# **Economics Group**

# Weekly Economic & Financial Commentary

# **U.S. Review**

### **More Growth Moving Forward**

- The Chicago Fed National Activity Index and the Leading Economic Index, aggregators of already-released economic data, both sent positive signals for current and future growth.
- Headline and core CPI advanced just 0.1 percent in September, leaving the year-ago rates unchanged at 1.7 percent.
- Initial jobless claims increased this week, but the four-week moving average fell to a new cycle low.
- Existing home sales perked up, while mortgage applications also increased, though the broader trend remains modest.

# **Global Review**

#### At the Final Turn, a Mixed Picture for Global Economy

- Some countries have already begun reporting third-quarter GDP growth figures. In this week's Global Review, we look at how these economies fare before coming into the home stretch in the final quarter of 2014.
- The year-over-year rate of Chinese GDP growth slowed to 7.3 percent in the third quarter. While that represented the slowest annual growth rate since the global recession, it was still better than consensus expectations.
- In the United Kingdom, real GDP grew at a 2.8 percent annualized pace, which was in line with expectations.

												2000	2002
Wells Fargo U.S. Economic Forecast													
	Act	tual			Fore	cast			Act	tual		Forecast	t
		20	14			20	15		2012	2013	2014	2015	2016
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q					
Real Gross Domestic Product <sup>1</sup>	-2.1	4.6	3.1	2.6	2.5	2.7	2.9	3.0	2.3	2.2	2.2	2.8	3.1
Personal Consumption	1.2	2.5	2.1	2.3	2.5	2.6	2.5	2.6	1.8	2.4	2.2	2.5	2.6
Inflation Indicators <sup>2</sup>													
PCE Deflator	1.1	1.6	1.5	1.6	1.7	1.6	1.8	2.0	1.8	1.2	1.5	1.8	2.1
Consumer Price Index	1.4	2.1	1.8	1.9	1.9	1.7	2.0	2.2	2.1	1.5	1.8	2.0	2.4
Industrial Production <sup>1</sup>	3.9	5.5	3.2	5.9	5.0	4.9	4.9	4.9	3.8	2.9	4.1	5.0	4.2
Corporate Profits Before Taxes <sup>2</sup>	-4.8	0.1	3.8	4.0	4.1	4.2	4.4	4.5	11.4	4.2	0.9	4.3	3.4
Trade Weighted Dollar Index <sup>3</sup>	76.9	75.9	81.3	81.1	81.8	82.3	83.0	83.8	73.5	75.9	78.8	82.7	85.3
Unemployment Rate	6.7	6.2	6.1	5.9	5.8	5.7	5.6	5.5	8.1	7.4	6.2	5.7	5.4
Housing Starts <sup>4</sup>	0.93	0.99	1.02	1.03	1.05	1.11	1.15	1.18	0.78	0.92	1.00	1.12	1.25
Quarter-End Interest Rates 5													
Federal Funds Target Rate	0.25	0.25	0.25	0.25	0.25	0.50	0.75	1.00	0.25	0.25	0.25	0.63	2.00
Conventional Mortgage Rate	4.34	4.16	4.16	4.06	4.11	4.24	4.26	4.42	3.66	3.98	4.18	4.26	5.00
10 Year Note	2.73	2.53	2.52	2.17	2.51	2.64	2.66	2.82	1.80	2.35	2.49	2.66	3.40

Forecast as of: October 17, 2014 <sup>1</sup> Compound Annual Growth Rate Quarter-over-Quarter

Year-over-Year Percentage Change

<sup>3</sup> Federal Reserve Major Currency Index, 1973=100 - Quarter End

<sup>4</sup> Millions of Units

Annual Numbers Represent Averages

Source: U.S. Department of Commerce, U.S. Department of Labor, Federal Reserve Board, The Conference Board, IHS Global Insight, Bloomberg LP and Wells Fargo Securities, LLC

# WELLS SECURITIES







### U.S. Review

#### **Inflationary Pressures Benign**

Even with the dearth of data this week, the U.S. economy looks to be improving. The Chicago Fed National Activity Index confirmed that economic growth was above trend in September, while a solid gain in the Leading Economic Index suggests that there is more growth ahead. Prices remain fairly benign for the consumer, while the labor market continues to accelerate. Meanwhile, the housing market is making modest gains again after the mortgage rate correction that occurred last year.

