TIAA-CREF Asset Management

Natural Resources & Infrastructure Quarterly

Fourth Quarter 2014

What's Inside

The Natural Resources & Infrastructure Quarterly features overviews of the following:

TIAA CREF Financial Services

Economic Commentary

The global economy ended 2014 on the same note that echoed throughout the year — divergence between a strengthening U.S. and mixed performance in much of the rest of the world. Europe, skating along a third recession, faces continued political hurdles.

Asia's largest economies, China and Japan, embarked upon economic reforms aimed at restructuring economic activity. Russia's economy and currency suffered in the midst of plunging oil prices and heightened geopolitical concerns. Emerging markets remain challenged by a combination of slackening commodity demand, the strengthening U.S. Dollar, and inflation. All the while, the U.S. economy continues broad-based fundamental expansion.

Turning to the U.S., GDP has grown by more than 3% in four of the past five quarters. Forecasts remain positive. Workforce numbers continue to improve, with some of the strongest monthly job gains in recent history and unemployment at 5.6%. The U.S. economy added more jobs in 2014 than any year since 1999. Retail sales in 4Q14 exceeded expectations, signaling a flow through of higher consumer confidence. Many experts believe lower oil prices will benefit the economy and boost consumer spending, potentially adding more than $1 trillion to the U.S. economy alone. Further, the plummet in gasoline prices potentially invigorates spending, with estimates that Americans will save more than $300 billion in retail gasoline savings per annum. Additionally, U.S. industrial production neared pre-recession levels.

Across the rest of the world, economic conditions remain more mixed. Europe's 2014 GDP grew only 0.8%, barely avoiding recession while still facing historically low interest rates, low inflation, stagnant demand, and stalled credit growth. Despite this, modest recovery is expected thanks to consumers, stable production in Germany, and structural reforms such as those in France designed to partially alleviate inflexible labor markets. The actions of the European Central Bank are also being watched closely.

Similar to the Eurozone, Japan faces persistent low interest rates and inflation, as well as the need for structural reform. With Prime Minister Abe's recent electoral win, his mandate continues for fiscal policies aimed at jumpstarting inflation, increasing competition, and supporting labor markets. Success on these fronts, however, remains far from guaranteed, as this is an economic battle that has persisted in Japan for two decades.

China, the driver of global growth during the Global Financial Crisis, also continues to decelerate. GDP growth fell to 7.3% in 4Q14. As a shift to a more domestically-focused economy continues, China's slowing consumption is going to present an ongoing challenge for other global economies, especially emerging markets.

Russia — which relies on oil and gas for two-thirds of total exports — saw the Ruble depreciate 46% in 2014. The drop accelerated in 4Q, growing to near currency crisis status before finding some relative stability at year-end.

How the divergent performance between the U.S. and other major economies plays out will continue to be a major theme in the coming year. The U.S. Dollar is expected to continue to strengthen against other major currencies; however, economists are concerned as to whether the U.S. growth will be challenged by such circumstances. Additionally, many analysts expect the Fed to raise short-term rates in June, with additional adjustments aligning with economic growth. Rising global demand may also help oil prices rebound in 2015. Along with European and Japanese fiscal and monetary policies and ongoing geopolitical tensions, 2015 is shaping up as a year of mixed melodies for continuing global growth.

Markets Summary

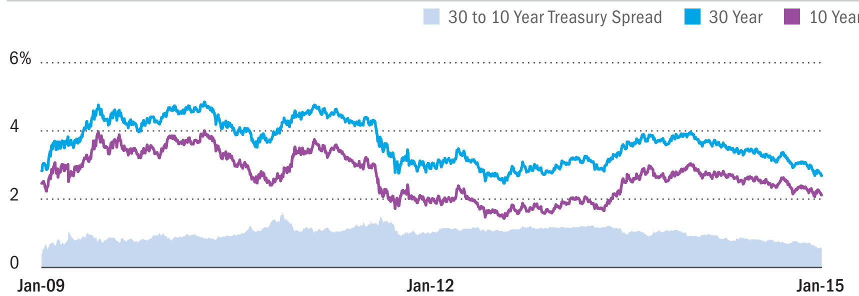
Key Market Metrics, as of December 31, 2014

