TIAA-CREF Asset Management

Natural Resources & Infrastructure Quarterly

First Quarter 2014

What's Inside

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

- While the global economy faced a number of major geopolitical and global challenges, a long, cold winter may have had the most impact on economic performance in the first quarter.

- Medium and long term bond spreads continue to tighten; emerging market FX markets recover from pressure; housing up despite employment woes; energy commodities mixed; agriculture commodities up.

- Natural gas storage levels reached their lowest point since 2004 due to a long and cold winter. Storage re-fill season (April through October) will be important to monitor as the industry will look to replenish gas supplies.
- An Obama administration study found that completion of the northern piece of the Keystone pipeline would have little impact on global climate changes.

- Demand remains strong for established infrastructure assets, helping to drive valuations to increasingly high levels in developed markets.
- Australian infrastructure assets remain a focus of the industry amidst a wave of government opportunities, while global construction companies compete for a range of P3 opportunity in the U.S.

- U.S. timberland returns were positive for 2013, with improved forest product fundamentals and increased investor confidence in the sector.
- Housing starts at year-end 2013 increased 18.3% year-over-year, with inventories of new homes available for sale at historical lows after low levels of construction through the years of the recession.

- Agricultural commodity prices trended upward in 1Q, driven by both weather and geopolitical events. A new Farm Bill was passed, providing continued risk management solutions for U.S. farmers.
- Chinese state-owned grain trader, Cofco, acquired controlling stakes in two global agricultural commodities traders.

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Economic Commentary

Amidst a quarter that included the continuation of U.S. tapering-driven emerging market currency pressure, escalation of international tensions in Ukraine, the unveiling of a fresh, largely unknown Fed Chief, and the continuation of the fragile global economic recovery, the dominant economic theme in the U.S. might just have been the weather.

The Fed's Beige Book report released in March mentioned "weather" 119 times and blamed poor job growth in several of its districts on Mother Nature. Indeed, the National Weather Service's "Accumulated Winter Season Severity Index" recorded this season as one of, if not the worst, winters in nearly fifty years. Severity varied slightly by city, with Detroit and Chicago amongst the hardest hit by snowfall, while uncharacteristic ice storms and droughts hit the southeast and west, respectively.

Economists were largely split on how much of the lackluster data should be attributed to the weather. For instance, in December the economy added just 84,000 jobs, less than half of the average over the previous two years. In March, employers hired 192,000 people, a sizable rebound but less of a snap-back than some expected if there truly was a weather-related lag. The Fed, collecting and analyzing the data, elected to maintain and not accelerate its tapering program, as some anticipated the newly appointed Federal Reserve Chair, Janet Yellen, would do.

While puzzling jobs, retail, and manufacturing data confounded the U.S., emerging markets saw a replay of last summer. With certain markets being highly reliant on foreign capital, fears of the winding down of U.S. monetary stimulus led to a withdrawal of funds from markets viewed as vulnerable. Dubbed the "fragile five" last August, the Turkish Lira, South African Rand, Brazilian Real, Indonesian Rupiah, and Indian Rupee faced depreciation against the U.S. dollar in the early part of the quarter. The five countries have since implemented varying degrees of reforms, with some countries, particularly India, rallying significantly while others, such as Brazil, continue to lag as they weigh policy options. If nothing else, the fragile five have clearly diverged.

In a reminder of the aptness of the term "global economic recovery," data in the first quarter indicated the long-anticipated Chinese growth slowdown may finally be taking place, while Russia's annexation of Crimea during Ukraine's political transition has further weighed on economic forecasts. Despite this, the IMF's latest World Economic Outlook, published shortly after quarter end, forecasts global growth to average 3.6% in 2014, up from 3% in 2013, and the IMF predicts strengthening to 3.9% in 2015. The organization notes that this growth is being supported by a stronger recovery in the United States, with some private economists forecasting record growth ahead. Time will tell if the weather holds.

Markets Summary

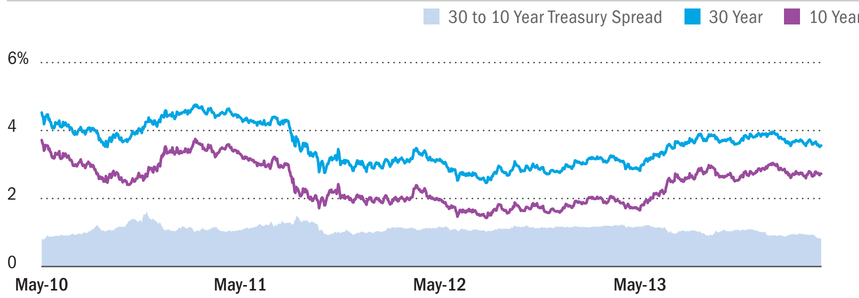
Key Market Metrics, as of March 31, 2014

	QTD	Previous QTD	6 Months	1 Year	3 Years	5 Years
Key Market Prices						
U.S. 10 Year Treasury	**2.73%**	3.04%	2.64%	1.87%	3.47%	2.71%
U.S. 30 Year Treasury	**3.56%**	3.96%	3.69%	3.10%	4.51%	3.56%
Initial Unemployment Claims (SA)	**332k**	344k	308k	388k	401k	670k
Unemployment Rate	**6.7%**	6.7%	7.2%	7.5%	9.0%	8.7%
CB Consumer Confidence	**82.3**	77.5	80.2	61.9	63.8	26.9
S&P 500	**1,872**	1,848	1,682	1,569	1,326	798
FX Markets*						
USD-CAD	**1.11**	1.06	1.03	1.02	0.97	1.26
Euro-USD	**1.38**	1.38	1.35	1.28	1.42	1.33
USD-BRR	**2.26**	2.36	2.22	2.02	1.63	2.30
AUD-USD	**0.93**	0.89	0.93	1.04	1.04	0.69

* FX table displays 1 unit of 1st currency in terms of 2nd currency (e.g. 1 USD is currently equivalent to 1.11 CAD)

Bond Markets
Despite continued modest domestic and global economic growth, the U.S. Federal Reserve's indications that interest rates may rise sooner than expected caused a reaction in bond markets. The spread between the 10-year and 30-year Treasuries narrowed to the tightest range since May 2010, closing 1Q 2014 at approximately 83bps. Spreads had widened as far as 160bps over that time. With persistent low inflation and mixed signals from key domestic economic data, the long end of the curve continues to find strong support, while Fed policy indications have a greater influence on the short end of the curve after the prolonged period of historically low rates.