With the four-week moving average for jobless claims falling to their lowest level since before the 2001 recession and nonfarm payrolls consistently adding more than 200,000 workers each month, the Fed's mandate of full employment appears to be on the horizon. However, the Fed's other mandate, low and stable inflation, could be further off. Core inflation held steady at 1.7 percent year over year, which remains comfortably lower than the 2.0 percent rate of inflation that the Fed is targeting.

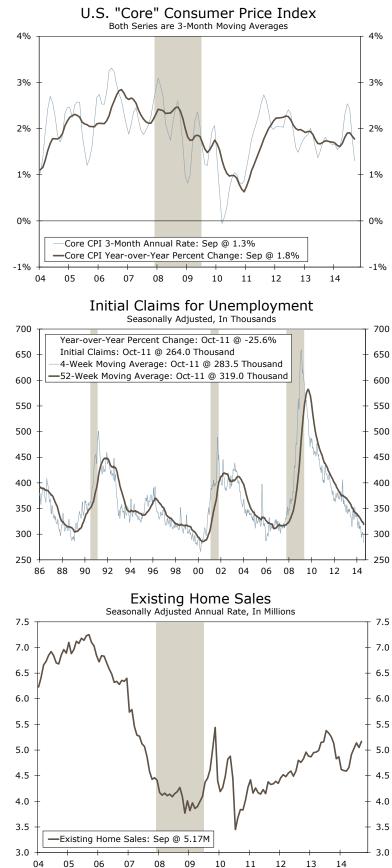
Although most of the recent attention on prices has focused on the dramatic fall in oil, the rise in food prices presents an interesting trend. The cost of food at home, which is now 3.2 percent higher than a year ago, grew 0.3 percent in September. The cost of food away from home, which tends to absorb food price fluctuations, also advanced 0.3 percent. Although rising food costs are painful for consumers, the growing cost of food away from home may indicate that the consumer is stronger. Food inflation is likely to ease soon as lower corn and grain prices should alleviate price pressures on meats, poultry, fish & eggs. The easing in food prices along with falling oil prices should keep headline inflation low in the near term.

### Housing Improvements Good, Not Great

The housing market continues to improve. Existing home sales rose to a 5.17 million unit annualized pace, with gains seen in the single-family and multifamily markets. For the third consecutive week, mortgage applications increased from the prior week and were up 11.6 percent for the week ended Oct. 17. Mortgage rates have been declining some recently, which could encourage wouldbe buyers to begin the home search, and residential construction also improved modestly for September.

Better housing data are certainly welcome, but are far from any indication that the housing market is poised for a roaring return to its prerecession days. For one, existing home sales are still 1.7 percent from year-ago levels. The second is that nearly all of the gain seen in September can be attributed to investors and allcash buyers, meaning that traditional homebuyers are still largely sitting on the sidelines. In addition, the first-time homebuyer has also been very slow to come back to the market. Furthermore, mortgage applications are 9.9 percent lower than a year ago despite the sizable gains over the past few weeks.

The sluggish pace of the housing recovery can be blamed on low household formation. In addition, growing student debt burdens make saving for a down payment difficult. Finally, renting allows workers to be mobile while the labor market makes a full recovery.



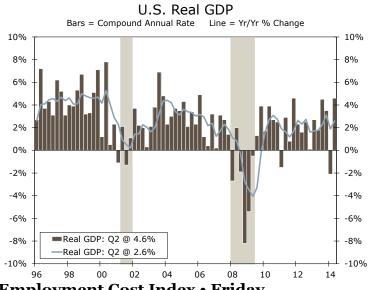
Source: U.S. Department of Labor, National Association of Realtors and Wells Fargo Securities, LLC

### **Durable Goods** • Tuesday

Giving back much of its sizeable monthly gain in July, durable goods orders fell a sharp 18.4 percent in August. Despite recent volatility, manufacturing is improving at a healthy pace. Excluding transportation, orders firmed during the month and are up almost 7 percent over the past year. Moreover, core capital goods orders also edged higher in August. The orders components of other key manufacturing reports released during the month, including the ISM manufacturing index, regional purchasing manager indexes and the Markit Flash U.S. Manufacturing PMI, are generally supportive of continued improvement. The unfilled orders component, which is a forward-looking indicator of shipments, continues to strengthen. Core shipments, which feed into the calculation for real GDP, suggest equipment and software could post another strong reading. We expect orders to strengthen in September largely based on the composition of Boeing orders.