	QTD	Previous QTD	6 Months	1 Year	3 Years	5 Years
Key Market Prices						
U.S. 10 Year Treasury	**2.17%**	2.52%	2.53%	3.02%	1.89%	3.85%
U.S. 30 Year Treasury	**2.75%**	3.21%	3.34%	3.96%	2.89%	4.63%
Initial Unemployment Claims (SA)	**294k**	228k	306k	453k	540k	562k
Unemployment Rate	**5.6%**	5.9%	6.1%	6.7%	8.5%	9.9%
CB Consumer Confidence	**92.6**	86.0	86.4	77.5	64.8	53.6
S&P 500	**2,059**	1,972	1,960	1,848	1,258	1,115
FX Markets*						
USD-CAD	**1.16**	1.12	1.07	1.06	1.02	1.05
Euro-USD	**1.21**	1.26	1.37	1.38	1.30	1.43
USD-BRR	**2.66**	2.45	2.20	2.36	1.86	1.74
AUD-USD	**0.82**	0.87	0.94	0.89	1.03	0.90

* FX table displays 1 unit of 1st currency in terms of 2nd currency (e.g. 1 USD is currently equivalent to 1.16 CAD)

Bond Markets
Fixed income yields continued to be pressed in 4Q14, while spreads between 10- and 30-year U.S. Treasuries were driven to the tightest point in six years. The reasons why remain consistent—investors are searching for long-term yield, developed market inflation outlooks are low-to-modest, and global growth is spotty. With 10-year U.S. Treasuries ending 2014 below 2.2% and 30 years below 2.8%, this continues to pressure expected returns across all investment sectors. U.S. rates also remain well above major European economies and Japan, where inability to create inflation is a major concern. Globally, all sources of yield are being pressed heading into the new year.

10 & 30 Year U.S. Treasury Bond Yields

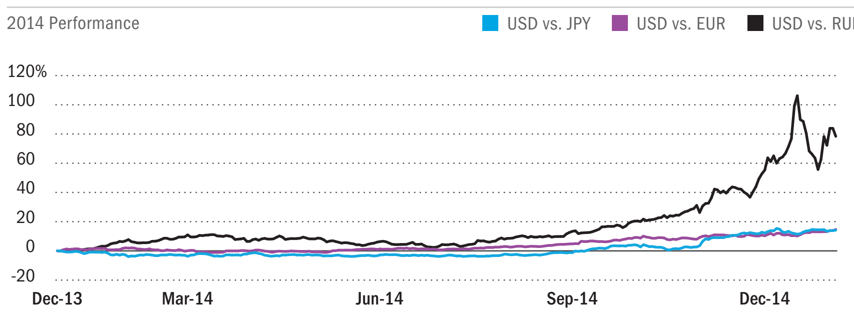


Source: U.S. Federal Reserve Board, Haver Analytics, TIAA-CREF analysis

FX Markets
The strong growth of the U.S. economy compared to other developed markets continued to drive a strengthening of the USD into year end. While Japan and Europe's continued struggle against low inflation remained headline risks in 4Q14, the most striking FX event in the quarter was the dramatic fall of the Russian Ruble. Russia's position at the heart of both global geopolitical tensions and the collapse in the price of oil caused the U.S. Dollar / Russian Ruble rate to, at one point, more than double compared to the rate at the start of 2014. While Russia's crisis took most the attention, the performance of the USD in the past year is more broadly positive.

U.S. Dollar vs. Japanese Yen, Euro, Russian Ruble

2014 Performance

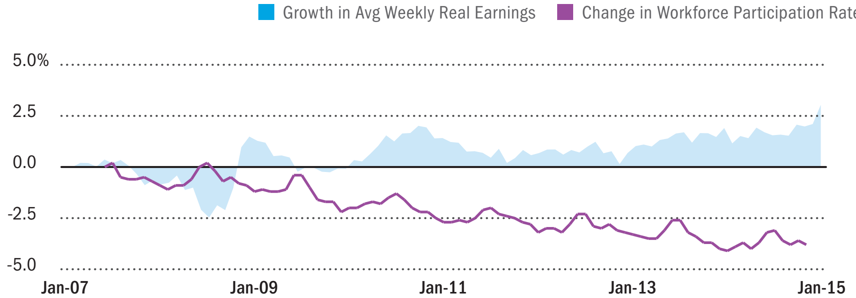


Source: U.S. Federal Reserve Board, Haver Analytics, TIAA-CREF analysis

Markets Summary

Employment and Earnings
Worker wages and labor participation continue to be closely watched as indicators of the endurance of global economic growth. In the U.S., wages provided positive news in 4Q14, as a strong uptick in real wages showed signs that benefits of U.S. growth are flowing through to employees. More consistency needs to be seen, however. Also, participation in the workforce remains well below the rates seen before the financial crisis; though conditions are at least not worsening. While the unemployment rate is touching levels last seen in July 2008, the current employment rate hovering around 59.0% is well below the rate around 62.5% seen in mid-2008.

