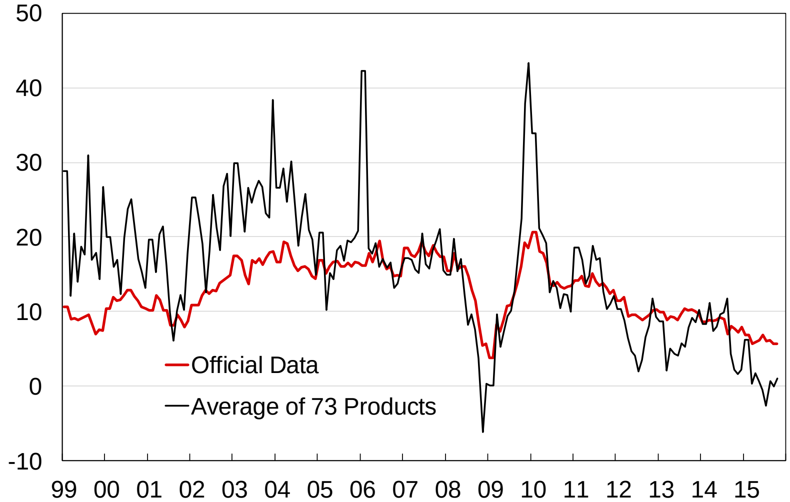
- Industrial production in Japanese manufacturing rose in September and October, but remains well below its early-2008 peak and is no higher than it was in the early 1990s.

- Industrial production in Korean manufacturing has been essentially flat for almost four years.

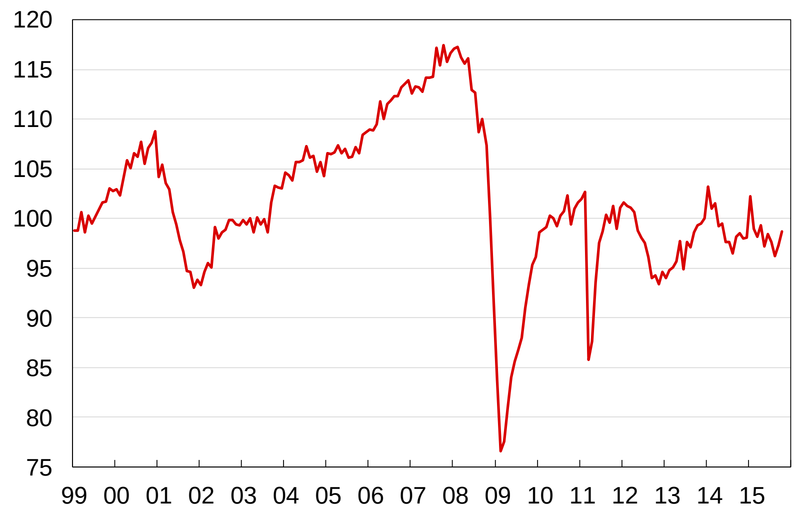
- The stagnation in Korean manufacturing is due to weak demand for exports, not to weak domestic demand. GDP growth, which is not as dependent on exports as is manufacturing, has been much stronger than growth in industrial production.

- Korean manufacturing was hit first by the depreciation of the Japanese yen, then by the slowing of the Chinese economy.

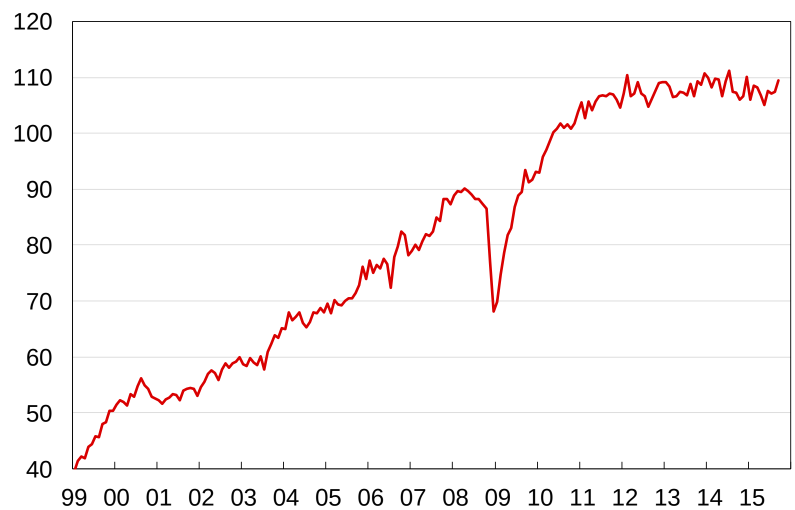
Value Added of Industry (Industrial Production): China
Percent Change from Year Ago



Industrial Production, Manufacturing: Japan
Index, 2010 = 100



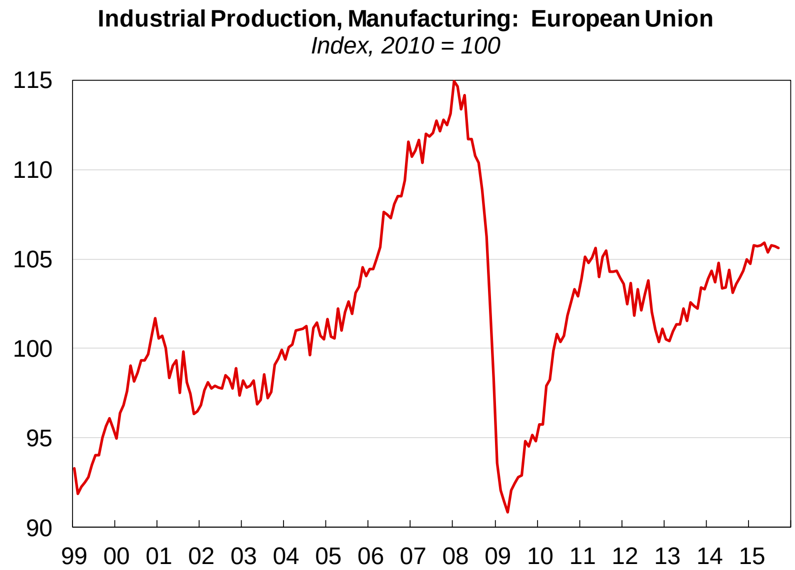
Industrial Production, Manufacturing: South Korea
Index, 2010 = 100



Global Macroeconomic Overview

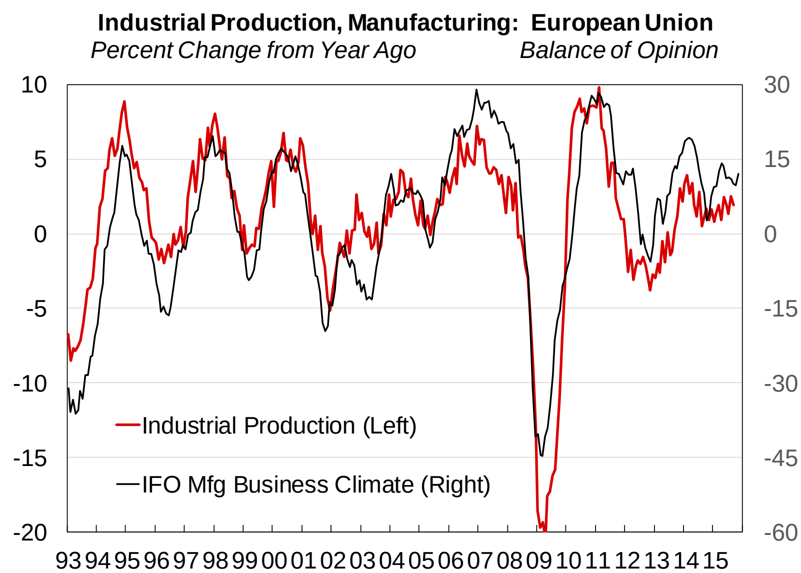
- Industrial production in European Union manufacturing was up 1.9% year-over-year in September, but has been essentially flat since February. It is still well below its early-2008 peak.