#### Previous: -18.4%

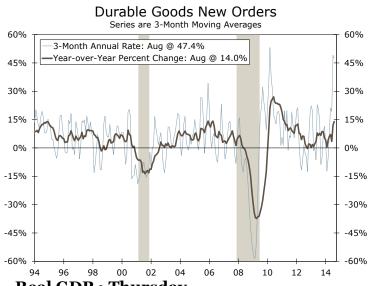
Wells Fargo: 2.4% Consensus: 0.4% (Month-over-Month)





The employment cost index (ECI), which measures wages, salaries and benefit costs, advanced to its fastest quarterly pace in almost six years in Q2. The quarterly gain pushed the year-over-year rate up 2.0 percent in Q2. One component of the report that is receiving a lot of headline attention in recent months is wages and salaries. The wages and salaries component of the ECI report is the broadest measure of labor costs of the key indicators. Fed Chair Janet Yellen has noted that low wage growth is evidence that there is still considerable slack in the labor market. However, with wages and salaries picking up amid a tightening labor market, the question remains whether there is still "significant underutilization of labor resources." That said, wages and salaries growth is still below its prerecession long-run trend of about 3.0 percent, but further improvement could support a hike in short-term rates next year.

#### Previous: 0.7% Wells Fargo: 0.5% Consensus: 0.5% (Quarter-over-Quarter)



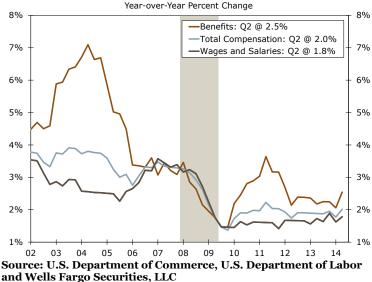
### **Real GDP** • Thursday

Real GDP growth is expected to rise at about a 3 percent annualized pace in Q3 and will likely average about that same rate over the next two years. Consistent with figures reported in the second quarter, gains should be fairly broad-based. Based on the trend, consumer spending is expected to stay on track despite the disappointing headline retail sales reading in September. Core retail sales on a three-month annualized basis posted another solid reading. Stronger job growth helped boost personal income, and lower retail gasoline prices are giving consumers a reprieve at the pump. Business spending and homebuilding continue to firm and should make another positive contribution to the headline. On the back of improving state and local tax receipts, government outlays are also positioned to strengthen. However, after making a sizeable contribution to real GDP in Q2, the volatile inventory component is expected to detract from the headline in Q3.

#### Previous: 4.6%

#### Wells Fargo: 3.1%

Consensus: 3.1% (CAGR)



# Employment Cost Index - All Workers

# **Global Review**

#### Slowest Growth in China Since 2009

The year-over-year rate of GDP growth in China slowed to 7.3 percent in the third quarter, marking the slowest annual growth rate since the global slowdown in 2009. The slower growth rate was not as weak as the consensus had feared, and there is some indication that prospects were brightening for the Chinese economy during the period.

For example, the year-over-year rate of industrial production growth increased to 8.0 percent in September compared to only 6.9 percent in August. The preliminary October estimate for the HSBC PMI remained in expansion territory at 50.4. While that is not overwhelming, it would mark the fifth straight month above 50 after being stuck in the 40s earlier this year.

Compared to many advanced economies where investment spending comprises only about a fifth of GDP, it accounts for almost half of GDP in China—and that has been a key source of recent weakness. We expect real GDP growth in China will slow from our estimate of 7.3 percent this year to 6.8 percent next year and to 6.5 percent in 2016. For more on China see our recent special report, titled *"Chinese GDP Growth Slows Further in Q3."* 

#### United Kingdom GDP Growth Slows Slightly in Q3

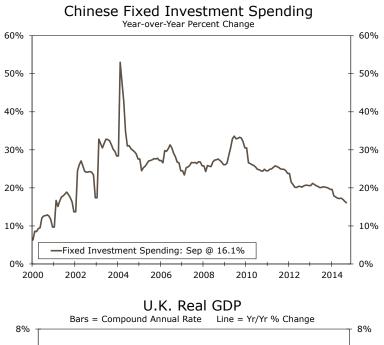
In the United Kingdom, real GDP grew 0.7 percent (not annualized) in the third quarter of the year. While that was in line with market expectations, it marks a slight slowing in the growth rate relative to the second quarter and it is a bit weaker than the 0.9 percent growth forecast by the Bank of England (BoE).