Economic Laggards — Participation and Earnings

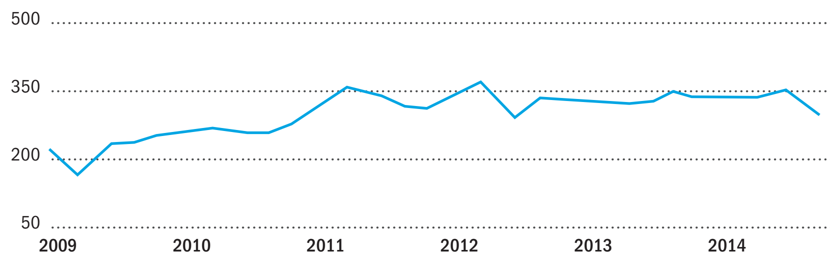


Source: U.S. BLS, Haver Analytics, TIAA-CREF analysis

Energy
The energy complex decreased during 4Q14, with oil prices being the largest factor. Record production and lower than expected global demand caused both Brent crude and WTI to fall during the quarter. It will be important to monitor energy prices during the winter, as uncertainty is particularly high after such large movements. As oil prices continue to drop, the value of the U.S. Dollar is rising and impacting global trade. The Federal Reserve is increasingly concerned the stronger USD may hurt U.S. trading partners. While the Fed's plans for raising interest rates do not appear to be changing as of yet, lower oil prices have caused inflation to be lower than anticipated and may delay plans to raise rates.

S&P GSCI Energy Spot Index

Monthly Average

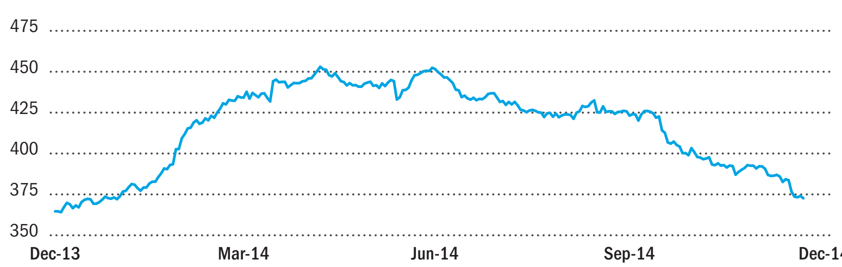


Source: Standard & Poor's, Haver Analytics

Agriculture
Major cash crop values rebounded slightly in the 4Q14 on soft markets. However, a strong U.S. Dollar continues to put pressure on globally traded, USD-denominated commodities, as international purchasing power declines. Record production and rising stocks for U.S. corn and soybeans are forecast to keep crop prices depressed for the next couple years, absent a weather event. Non-core agri-commodities, such as cocoa and butter, followed suit as they dipped to 52-week lows during 4Q14.

CRB Foodstuffs Index

1967 = 100



Source: Commodity Research Bureau, Haver Analytics

Energy Market Overview

Market Review

- Decline in global demand combined with U.S. shale oil supply glut and market positioning by OPEC members contributed to a decrease in oil prices. Oil prices have dropped from the $90–$95 range to around $53 (over 40%) since September 30, 2014. Uncertainty in the market may last for another 12 months until signs of production reduction appear.
- Market uncertainty started to affect the rig count. EIA reported 1,925 U.S. crude oil and natural gas rotary rigs in operation for November 2014, the highest to date in 2014, but December numbers decreased to 1,882 according to Baker Hughes.
  - U.S. operators are pivoting to release drilling rigs and to sharply cut capital expenditure programs for 2015–2016.
- Some operators are finding that oil well decline curves are not as steep or fast as originally forecasted, contributing to further oil price pressures.
- In a low-price environment, the most viable North American shale plays with the lowest break-evens are the Permian Basin, Bakken, and DJ Basin.
- Well drilling and completion costs are easing, which will help protect well profitability.
- During 4Q14, M&A activity in the oil and gas industry slowed considerably due to volatility and a dramatic decline in oil prices. Company management teams have put M&A efforts on hold until prices stabilize.
  - It is anticipated that if oil prices remain low for extended periods of time, smaller and/or highly leveraged companies will be forced to sell assets to shore up liquidity.
- Some first time energy focused PE funds that were seeking to raise capital in 2H14 are struggling to get off the ground.