- European manufacturing has been hurt by weak demand for capital goods in China, but has been helped by the weakening of the Euro versus the U.S. dollar.



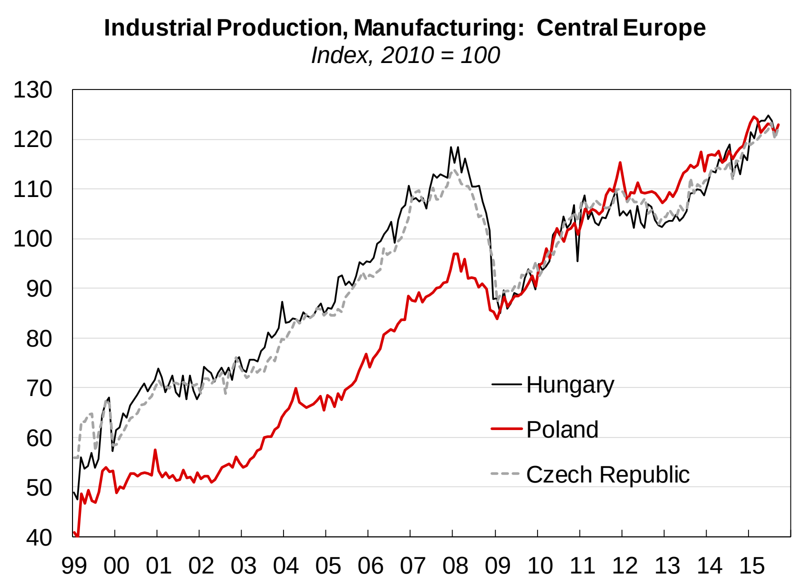
- The 12-month change in the German IFO manufacturing business climate index has historically led year-over-year growth in European Union manufacturing production by three months and is reported in a timelier manner.

- The IFO index rose to a six-month high in November. The index suggests that year-over-year growth in industrial production, which has been trending up since mid-2014, is likely to accelerate further.



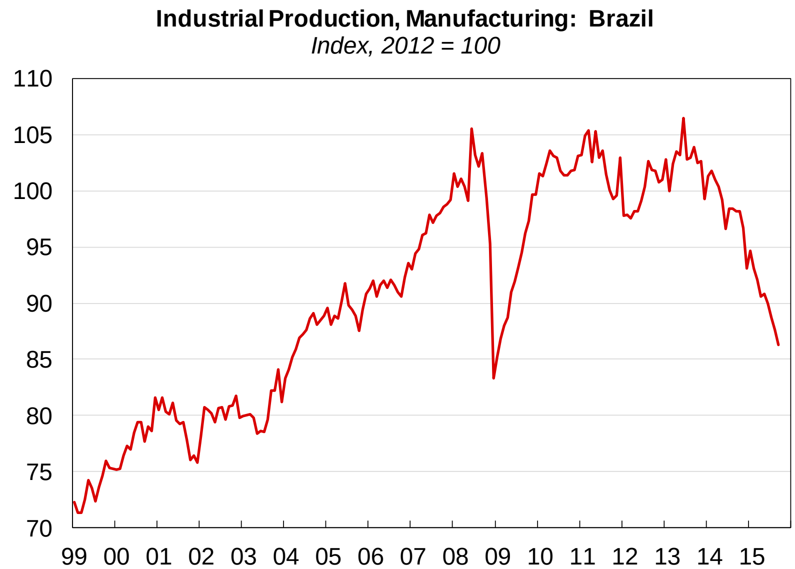
- Although production has flattened this year, the major economies of Central Europe – Poland, Hungary, and the Czech Republic – are among the best-performing economies in the world over the last several years.

- Industrial production in manufacturing was up 7.7% in Hungary and 4.7% in Poland in October.



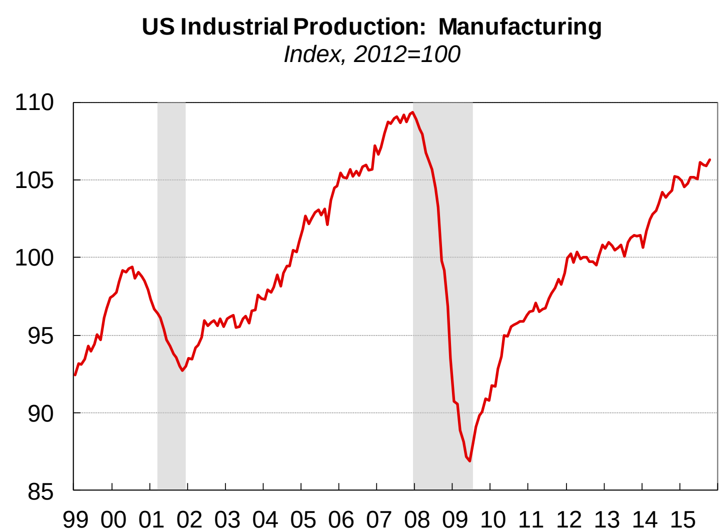
Global Macroeconomic Overview

- Brazil has been, by far, the worst-performing major economy in the world over the last two years.
- Industrial production in Brazilian manufacturing has fallen nearly to its December 2008 trough.
- Brazil's problems reflect a combination of slower growth in China, which has hurt commodity producers like Brazil, and the bad policies undertaken by the Brazilian government. Without new policies, Brazil will never realize its economic potential.



- Industrial production in Mexican manufacturing has flattened since hitting a record high in April, but has grown fairly steadily since the global recession ending in 2009, leaving it well above its 2008 pre-recession high.
- Although better economic policies have not boosted growth nearly as much as some had hoped, Mexico is doing far better than most Latin American economies.

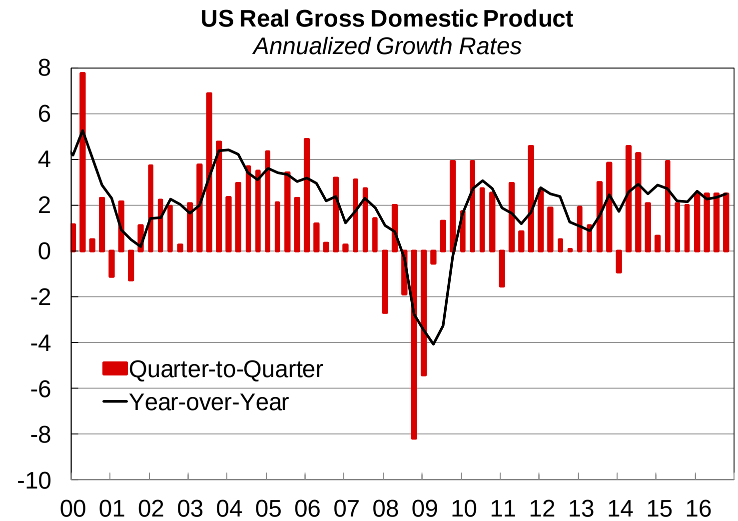
- Industrial production in U.S. manufacturing was up 1.9% year-over-year in October, but is still about 3% below its 2007 pre-recession peak.
- I would put Canada here if I could find the data, but Canada sells their data rather than making it available free.