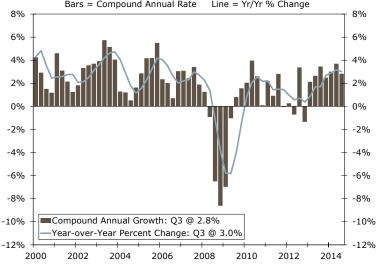
In the minutes of the most recent Monetary Policy Committee meeting released this week, two of the nine policymakers dissented on the decision to keep rates on hold, preferring to increase the target lending rate 25 bps. In this context, the modest slowing in GDP growth during the third quarter may diminish some of the eagerness to begin raising rates or at the margin it could push back the timing of eventual rate increases. A far more influential input for BoE policymakers is CPI inflation, which was unchanged in September and up only 1.2 percent on a year-over-year basis.

#### Eurozone PMIs: Not Great, but a Bit of Relief

Last week, we learned that industrial production in the Eurozone fell in August by the largest amount in a single month since 2009. Fear of a broader deterioration in Europe seized financial markets and speculation of eventual bond-buying by the ECB sparked buying of German Bunds, driving the yield to an all-time low.

Amid that reported weakness in output, markets were braced for more disappointment with this week's release of October PMI data for the Eurozone. The consensus was looking for 49.9. So it came as a welcome surprise to learn that the manufacturing PMI actually improved slightly and the service sector PMI was unchanged. At 50.7, the manufacturing PMI is still on thin ice, but it was a respite from a run of weaker-than-expected economic reports and it turns down the pressure on the ECB to take action prior to its next scheduled meeting on Nov. 6.







Source: IHS Global Insight and Wells Fargo Securities, LLC

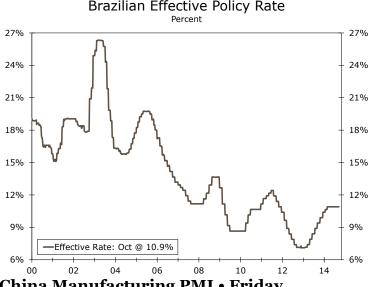
### Japan Industrial Production • Tuesday

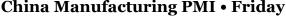
Japanese industrial production has remained very bumpy, down one month and then partially recovering the following month, on a month-over-month basis. The fact that during the positive months the rebound has been very weak indicates that there has been a weakening trend in Japanese industrial production. This has been clearly reflected in the year-over-year numbers: August figures were 3.3 percent below year-ago levels compared to the 10.6 percent year-over-year growth registered in January of this year.

This time around, however, markets are expecting to see a big rebound with the consensus expecting a month-over-month increase of 2.5 percent in September after a 1.9 percent drop in August. If the consensus is correct, this will break a trend that has built over the past year and could point to a change in direction for Japanese industrial activity.

#### Previous: -3.3%

#### Consensus: -0.1% (Year-over-Year)





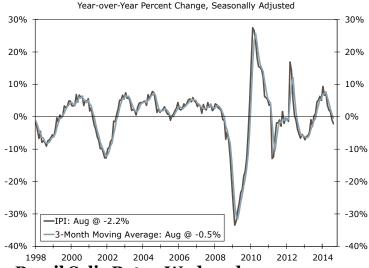
After the release of China's third-quarter GDP early this week, next Friday's release of the official China manufacturing PMI for October should provide the markets with more insight into the direction the Chinese economy will take in the last quarter of the year. The PMI remained unchanged in August and September with a reading of 51.1.

Any improvement in the manufacturing index will be welcome news as the year comes to an end and markets continue to speculate what is next for the second-largest economy in the world, an economy that, until recently, was the driving force of the positive developments in the global economy. The Chinese government is trying to rebalance the economy, so the current slowdown is not completely unwelcome by authorities. However, the rest of the world may be having some trouble adjusting to the "new normal" in the Chinese economy.

Previous: 51.1

Consensus: 51.1

Japanese Industrial Production Index



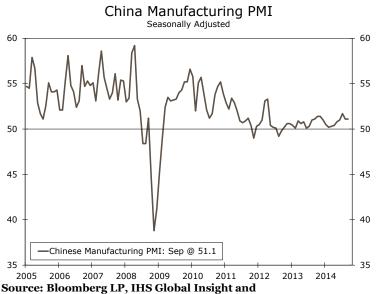
Brazil Selic Rate • Wednesday

The last time the Brazilian central bank raised rates, to 11.0 percent, was in April 2014, with markets clamoring for the institution to do more to limit accelerating inflation expectations. At that time, inflation was at 6.3 percent, near the top of its target band of 4.5 percent plus/minus two percentage points. Today, inflation is at 6.7 percent, but the inflation path seems a bit more benign than what it was early in the year. Thus, analysts are expecting the institution to keep rates at current levels even as the economy continues to struggle.