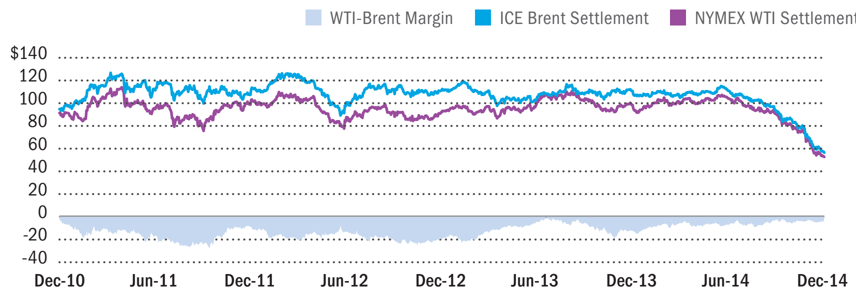
Outlook

- U.S. household gasoline expenditures in 2015 are on track to be the lowest in 11 years.
- Oil market forecasts for 2015 are mostly uncertain. Demand growth is expected to remain at 9 Mbbl/day.
- The EIA forecasts Brent crude oil pieces will average $68/bbl in 2015, with prices up to $5/bbl below that average early in the year. The EIA forecast for WTI crude oil spot prices averages $63/bbl in 2015.
- Natural gas liquids prices have fallen along with the oil price. Liquids rich natural gas prices were below $3 in December 2014.

Key Market Metrics

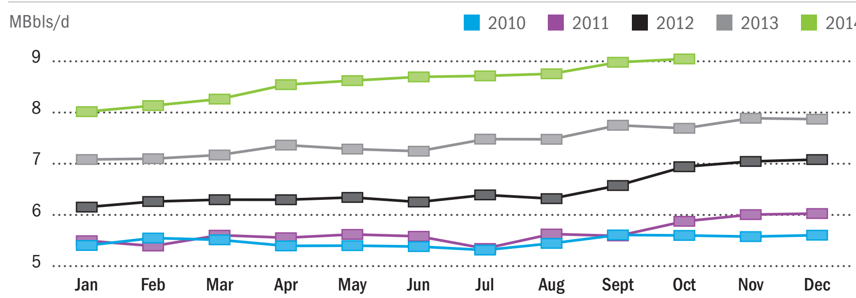
	QTD	Previous QTD	6 Months	1 Year	3 Years	5 Years
NYMEX WTI Crude Oil	**$53.27**	$91.16	$105.37	$98.42	$98.83	$79.36
ICE Brent Crude Oil	**$57.33**	$94.67	$112.36	$110.80	$107.38	$77.93
WCS Crude Oil	**$37.27**	$76.91	$84.37	$75.55	$82.68	$71.86
Henry Hub Nat. Gas	**$2.89**	$4.12	$4.46	$4.23	$2.99	$5.57
Alberta Nat. Gas	**$2.46**	$3.95	$4.18	$3.79	$2.59	$5.50
Wtd. Avg. $/kWh in U.S.	**N/A**	$10.75	N/A	$9.88	$9.53	$9.38
OPEC Prod. (Mbbls/d)	**N/A**	30.8M	30.1M	29.9M	30.6M	28.9M
U.S. Oil Imports (Mbbls/d)	**7.4M[1]**	7.5M	7.1M	7.8M	8.7M	8.2M
U.S. Gas Output (Bcf/d)	**89.7B[2]**	89.1B	87.1B	84.9B	82.1B	70.9B

Crude Oil Exchange Prices



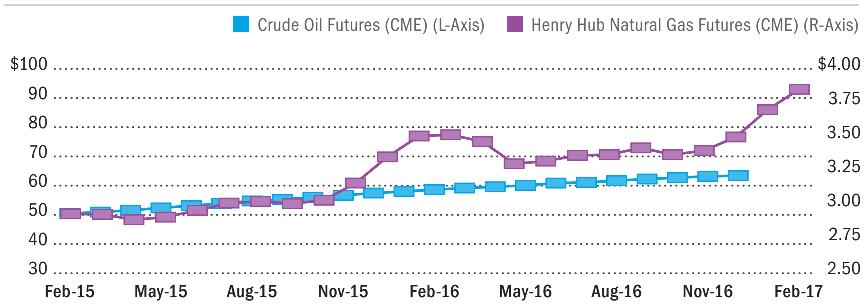
Source: Haver Analytics, TIAA-CREF analysis