Global Macroeconomic Overview

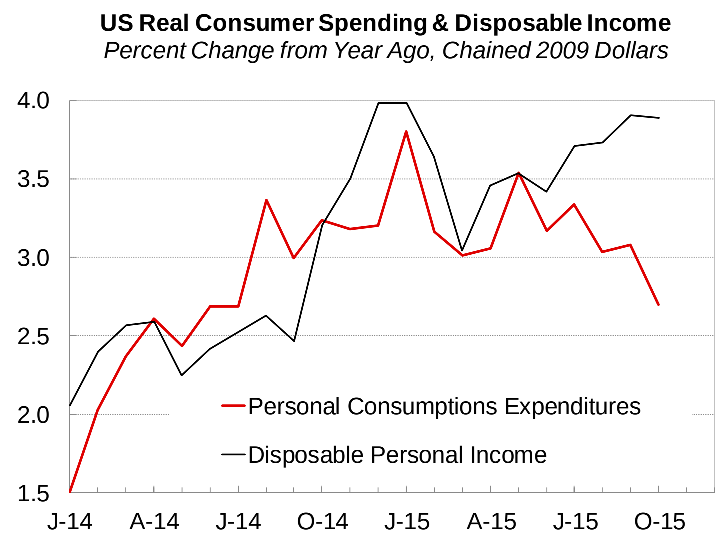
- U.S. real Gross Domestic Product grew at a 2.1% annual rate in the third quarter. Year-over-year growth slowed from 2.7% to 2.2%.

- Growth is being held down by reduced demand for U.S. exports and is made more volatile by changes in the pace of inventory accumulation. Domestic final demand (GDP excluding net exports and inventory investment) has grown at at least a 2.9% annual rate in five of the last six quarters.

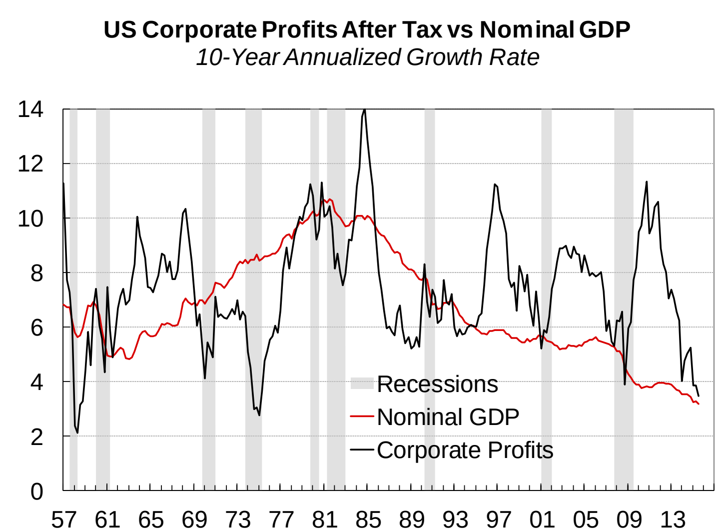


- Income growth has accelerated in recent months as wages and salaries have started to pick up in response to tighter labor markets.

- So far, stronger income growth has not translated into faster growth in consumer spending. As a result, the savings rate has risen to its highest level in three years.

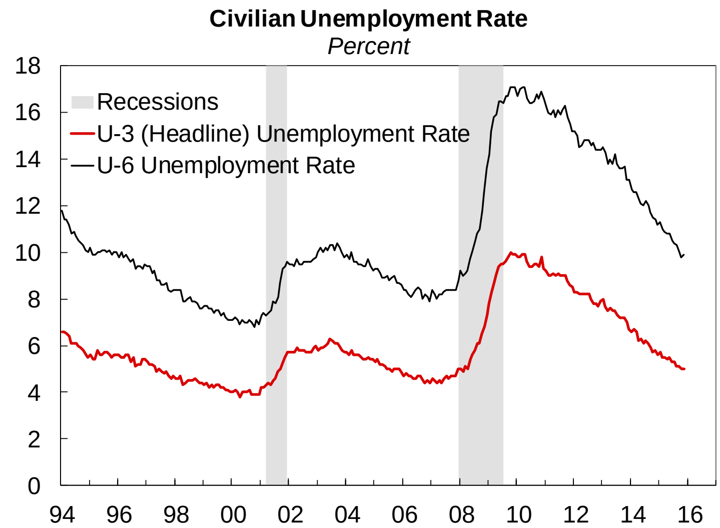


- Growth in nominal GDP has slowed due to both slower real growth and slower inflation. Given the relationship between corporate profits and nominal GDP, for most companies, expectations of double-digit earnings growth are not realistic, and futile efforts to achieve such growth have caused U.S. companies to cede market share to foreign competitors.

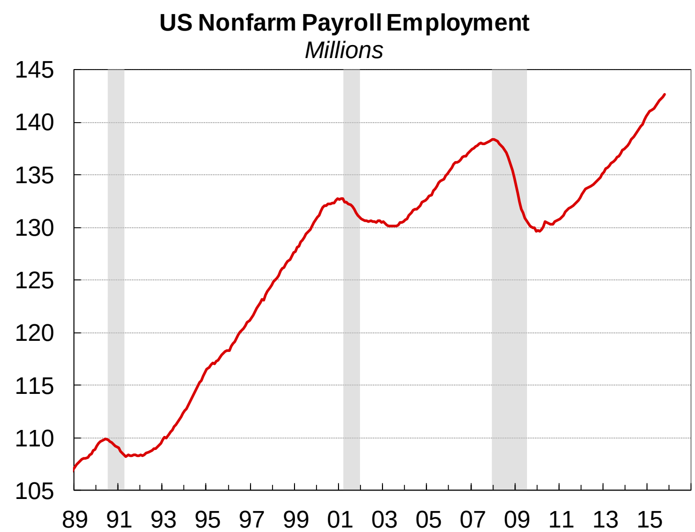


Global Macroeconomic Overview

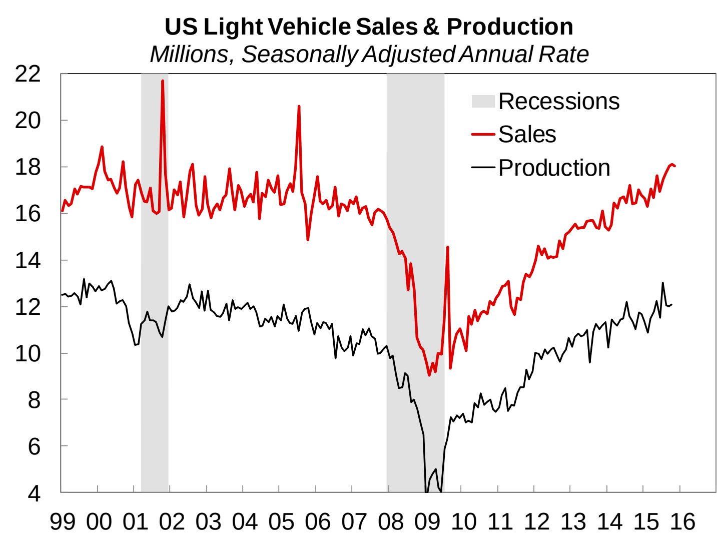
- The civilian unemployment rate has fallen to 5.0%, which the Federal Reserve regards as consistent with full employment.
- The U-6 measure of unemployment, which includes people who are working part-time but would prefer to work full-time and those who have stopped looking for a job because they are discouraged is at 9.9%, still about a percentage point higher than the level consistent with full employment.



- Nonfarm payrolls have increased by an average of 210,000 so far this year. This is much more than is required to absorb growth in the labor force. As a result, unemployment has fallen and labor markets have tightened.