Meanwhile, the Mexican central bank intends to hold its monetary policy committee meeting on Friday. However, the Mexican central bank is driving in the opposite direction than the Brazilian central bank. The institution lowered interest rates in June of this year from 3.5 percent to 3.0 percent to support its struggling economy. The central bank is expected to keep rates stable at 3.0 percent.

#### Previous: 11.00%

#### Consensus: 11.00%



Wells Fargo Securities, LLC

# **Interest Rate Watch**

### Yield Curve Becomes Bumpy

Over the past few months, the yield curve has broken down all along the maturity spectrum. As an administered rate, the funds rate is whatever the Fed wishes it to be, but as we move along the yield curve, the Fed exerts less and less influence.

Prior to market turmoil over the past two weeks, at the very short end of the curve, the 2-year rate had been rising relative to the administered funds rate (top graph). We expect that the two-year rate will rise again in the first quarter in anticipation of the Fed beginning to raise the fed funds target rate around mid-2015.

#### A Flatter, More Volatile Yield Curve

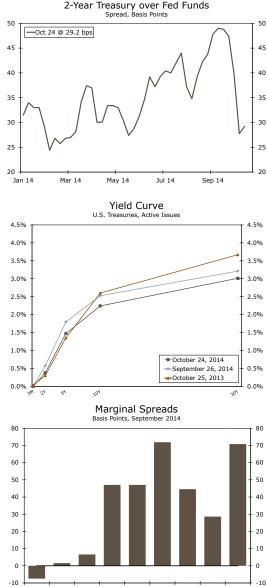
As illustrated in the middle graph, there is a clear shift upward in the short end of the yield curve from October 2013 to September 2014 from the 3-month to the 5-year yield. However, over the past month, yields have shifted back in over the same maturity spectrum. This is especially true for the 5- and 2-year yields.

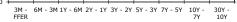
At the longer end of the curve, yields have steadily shifted down over the past year. There was no backup in yield from last October to September this year, unlike the short end of the curve where yields shifted up and now have come back in up to the 5-year yield.

### Marginal Yields for the Marginal Investor

Investors pick up more incremental yield between the 2-year to 5-year points on the curve. But note that extending the maturity beyond the 5-year yields significantly less return at the 7- and 10-year maturities. The problem comes with the question of balance. Does the marginal return for the 7- and 10-year maturities compensate for the risk of a greater rise in long rates or inflation than is currently discounted in the marketplace?

Since 1982, the tendency of inflation, as measured by the PCE deflator, has been to average 2.54 percent—which is currently above the majority of forecasts. This raises the possibility that extensions along the yield curve will not generate real returns as inflation resumes its long-run path since 1982.





Source: Bloomberg LP and Wells Fargo Securities, LLC

Credit Market Data					
Mortgage Rates	Current	Week Ago	4 Weeks Ago	Year Ago	
30-Yr Fixed	3.92%	3.97%	4.19%	4.13%	
15-Yr Fixed	3.08%	3.18%	3.36%	3.24%	
5/1 ARM	2.91%	2.92%	3.06%	3.00%	
1-Yr ARM	2.41%	2.38%	2.42%	2.60%	
Pouls Londing	<b>Current Assets</b>	1-Week	4-Week	Year-Ago	
Bank Lending	(Billions)	Change (SAAR)	Change (SAAR)	Change	
Commercial & Industrial	\$1,737.2	1.06%	7.91%	12.06%	
Revolving Home Equity	\$459.2	-4.21%	-0.74%	-4.43%	
Residential Mortgages	\$1,570.9	-24.98%	-3.85%	0.59%	
Commerical Real Estate	\$1,576.5	9.08%	5.68%	6.87%	
Consumer	\$1,190.1	0.25%	4.43%	3.84%	

Source: Freddie Mac, Federal Reserve Board and Wells Fargo Securities, LLC

## **Credit Market Insights** Mortgage Originations Expectations

On Tuesday the Mortgage Bankers Association (MBA) announced it expects \$1.2 trillion in mortgage originations in 2015. This would mark a 7 percent increase from 2014 levels. The MBA expects these gains to come from a \$96 billion (15 percent) increase in purchase originations, offsetting their forecasted \$14 billion (3 percent) fall in refinances.