U.S. Crude Oil Production



Source: Energy Information Administration, Haver Analytics

Futures Curve — Crude Oil & Natural Gas



Source: CME

[1] Items are as of 11/30/14; [2] Items are as of 10/31/14

Infrastructure Market Overview

Market Review

- Global infrastructure markets continue to be highly competitive for core, mature infrastructure assets in developed markets. As institutional investors grow their presence in the sector, an influx of capital from institutions is increasingly squeezing out funds and encouraging sales.
  - Macquarie and Ferrovial have joined forces to acquire Heathrow's three non-designated airports: Aberdeen, Glasgow, and Southampton.
  - A Macquarie-led consortium acquired the Louisiana-based utility, Cleco Corporation, for an enterprise value of $4.7 billion, which is a P/E ratio of 21.7x. The $55.37 per share purchase price represents a 15% premium.
  - Goldman Sachs Infrastructure Partners (GSIP) and Infracapital are selling their 23.3% and 10% respective ownership stakes in Associated British Ports (ABP), the U.K.'s largest port company.
- Canadian and Australian infrastructure markets are expected to be the most active in 2015 and 2016.
  - Ontario is looking to sell $1.7–$2.6 billion of power assets.
  - The pipeline for Australian asset sales through 2017 includes a total of about $75–$80 billion.
- The European Commission's investment plan for the next three years is intended to facilitate investments in the EU in excess of €315 billion.
- Regulatory uncertainty in Europe is deterring investment.
  - Ofwat released price limits for UK water companies over the next five years, reducing the wholesale return by 10 bps.
  - PE fund flows for 4Q14 were below levels year-over-year. According to Preqin, 16 funds closed and a total of $12.7 billion capital was raised compared to 26 funds closed and $21.2 billion capital raised in 4Q13.

Outlook

- Increased deal flow is anticipated in 2015; however, the market is expected to remain competitive in a low-yield environment.
- Fitch expects steady performance in the upcoming year for LatAm infrastructure, with a deceleration expected in Brazil and Chile and optimistic growth in Mexico and Columbia.
- Moody's and Fitch maintain a stable outlook on European transportation infrastructure. However, tariffs will likely remain flat due to the low inflation environment and competitive pricing.

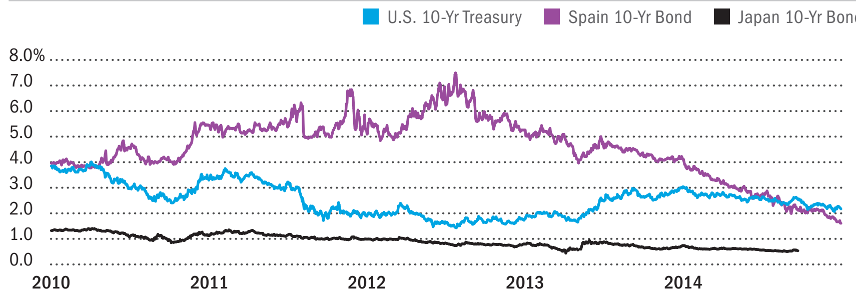
[1] Items are as of 11/30/14; [2] Items are as of 10/31/14

Key Market Metrics

	QTD	Previous QTD	6 Months	1 Year	3 Years	5 Years
U.S. Pop. Growth from '00	**12.6%[1]**	12.4%	12.2%	11.9%	10.3%	8.7%
U.S. Inflation Rate (Y-o-Y)	**1.3%[1]**	1.7%	2.1%	1.5%	3.0%	2.7%
Y-o-Y U.S. Real GDP Growth	**N/A**	2.7%	2.6%	3.1%	1.7%	-0.2%
U.S. Deficit as % of GDP	**N/A**	3.1%	3.6%	2.5%	7.2%	9.8%
U.K. Deficit as % of GDP	**N/A**	3.7%	3.8%	3.6%	4.0%	5.9%
FTSE Utilities*	**475.9**	460.7	482.4	N/A	362.3	376.5
FTSE Constru./Manufact.*	**615.0**	632.3	692.2	N/A	436.1	487.0
U.S. Inv. Priv. Structures**	**N/A**	$513B	$504B	$482B	$415B	$377B
Freight Transport Index	**121.8[2]**	121.4	118.8	119.1	115.7	101.6

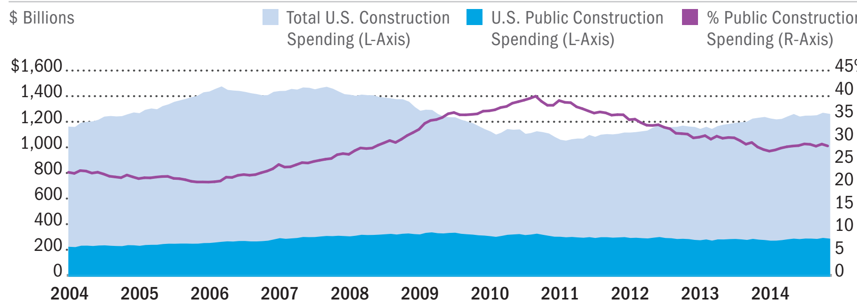
* Global, Total Return Index; ** Total investment ($) in non-residential structures in the U.S.