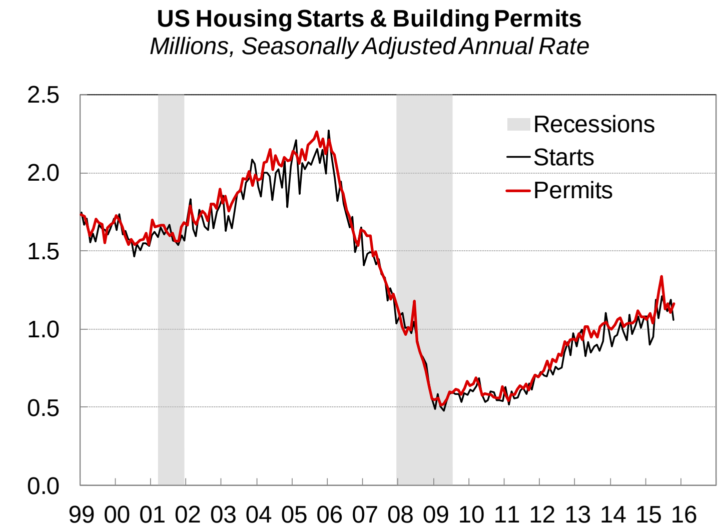
- Historically, employment growth is one of the most important drivers of motor vehicle sales.
- Vehicle sales have exceeded an 18 million seasonally adjusted annual rate for three straight months, the first time this has ever happened. Sales are being boosted by both solid employment growth and the big decline in fuel prices since mid-2014.
- While there are no signs of an impending decline in vehicle sales, one should not expect further increases from current levels.



Global Macroeconomic Overview

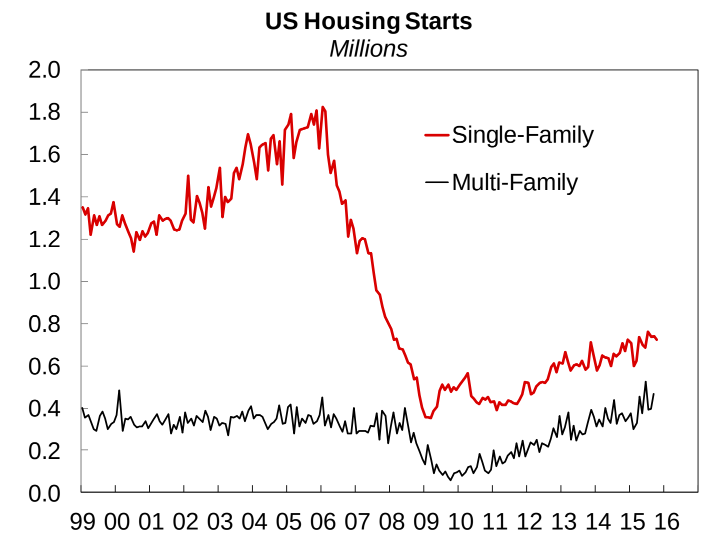
- While large month-to-month fluctuations make it hard to discern the underlying trend, U.S. housing starts have grown by about 140,000 per year for the last four years. Demographics argue for a much stronger rebound, but supply-chain constraints and cautious lending standards are preventing that.

- Because housing permits are less sensitive to weather than are starts and lead starts slightly, they are a better indicator of housing market conditions than are starts.



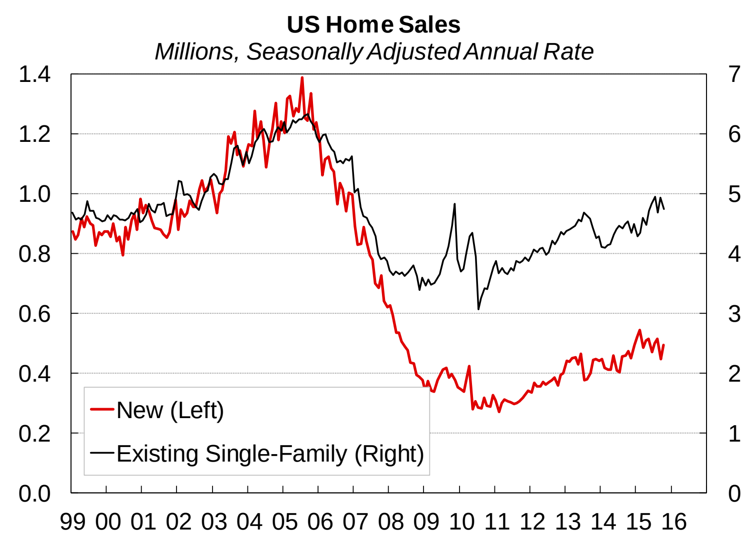
- Multi-family structures (apartments and condominiums) account for much of the recovery in housing starts since the recession. The "lumpiness" of multi-family starts also accounts for much of the volatility in starts over the last few years.

- The increase in multi-family starts might reflect difficulties in qualifying for a mortgage stemming in part from student-loan debt, but it also reflects a generational shift in locational preferences and attitudes towards home ownership.



- New and existing home sales have flattened recently. They remain in an upward trend, but are still well below their 2005 peaks.

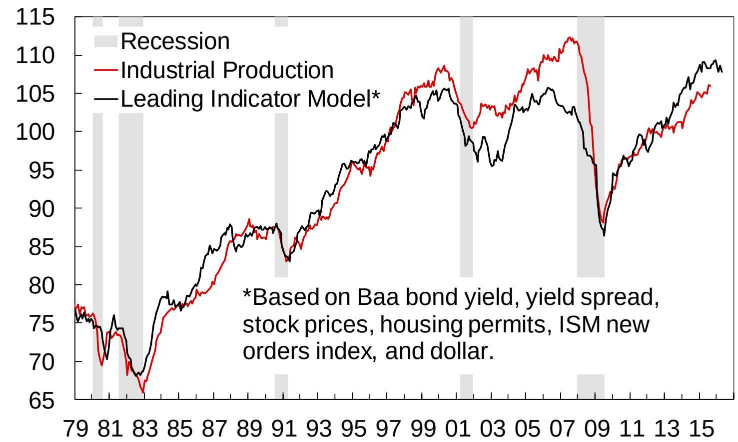
- Sales are being held back by a lack of houses on the market.



Global Macroeconomic Overview

- Industrial production in U.S. manufacturing (excluding computers, communication equipment, and semiconductors) rose in October to its highest level since June 2008, but my own leading indicator suggests that declines are possible in coming months.

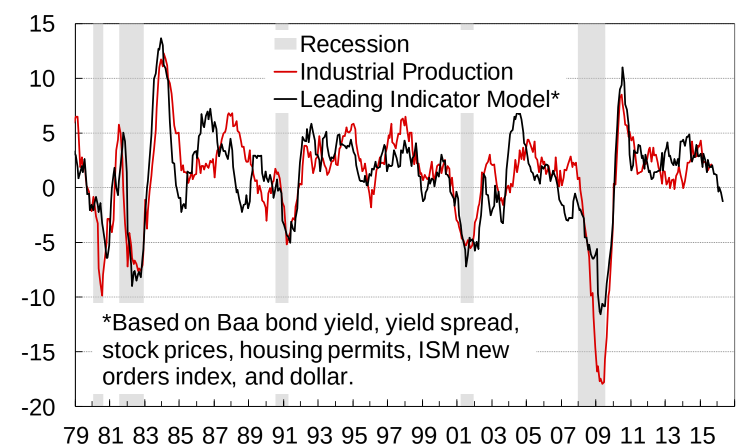
US Industrial Production: Manufacturing ex high-tech
Index 2012 = 100



- Industrial production for manufacturing (excluding the high-tech sectors) was up just 1.9% year-over-year in October.