We agree that the housing market will continue to improve in 2015, with both new and existing home sales trekking higher. Our forecast also calls for increasing mortgage rates as interest rates gradually increase, which would likely be a drag on refinancing, as the MBA has suggested.

However, there may be some upside risk for refinancing originations. Recent fears about global growth and falling commodity prices have caused a flight to quality. These fears not only lowered the expected path of short-term rates, they also caused the term premium, or the compensation investors receive for holding longer-dated assets, to fall. This led to an unexpected rally in Treasuries and caused mortgage rates to fall as well.

With mortgage rates again falling below 4 percent, we saw an 11.6 percent jump in refinancing applications. Rising home prices and improved household balance sheets likely allowed individuals to refinance who were previously unable to. If rates remain lower for longer, we would expect refinance applications to increase.

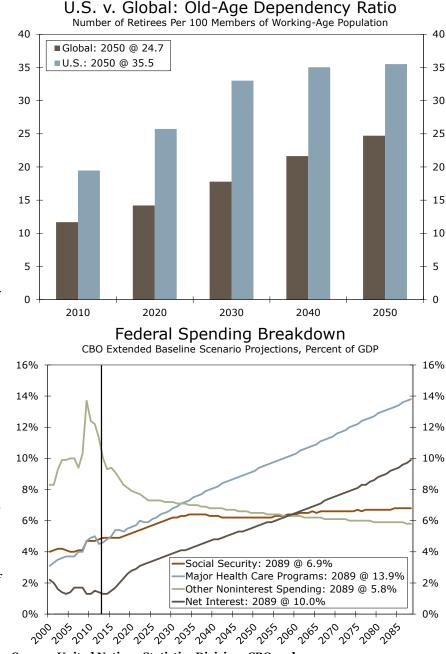
# Topic of the Week

### A Smaller Workforce, Higher Federal Outlays

The aging of the U.S. population will play a vital role in affecting federal spending over the next several years. There are three key areas of federal spending that will be affected the most by an aging population: Social Security, Medicare and Medicaid. These programs combined represent the greatest challenge to federal outlays and, in turn, federal debt growth over the next several years. By 2024, these three programs are expected to account for just over 52 percent of the federal budget, according to the latest estimates from the Congressional Budget Office (CBO). With such a large and growing share of the federal budget tied to these programs, the CBO has warned that the current path of federal spending for these programs is unsustainable. The issue is the imbalance between the working age population and the retiree population. This imbalance can be measured by an increase in the old-age dependency ratio, which measures the number of retirees relative to the working age population. The oldage dependency ratio has steadily increased in the United States in the past several years and is expected to reach 35.5 per 100 working-age people by 2050.

We suspect there will be some combination of both tax increases and benefit cuts to these programs to make them more sustainable. These changes, however, would have negative economic consequences. Increasing taxes on the working population would shift some of the cost burden, resulting in reduced spending power. Should the retired or soon-to-be-retired population experience a cut to their benefits, this would also adversely affect spending for this segment of the population. Thus, any changes to policy are likely to affect the choices of when individuals retire and raise some issues around intergenerational equity.

For further reading see our special report "The Effects of Changing Demographics on the Federal Budget Part II: A Smaller Workforce, Higher Federal Outlays."



Source: United Nations Statistics Division, CBO and Wells Fargo Securities, LLC

**Subscription Info** 

Wells Fargo's Weekly Economic & Financial Commentary is distributed to subscribers each Friday afternoon by e-mail.

To subscribe please visit: www.wellsfargo.com/economicsemail

The Weekly Economic & Financial Commentary is available via the Internet at www.wellsfargo.com/economics

Via The Bloomberg Professional Service at WFRE.