10-Year Benchmark Government Bond Yields by Country



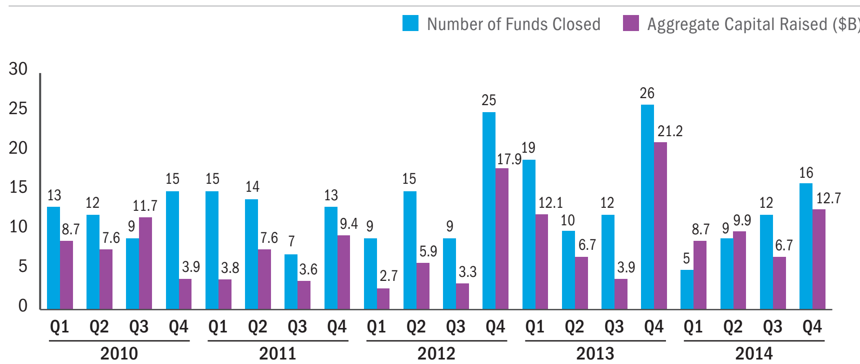
Source: U.S. Treasury, Banco de España, Ministry of Finance Japan, Haver Analytics

10-Year U.S. Construction Spending



Source: U.S. Census Bureau, Haver Analytics, TIAA-CREF analysis

Unlisted Infrastructure Fundraising by Year



Source: Preqin Infrastructure Spotlight

Timberland Market Overview

Market Review

- U.S. timber prices remain mixed in 4Q14.
  - Southern pine sawlog prices grew only modestly from the prior year, while pulpwood prices remained healthy.
  - U.S. Pacific Northwest log prices saw declines from early 2014 due to softer demand from China and Japan; however, early 2015 prices appear healthy.
  - Log prices are likely to be steady into 2015, with primary challenges being high log inventories in China, lower Japanese construction activity, and modest U.S. residential construction levels.
- Despite slower home construction, Chinese softwood lumber is up 5% on a continued increase in imports and buildup of inventories. China is also importing more wood products from Russia as a result of Russia's weaker currency.
- Homebuilder confidence rose, despite flat housing data.
  - U.S. housing continues its slow recovery, meanwhile housing starts are up more than 15% year-over-year.
  - In November, new home sales declined modestly and missed consensus estimates. Homes priced below $200k jumped 4.6% year-over-year, while homes priced from $500–750k jumped 21% year-over-year.

Outlook

- Timberland is seeing significant deal activity heading into 2015, especially among REITs and TIMOs. Though average 2014 deal size was lower compared to 2013 (a year that saw a few very large sales), total deal flow was strong.
  - In 2015, deal flow is expected to continue as timberland valuations are aggressive in core markets. Many timber REITs and TIMOs, with plentiful access to capital, are expected to target larger deals.
  - According to RISI, the outlook for homebuilding is favorable as a result of accelerating U.S. economic conditions and low energy prices. However, tight mortgage availability and weak household income still persist.

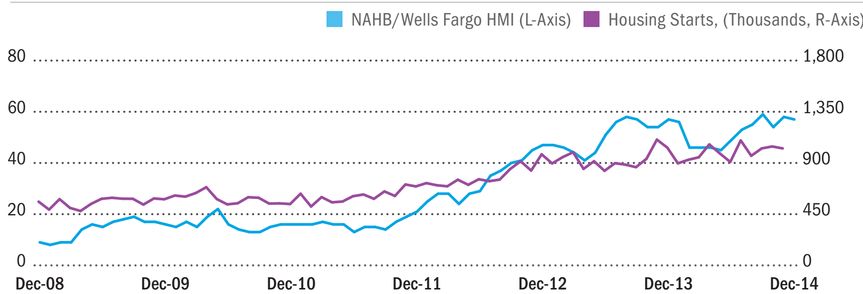
[1] As of 12/26/2014. [2] As of 11/30/2014.