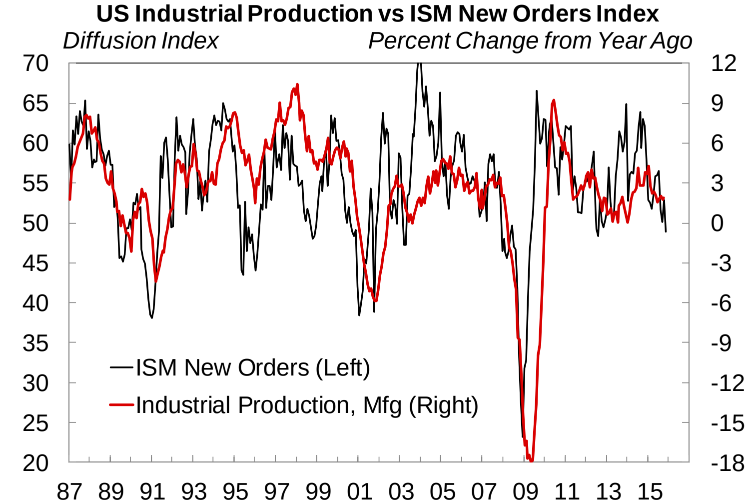
- My leading index for industrial production suggests that year-over-year growth will fall slightly below zero over the next few months.

US Industrial Production: Manufacturing ex high-tech
Percent Change from Year Ago



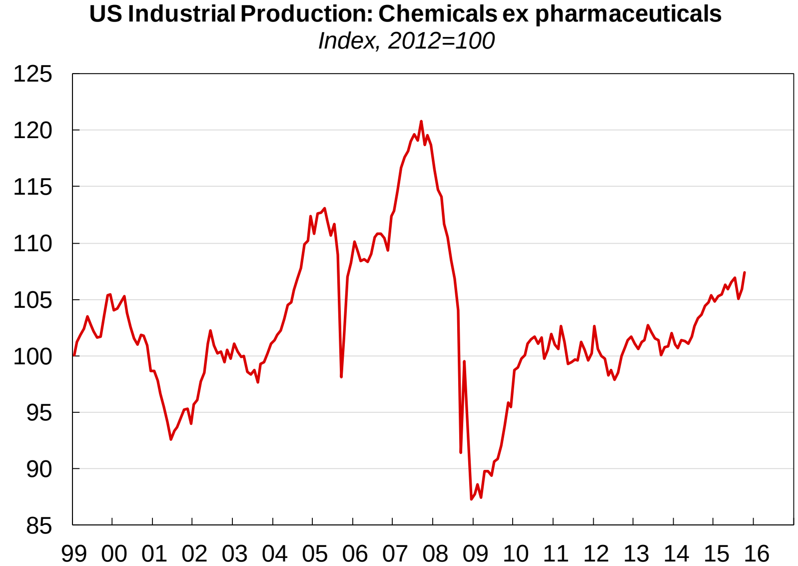
- The Institute for Supply Management's PMI new orders index for manufacturing fell in November to 48.9, its first reading below the neutral level of 50 since November 2012. The indexes suggests that U.S. manufacturing could decline slightly over the next few months.

US Industrial Production vs ISM New Orders Index

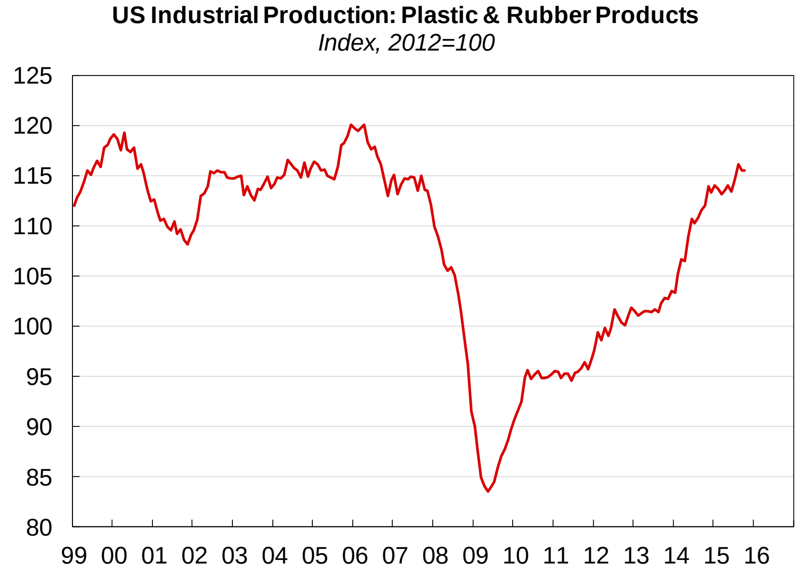


Global Macroeconomic Overview

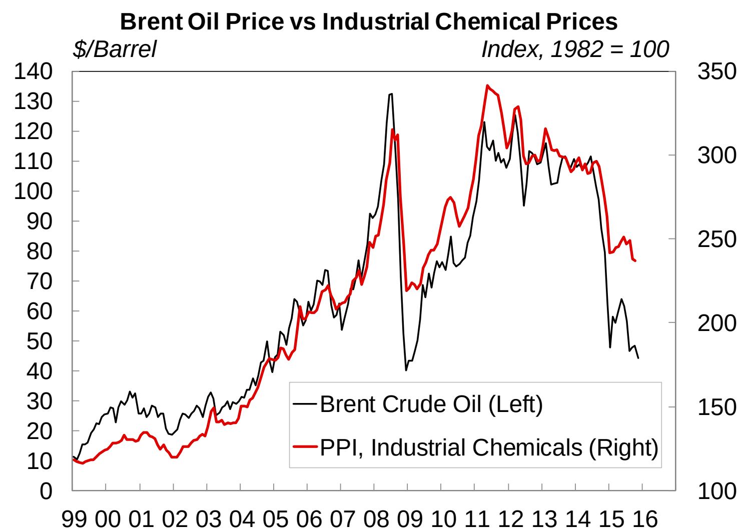
- Industrial production for chemicals (excluding pharmaceuticals) rose in October to its highest level since June 2008 and was up 2.9% from October 2014.
- Chemical production in the United States is expanding as new facilities are built to take advantage of the abundance of cheap natural gas liquids from shale formations.



- U.S. industrial production of plastic and rubber products was up 3.2% year-over-year in October and is near the all-time highs reached in 2006.
- Plastic and rubber production has been boosted by both the abundance of cheap natural gas liquids and the very strong recovery in motor vehicle sales and production since the recession.



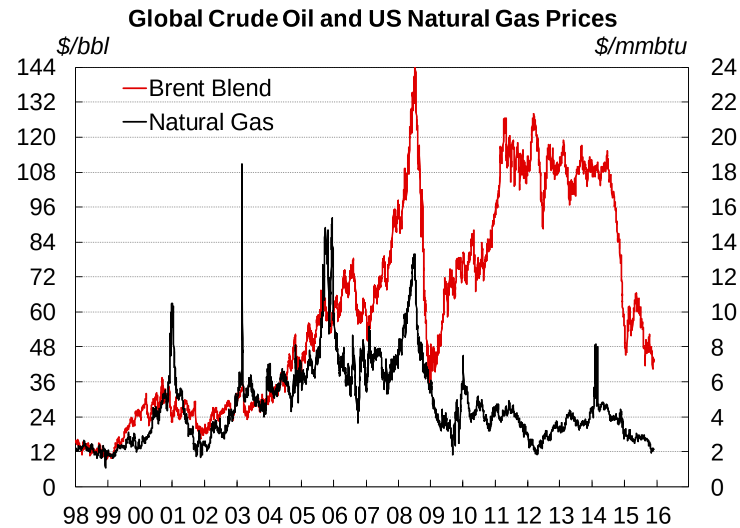
- Even though natural gas liquids are the primary feedstock for the North American chemical industry, industrial chemical prices are more highly correlated with global oil prices than with natural gas prices because oil-based imports are the marginal source of supply. The Producer Price Index for industrial chemicals has fallen sharply since the collapse in oil prices that began in mid-2014.