And for those with permission at www.wellsfargoresearch.com

# Market Data 🔶 Mid-Day Friday

U.S. Interest Rates					
	Friday	1 Week	1 Year		
	10/24/2014	Ago	Ago		
3-Month T-Bill	0.01	0.02	0.03		
3-Month LIBOR	0.23	0.23	0.24		
1-Year Treasury	0.15	0.14	0.15		
2-Year Treasury	0.39	0.37	0.30		
5-Year Treasury	1.50	1.42	1.30		
10-Year Treasury	2.27	2.19	2.52		
30-Year Treasury	3.04	2.97	3.61		
Bond Buyer Index	3.90	3.87	4.56		

Foreign Exchange Rates					
	Friday	1 Week	1 Year		
1	0/24/2014	Ago	Ago		
Euro (\$/€)	1.267	1.276	1.380		
British Pound (\$/£)	1.609	1.609	1.620		
British Pound (₤/€)	0.788	0.793	0.852		
Japanese Yen (¥/\$)	108.130	106.880	97.280		
Canadian Dollar (C\$/\$)	1.122	1.128	1.042		
Swiss Franc (CHF/\$)	0.952	0.946	0.892		
Australian Dollar (US\$/A\$	0.881	0.874	0.962		
Mexican Peso (MXN/\$)	13.523	13.524	12.967		
Chinese Yuan (CNY/\$)	6.117	6.125	6.082		
Indian Rupee (INR/\$)	61.281	61.421	61.650		
Brazilian Real (BRL/\$)	2.457	2.435	2.203		
U.S. Dollar Index	85.683	85.110	79.185		
Source: Bloomberg LP and Wells Fargo Securities LLC					

Foreign Interest Rates					
	Friday	1 Week	1 Year		
1	0/24/2014	Ago	Ago		
3-Month Euro LIBOR	0.06	0.06	0.17		
3-Month Sterling LIBOR	0.55	0.56	0.52		
3-Month Canada Banker's Acceptance	1.27	1.27	1.28		
3-Month Yen LIBOR	0.11	0.11	0.14		
2-Year German	-0.04	-0.05	0.18		
2-Year U.K.	0.68	0.69	0.45		
2-Year Canadian	1.00	0.98	1.10		
2-Year Japanese	0.02	0.02	0.11		
10-Year German	0.89	0.86	1.77		
10-Year U.K.	2.23	2.19	2.63		
10-Year Canadian	1.99	1.95	2.43		
10-Year Japanese	0.47	0.48	0.62		

Commodity Prices			
	Friday	1 Week	1 Year
	10/24/2014	Ago	Ago
WTI Crude (\$/Barrel)	80.61	82.75	97.11
Gold (\$/Ounce)	1230.69	1238.32	1346.78
Hot-Rolled Steel (\$/S.Ton)	642.00	642.00	651.00
Copper (¢/Pound)	304.00	300.35	326.35
Soybeans (\$/Bushel)	9.88	9.59	13.18
Natural Gas (\$/MMBTU)	3.56	3.77	3.63
Nickel (\$/Metric Ton)	15,080	15,391	14,511
CRB Spot Inds.	503.34	504.31	513.94

Source: Bloomberg LP and Wells Fargo Securities, LLC

# Next Week's Economic Calendar

	Monday	Tuesday	Wednesday	Thursday	Friday
	27	28	29	30	31
	Pending Home Sales (MoM)	Durable Goods Orders	FOMC Decision	GDP (QoQ)	Personal Income & Spending
g	August -1.0%	August -18.4%	September 17th 0.25%	2Q4.6%	August 0.3% & 0.5%
	September 1.0% (C)	September 2.4% (W)	October 29th 0.25% (W)	3Q3.1%(W)	September 0.3% & 0.1% (W)
5		Consumer Confidence Index			Employment Cost Index
		September 86.0			2Q 0.7%
		October 88.0 (W)			3Q 0.5% (W)
		Japan	Brazil	Germany	China
		Industrial Production (MoM)	Selic Rate	Unemployment Rate	Manufaturing PMI
		Previous (August) -1.9%	Previous (September 5th) 11.00%	Previous (September) 6.7%	Previous (September) 51.1
					Argentina
					Industrial Production (YoY)
					Previous (August) -2.9%