Key Market Metrics

	QTD	Previous QTD	6 Months	1 Year	3 Years	5 Years
Total Res. Construction[1]	**$358B**	$352B	$356B	$369B	$256B	$254B
Housing Starts, SA (Vol)[1]	**1,028k**	1,028k	909k	1,034k	694k	581k
Building Permits (Vol)[1]	**1,052k**	1,031k	973k	1,022k	697k	664k
U.S. S. Sawtimber Index	**N/A**	$25.23	$25.66	$24.01	$22.59	$26.47
CME Lumber ($/1,000BF)	**$331**	$333	$335	$360	$247	$205
NBSK U.S. Pulp Index	**$1,026**	$1,030	$1,020	$948	$971	$780
Paper&Paperboard Prod.*[1]	**6,502k**	6,682k	6,626k	6,685k	6,795k	6,832k
Industry Capacity Use (%)[1]	**72%**	71%	71%	72%	61%	53%
World Timber Index	**$1075.15[2]**	$1,049	$1,044	$993	$587	$609

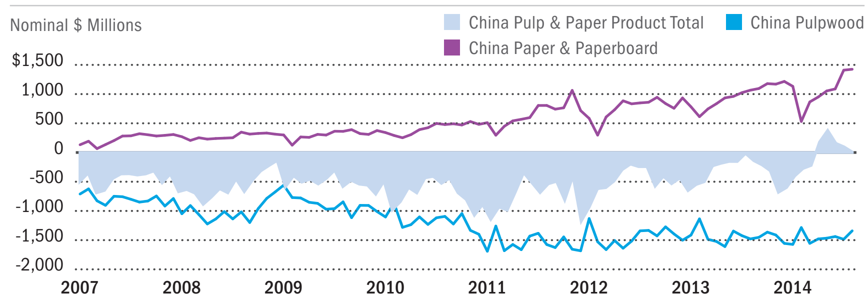
* U.S. Total Production, in Tons

Builder Confidence vs. Housing Starts



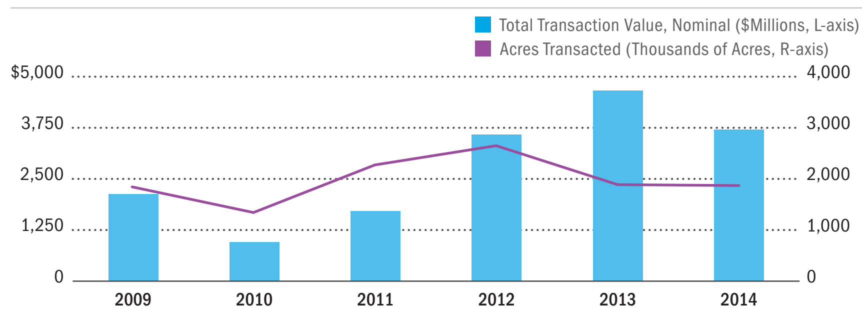
Source: U.S. Census, National Association of Homebuilders, Haver Analytics, TIAA-CREF analysis

China Pulp & Paper Products Trade Balance



Source: China General Administration of Customs, Haver Analytics, TIAA-CREF analysis

Total U.S. Timberland Transactions, Value and Volume



Source: RISI, TIAA-CREF analysis

Agriculture Market Overview

Market Review

- Alongside the world's ever-increasing population and improving dietary patterns, the global agriculture sector continues to see considerable growth in demand for crop output, creating the need for increased and more efficient production. Opportunistic, agriculture-focused private equity fund managers are seeking capital for potential investments that can generate attractive risk-adjusted returns for long-term investors.
  - There are 34 ag funds in the market seeking almost $14 billion in aggregate capital with TCGA II being the largest (source: Preqin).
- The traditional rainfall seasons have begun in California and Australia.
  - The rainfall season in California has gotten off to a good start with the Northern California Index recording precipitation of 22.8 inches or 132% of the typical average as of year-end while many of Australia's key agricultural regions have reported above average rainfall to start the season as well.
- China and Australia finalized a major free trade agreement that will reduce or eliminate tariffs on many agricultural imports to China.
- The USDA revised 2014 U.S. farm income expectations to $97.3 billion from a 3Q14 estimate of $113.2 billion due to depressed prices and increasing crop production expenses.
  - Although down almost 25% from the 40-year high income in 2013, 2014 farm income is projected to be $12.3 billion above the ten-year average.

Outlook

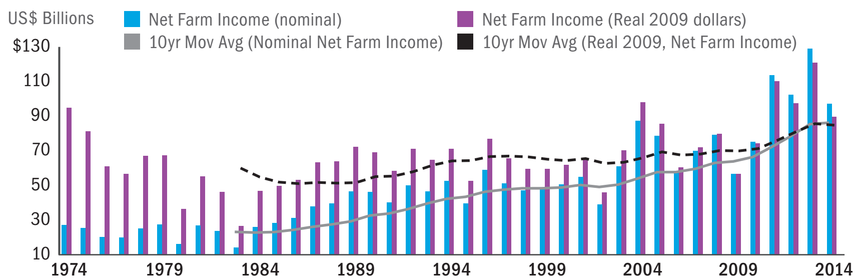
- Despite higher U.S. and global corn and soybean stocks on record row crop harvests, many major agricultural grains and oilseeds experienced a slight price recovery to close the year.
  - Although corn and soybean prices stabilized, absent a weather event, prices are expected to remain soft throughout 2015.
  - Global sugar production is expected to decline for the third consecutive year on weak Brazilian production, and 2015 global stocks are projected to fall for the first time since 2010 on strong global demand, which should support prices higher in the coming years.
  - A strong U.S. dollar will continue to act as a headwind for commodity prices, but should offer improved export competitiveness to international producers.
  - Tree nut and wine grape prices remain elevated supported by strong consumer demand in the U.S. and internationally.
- Total U.S. major field crop acreage is forecast to decline for the first time since 2011 as marginal land falls out of production due to the lower priced environment.