Global Macroeconomic Overview

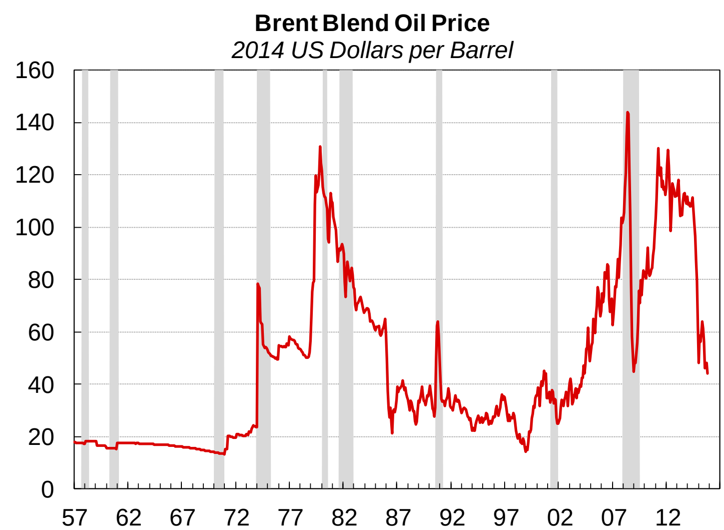
- Low prices for natural gas and natural gas liquids boost the competitiveness of North American chemical producers, which tend to use natural gas liquids as a feedstock while most of their foreign competitors rely on naphtha, a crude oil derivative.

- The North American chemical industry still has a significant feedstock-cost advantage. However, the decline in oil prices has lowered costs for competitors abroad, allowing for a decline in prices that has put pressure on the margins of North American chemical companies.



- Oil prices don't exhibit smooth cycles. Instead, they are marked by sudden regime shifts, shown by nearly-vertical lines on the chart.

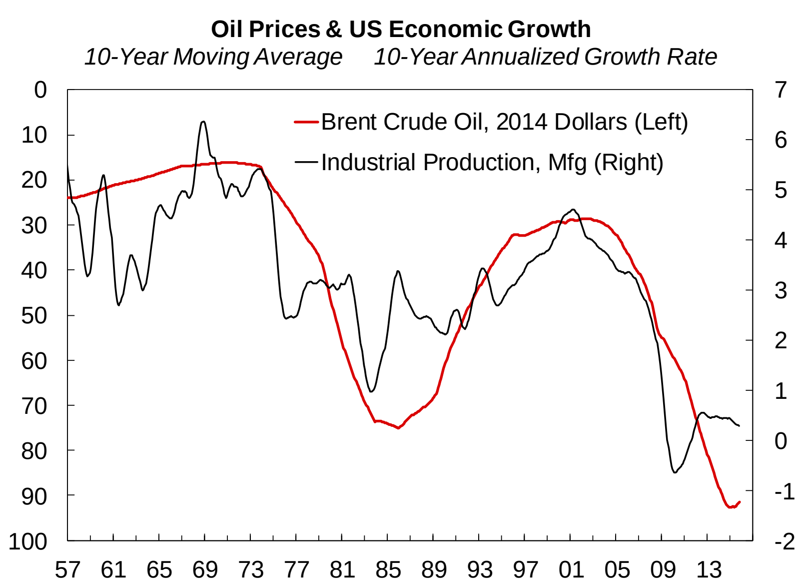
- The real (inflation-adjusted) price of Brent Blend crude oil peaked in November 1979 and did not set another new high until May 2008. It remained above its November 1979 peak for only three months.



- Because of hydraulic fracturing and horizontal drilling in shale formations, real oil prices could remain below their 2008 highs for decades.

- Economic growth, particularly growth in U.S. industrial production in manufacturing, has been significantly stronger during periods of low real oil prices than during periods of high prices.

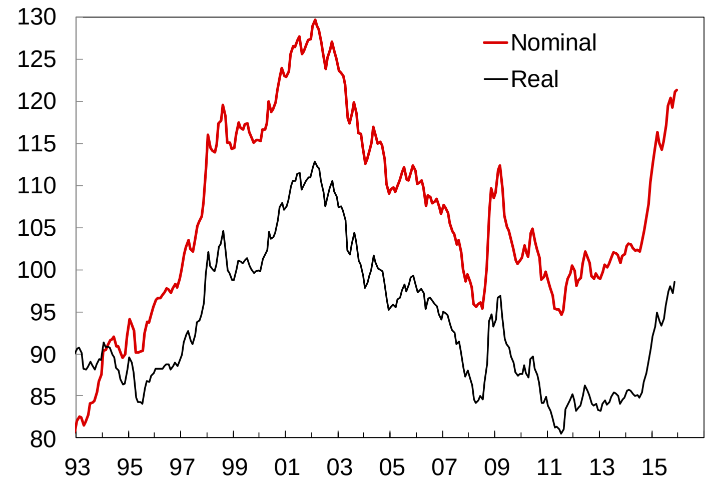
- Although real oil prices peaked in 2008 and have fallen sharply since mid-2014, the 10-year moving average of real oil prices did not begin to decline until 2015.



Global Macroeconomic Overview

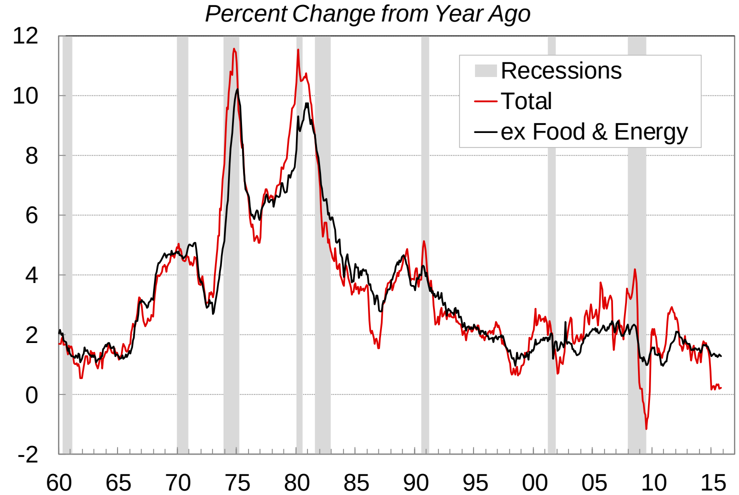
- The sharp appreciation of the U.S. dollar over the last year significantly reduces the dollar value of the foreign-currency earnings of U.S. corporations.
- A stronger dollar also reduces the competitiveness of U.S.-produced goods and services, but the "real" dollar index (adjusted for inflation differentials) is not unusually high by historical standards, suggesting that the hit to competitiveness is not an existential threat even if it does put downward pressure on profit margins.