Note: (W) = Wells Fargo Estimate (C) = Consensus Estimate

# Wells Fargo Securities, LLC Economics Group

Diane Schumaker-Krieg	Global Head of Research,	(704) 410-1801	diane.schumaker@wellsfargo.com
	Economics & Strategy	(212) 214-5070	
John E. Silvia, Ph.D.	Chief Economist	(704) 410-3275	john.silvia@wellsfargo.com
Mark Vitner	Senior Economist	(704) 410-3277	mark.vitner@wellsfargo.com
Jay H. Bryson, Ph.D.	Global Economist	(704) 410-3274	jay.bryson@wellsfargo.com
Sam Bullard	Senior Economist	(704) 410-3280	sam.bullard@wellsfargo.com
Nick Bennenbroek	Currency Strategist	(212) 214-5636	nicholas.bennenbroek@wellsfargo.com
Eugenio J. Alemán, Ph.D.	Senior Economist	(704) 410-3273	eugenio.j.aleman@wellsfargo.com
Anika R. Khan	Senior Economist	(704) 410-3271	anika.khan@wellsfargo.com
Azhar Iqbal	Econometrician	(704) 410-3270	azhar.iqbal@wellsfargo.com
Tim Quinlan	Economist	(704) 410-3283	tim.quinlan@wellsfargo.com
Eric Viloria, CFA	Currency Strategist	(212) 214-5637	eric.viloria@wellsfargo.com
Sarah Watt House	Economist	(704) 410-3282	sarah.house@wellsfargo.com
Michael A. Brown	Economist	(704) 410-3278	michael.a.brown@wellsfargo.com
Michael T. Wolf	Economist	(704) 410-3286	michael.t.wolf@wellsfargo.com
Zachary Griffiths	Economic Analyst	(704) 410-3284	zachary.griffiths@wellsfargo.com
Mackenzie Miller	Economic Analyst	(704) 410-3358	mackenzie.miller@wellsfargo.com
Erik Nelson	Economic Analyst	(704) 410-3267	erik.f.nelson@wellsfargo.com
Alex Moehring	Economic Analyst	(704) 410-3247	alex.v.moehring@wellsfargo.com
Donna LaFleur	Executive Assistant	(704) 410-3279	donna.lafleur@wellsfargo.com
Cyndi Burris	Senior Admin. Assistant	(704) 410-3272	cyndi.burris@wellsfargo.com

Wells Fargo Securities Economics Group publications are produced by Wells Fargo Securities, LLC, a U.S broker-dealer registered with the U.S. Securities and Exchange Commission, the Financial Industry Regulatory Authority, and the Securities Investor Protection Corp. Wells Fargo Securities, LLC, distributes these publications directly and through subsidiaries including, but not limited to, Wells Fargo & Company, Wells Fargo Bank N.A., Wells Fargo Advisors, LLC, Wells Fargo Securities International Limited, Wells Fargo Securities Asia Limited and Wells Fargo Securities (Japan) Co. Limited. Wells Fargo Securities, LLC. ("WFS") is registered with the Commodities Futures Trading Commission as a futures commission merchant and is a member in good standing of the National Futures Association. Wells Fargo Bank, N.A. ("WFBNA") is registered with the Commodities Futures Trading Commission as a swap dealer and is a member in good standing of the National Futures Association. WFS and WFBNA are generally engaged in the trading of futures and derivative products, any of which may be discussed within this publication. Wells Fargo Securities, LLC does not compensate its research analysts based on specific investment banking transactions. Wells Fargo Securities, LLC does not compensate its research analysts based on specific investment banking transactions. Wells Fargo Securities, LLC does not complexate its research analysts based on specific investment banking transactions. Wells Fargo Securities, LLC does not guarantee their accuracy or completeness, nor does Wells Fargo Securities, LLC assume any liability for any loss that may result from the reliance by any person upon any such information or opinions. Such information and opinions are subject to change without notice, are for general information only and are not intended as an offer or solicitation with respect to the purchase or sales of any security or as personalized investment advice. Wells Fargo Securities, LLC is a separate legal entity and distinct from affiliate

#### Important Information for Non-U.S. Recipients

For recipients in the EEA, this report is distributed by Wells Fargo Securities International Limited ("WFSIL"). WFSIL is a U.K. incorporated investment firm authorized and regulated by the Financial Conduct Authority. The content of this report has been approved by WFSIL a regulated person under the Act. For purposes of the U.K. Financial Conduct Authority's rules, this report constitutes impartial investment research. WFSIL does not deal with retail clients as defined in the Markets in Financial Instruments Directive 2007. The FCA rules made under the Financial Services and Markets Act 2000 for the protection of retail clients will therefore not apply, nor will the Financial Services Compensation Scheme be available. This report is not intended for, and should not be relied upon by, retail clients. This document and any other materials accompanying this document (collectively, the "Materials") are provided for general informational purposes only.

### SECURITIES: NOT FDIC-INSURED/NOT BANK-GUARANTEED/MAY LOSE VALUE