Key Market Metrics

	QTD	Previous QTD	6 Months	1 Year	3 Years	5 Years
Corn ($/bu)	**$3.97**	$3.21	$4.24	$4.22	$6.46	$4.14
Soybeans ($/bu)	**$10.19**	$9.13	$14.00	$13.12	$11.98	$10.40
Wheat ($/bu)	**$5.90**	$4.78	$5.65	$6.05	$6.53	$5.41
Sugar ($/100 lbs)	**$14.52**	$15.48	$16.62	$16.41	$23.30	$26.95
Cotton ($/100 lbs)	**$60.27**	$61.96	$79.21	$84.64	$91.80	$75.60
Ethanol ($/gallon)	**$1.63**	$1.59	$2.12	$1.91	$2.20	$1.95
S&P GSCI Agri. Index	**329.7**	302.8	367.5	358.4	415.3	346.0
CRB Foodstuffs Index	**371.6**	423.2	450.2	364.7	432.0	340.8
FAO Food Price Index*	**192.6**	192.7	208.9	206.2	213.3	180.9

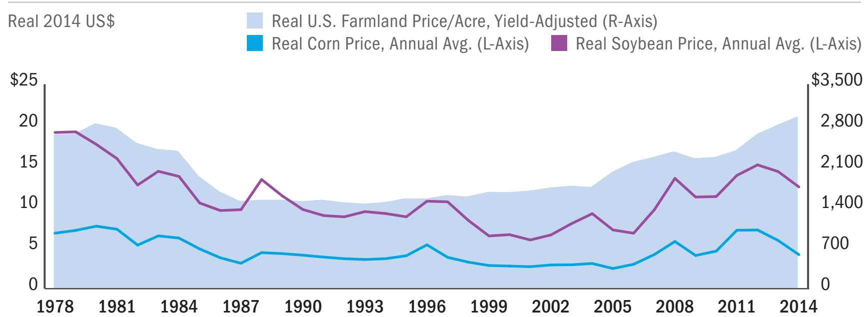
* Most recent value as of 11/30/2014

U.S. Annual Net Farm Income



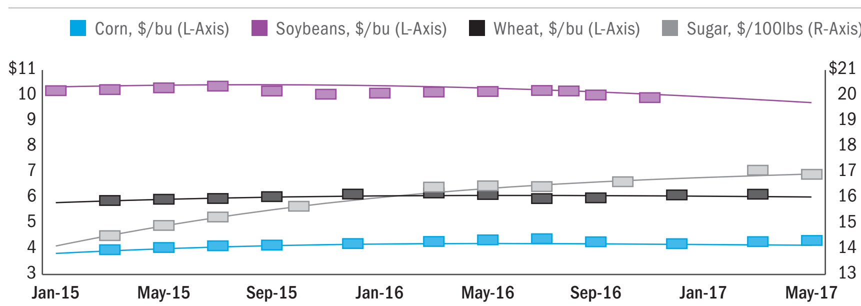
Source: USDA ERS, TIAA-CREF analysis

Average Annual Crop Prices and Yield-Adjusted U.S. Farmland Values



Source: USDA, Haver Analytics, TIAA-CREF analysis

Futures Curve — Key Agricultural Commodities



Source: USDA, Haver Analytics

Please note alternative and commodity investments may be subject to the risks of leverage, speculative trading, volatility and political risk. Natural Resources and Infrastructure Investment Quarterly Highlights: Fourth Quarter 2014 is prepared by TIAA-CREF Asset Management and represents the views of TIAA-CREF's Global Natural Resources and Infrastructure Investment team as of January 2015. These views may change in response to changing economic and market conditions. Past performance is not indicative of future results. The material is for informational purposes only and should not be regarded as a recommendation or an offer to buy or sell any product or service to which this information may relate. Certain products and services may not be available to all entities or persons.

Data is as of 12/31/2014 unless noted otherwise.

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