Federal Reserve Broad Dollar Index



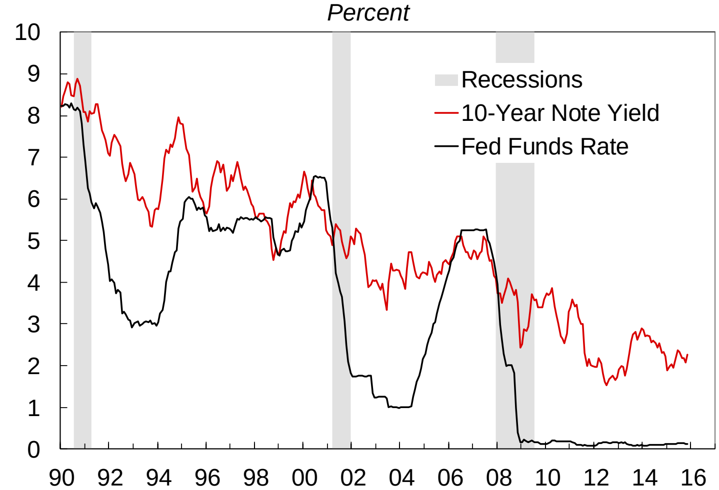
- The U.S. Federal Reserve seeks to keep inflation, as measured by the year-over-year change in the Personal Consumption Expenditure Price Index, near 2%.
- Inflation is below the Fed's target whether it is measured using the total PCE Price Index or the "core" (ex food and energy) index.
- The total PCE Price Index was up just 0.2% year-over-year in October. The core index was up 1.3%.

US Personal Consumption Expenditures Price Index
Percent Change from Year Ago



- Even though inflation remains below target, the Fed is likely to raise its target federal funds rate by a quarter point at its December meeting and by an additional percentage point (a quarter point every other meeting) in 2016.
- A 30-year downtrend in the yield on 10-year Treasury notes likely ended in 2013, but the yield has risen little since then. Yields are likely to rise going forward, but to remain well below historical norms.

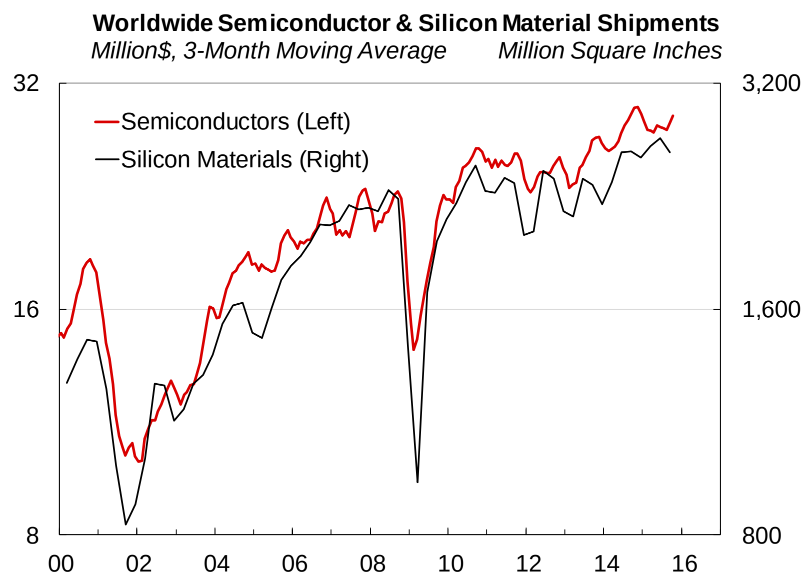
US Interest Rates
Percent



Global Macroeconomic Overview

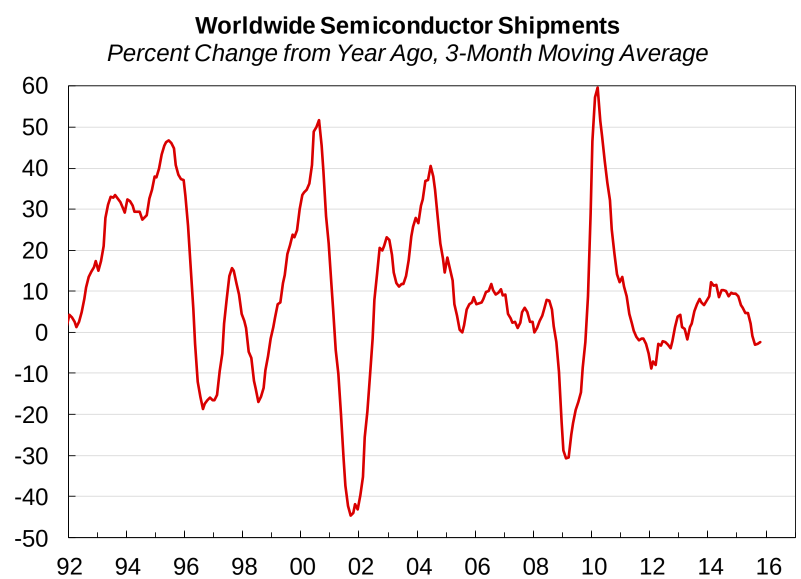
- Shipments of silicon materials are a good indicator of global demand for products going into the electronics industry. Shipments declined in the third quarter after hitting a record high in the second quarter. They were down 0.2% year-over-year.

- The data are only reported quarterly back to 2000, but silicon wafer area (in square inches) has been strongly correlated with semiconductor shipments (in dollars), which are reported monthly back to 1976.



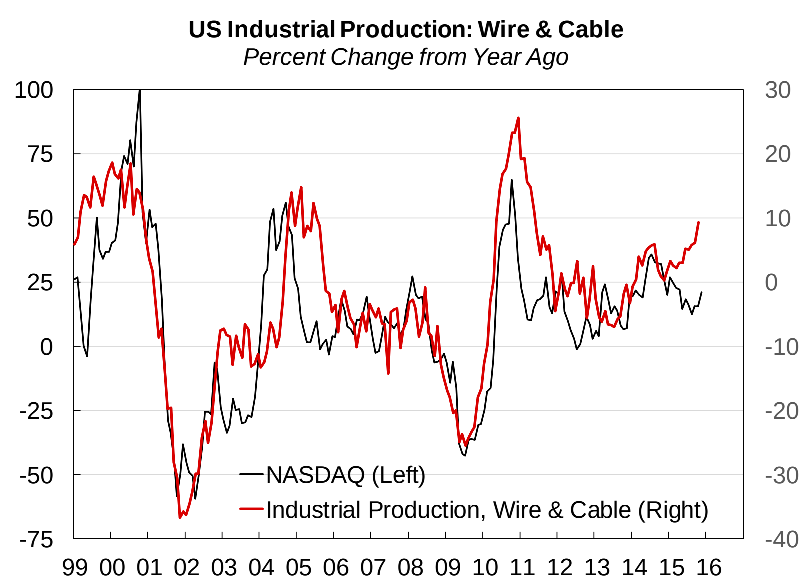
- Worldwide semiconductor shipments hit a record high in the three months ending in November 2014, but remain below those highs despite a recent uptick.

- Worldwide semiconductor shipments were down 2.4% year-over-year in the three months ending in October.



- Industrial production of wire and cable used in communication and energy applications rose in October to its highest level since 2008. It was up 9.8% year-over-year.

- The decline in the NASDAQ stock price index over the last year suggests that growth in wire and cable production is likely to slow significantly.



Global GDP Growth

	2013	2014	2015	2016	2017	2018	2019	2020	2020 -2025
			Forecast						
World	**2.4**	**2.6**	**2.4**	**2.7**	**2.9**	**3.1**	**3.2**	**3.1**	**3.1**
North America	**1.5**	**2.4**	**2.3**	**2.3**	**2.5**	**2.5**	**2.4**	**2.0**	**2.3**
United States	1.5	2.4	2.5	2.4	2.5	2.5	2.4	2.0	2.3
Canada	2.0	2.4	1.0	1.7	2.4	2.3	2.1	2.0	2.2
Mexico	1.4	2.1	2.3	2.8	3.1	3.2	3.3	3.3	3.3
Western Europe	**0.2**	**1.3**	**1.6**	**1.7**	**1.8**	**1.7**	**1.7**	**1.7**	**1.6**
France	0.7	0.2	1.2	1.5	1.6	1.7	1.9	1.9	1.4
Germany	0.4	1.6	1.5	1.6	1.5	1.3	1.3	1.3	1.6
Italy	-1.7	-0.4	0.8	1.3	1.2	1.1	1.1	1.0	0.9
Spain	-1.2	1.4	3.1	2.5	2.2	2.0	1.9	1.8	1.7
U.K.	1.7	3.0	2.5	2.2	2.2	2.2	2.2	2.1	2.2
C & E Europe	**2.2**	**1.8**	**0.2**	**1.7**	**2.6**	**2.8**	**2.8**	**2.8**	**2.9**
Middle East & Africa	**2.9**	**3.1**	**2.6**	**3.7**	**4.1**	**4.2**	**4.2**	**4.3**	**4.0**
Asia/Pacific	**4.8**	**4.3**	**4.3**	**4.4**	**4.3**	**4.5**	**4.7**	**4.7**	**4.5**
Japan	1.6	-0.1	0.6	1.0	0.4	0.7	0.9	0.7	0.9
ex Japan	6.0	5.9	5.6	5.5	5.5	5.6	5.8	5.8	5.4
Australia	2.1	2.7	2.4	2.9	3.1	3.0	2.9	2.8	2.7
China	7.7	7.3	6.8	6.3	6.0	6.1	6.3	6.3	5.9
India	6.9	7.3	7.3	7.5	7.5	7.6	7.7	7.7	7.2
Indonesia	5.6	5.0	4.7	5.1	5.5	5.8	6.0	6.0	5.2
Korea (South)	2.9	3.3	2.7	3.2	3.6	3.6	3.6	3.6	2.5
Malaysia	4.7	6.0	4.7	4.5	5.0	5.0	5.0	5.0	4.9
Philippines	7.1	6.1	6.0	6.3	6.5	6.5	6.5	6.5	4.9
Singapore	4.4	2.9	2.2	2.9	3.2	3.2	3.2	3.2	3.4
Taiwan	2.2	3.8	2.2	2.6	2.9	3.1	3.1	3.2	3.0
Thailand	2.8	0.9	2.5	3.2	3.6	3.4	3.3	3.2	3.7
Vietnam	5.4	6.0	6.5	6.4	6.0	6.0	6.0	6.0	6.0
Latin America	**3.1**	**0.9**	**-1.3**	**-1.5**	**-0.5**	**2.3**	**2.5**	**2.6**	**2.9**
Argentina	2.9	0.5	0.4	-0.7	0.0	0.1	0.2	0.2	1.8
Brazil	2.7	0.1	-3.0	-4.0	-3.0	2.4	2.5	2.5	2.5
Colombia	4.9	4.6	2.5	2.8	3.2	3.6	3.9	4.1	4.0
Venezuela	1.3	-4.0	-10.0	-6.0	-4.5	-3.0	-1.0	0.0	2.6

Global Industrial Production

			Forecast						2020
	2013	2014	2015	2016	2017	2018	2019	2020	-2025
World	**2.2**	**3.3**	**1.6**	**2.4**	**3.0**	**2.7**	**2.5**	**2.4**	**2.4**
Advanced economies	**0.4**	**2.4**	**1.0**	**1.6**	**2.1**	**1.9**	**1.8**	**1.7**	**1.7**
United States	1.9	3.7	1.5	1.6	2.8	2.7	2.5	2.4	2.2
Japan	-0.6	1.9	-1.0	1.0	1.0	1.0	0.5	0.5	0.5
Euro Area	-0.6	0.8	1.5	2.0	2.0	1.5	1.5	1.5	1.5
Other advanced	-0.2	2.5	1.0	1.5	2.0	2.0	2.0	2.0	2.0
Emerging economies	**4.2**	**4.2**	**2.5**	**3.7**	**4.4**	**3.9**	**3.8**	**3.5**	**3.7**
Emerging Asia	7.1	6.4	5.0	5.5	6.0	5.0	5.0	4.5	4.5
C & E Europe	1.5	2.5	0.5	3.0	3.0	3.0	3.0	3.0	2.5
Latin America	0.9	-0.4	-2.0	0.0	3.0	3.0	2.0	2.0	2.5
Middle East & Africa	-2.9	0.0	2.0	3.0	3.0	3.0	3.0	3.0	3.5

Global Consumer Price Inflation

	2013	2014	2015	2016	2017	2018	2019	2020	2020-2025
			Forecast						
North America									
United States	1.5	1.6	0.1	1.1	1.8	2.2	2.3	2.4	2.3
Canada	1.0	1.9	1.0	1.6	2.3	2.2	2.2	2.1	2.0
Mexico	3.8	4.0	2.8	3.0	3.0	3.0	3.0	3.0	3.9
Eurozone	**1.3**	**0.4**	**0.2**	**1.0**	**1.3**	**1.4**	**1.6**	**1.7**	**1.8**
France	1.0	0.6	0.1	1.0	1.1	1.3	1.5	1.7	2.1
Germany	1.6	0.8	0.2	1.2	1.5	1.6	1.8	1.9	1.4
Italy	1.3	0.2	0.2	0.7	1.0	1.1	1.2	1.3	2.0
Spain	1.4	-0.2	-0.3	0.9	1.0	1.2	1.4	1.5	2.0
U.K.	2.6	1.5	0.1	1.5	2.0	2.0	2.0	2.0	2.0
Russia	6.8	7.8	15.8	8.6	7.3	5.0	4.0	4.0	5.0
Turkey	7.5	8.9	7.4	7.0	6.5	6.5	6.5	6.5	3.4
Asia/Pacific									
Japan	0.4	2.7	0.7	0.4	1.6	1.1	1.2	1.5	2.3
Australia	2.4	2.5	1.8	2.6	2.4	2.5	2.5	2.5	2.6
China	2.6	2.0	1.5	1.8	2.2	2.5	3.0	3.0	3.5
India	10.0	5.9	5.4	5.5	5.4	5.1	4.9	4.9	6.5
Indonesia	6.4	6.4	6.8	5.4	4.7	4.5	4.3	4.1	4.8
Korea (South)	1.3	1.3	0.7	1.8	3.0	3.0	3.0	3.0	3.0
Malaysia	2.1	3.1	2.4	3.8	3.0	3.0	3.0	3.0	4.0
Philippines	2.9	4.2	1.9	3.4	3.5	3.5	3.5	3.5	4.8
Singapore	2.4	1.0	0.0	1.8	1.9	1.9	1.8	1.8	2.7
Taiwan	0.8	1.2	-0.1	1.0	1.3	1.5	1.8	2.0	1.8
Thailand	2.2	1.9	-0.9	1.5	2.2	2.2	2.2	2.2	4.0
Vietnam	6.6	4.1	2.2	3.1	3.8	4.1	4.6	4.9	6.4
Latin America									
Argentina	10.6	21.4	31.6	28.9	17.5	12.6	12.2	12.1	10.4
Brazil	6.2	6.3	8.9	6.3	5.2	5.0	4.8	4.6	3.6
Colombia	2.0	2.9	4.4	3.5	3.2	3.0	3.0	3.0	3.7
Venezuela	40.6	62.2	159.1	204.1	200.0	187.5	177.5	162.5	3.5