10 & 30 Year U.S. Treasury Bond Yields

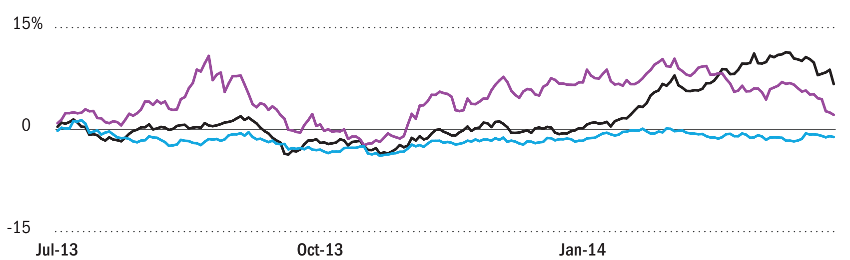


Source: U.S. Federal Reserve Board, Haver Analytics, TIAA-CREF analysis

FX Markets
The USD held stable in 1Q 2014, even in the face of the evolving messages of the Federal Reserve. Embattled emerging market currencies, including the Brazilian Real and Indian Rupee, recovered some after approaching their recent lows at the end of 2013. The economic actions against Russia for the country's geopolitical actions in Ukraine sent a shock to the market for the Russian Ruble, with the currency depreciating sharply through the quarter. More broadly, the markets remain attuned to the actions of key policy brokers, including the Federal Reserve, European Central Bank, and Bank of Japan, to see what they will do in the face of continued low inflation.

USD Broad FX Index & vs. Brazilian Real, Russian Ruble

July 1, 2013 – March 31, 2014 Performance

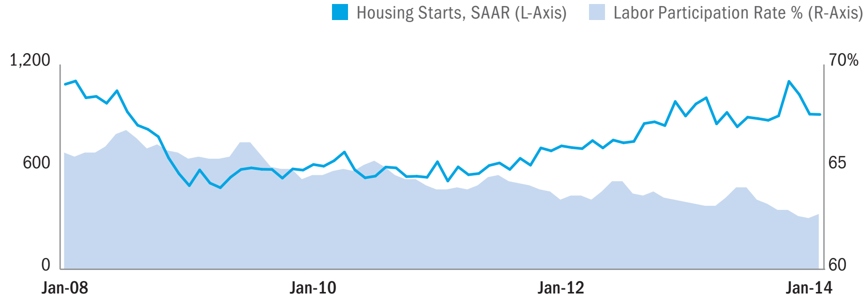


Source: U.S. Federal Reserve Board, Haver Analytics, TIAA-CREF analysis

Markets Summary

Housing and Employment
Along with higher interest rates, modest employment and wage growth continue to present headwinds to both housing and a broadening of the economic recovery. Housing continues to moderately strengthen, however this will not translate to a wider uptick in economic activity without more jobs and higher incomes. Although unemployment numbers are close to thresholds previously stated by the Federal Reserve, this is heavily attributable to lower labor participation. This is why the Federal Reserve did away with a link between unemployment rate and monetary policy in 1Q, leaving more discretion to qualitative factors and broader data analysis.

Housing Starts vs. Labor Participation Rate



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

Energy
The energy complex increased slightly during 1Q, with natural gas being the largest factor. The long and cold winter resulted in a spike in natural gas prices, before they settled back down by March to levels experienced at the start of the quarter. The Federal Reserve's decision to formally begin tapering toward the end of 4Q has thus far not materially impacted the diversified energy complex. The improved GDP and employment figures seen during the quarter could serve as a catalyst moving forward.

S&P GSCI Energy Spot Index

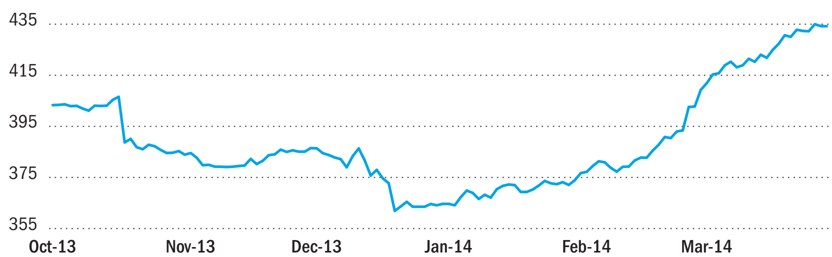
December 1982 = 100

Source: Standard & Poor's, Haver Analytics

Agriculture
Modest appreciation of the USD and interest rates have relieved some of the macroeconomic pressure on agri-commodities. Nonetheless, prices generally remain softer than the elevated levels of 2013. This moderation was widely anticipated, and net returns for producers remain healthy. Along with the favorable government support for U.S. farmers, as a result of the new Farm Bill, the industry is positioned well going forward. U.S. farmland is forecast to continue to benefit from this strong backdrop in 2014, albeit with more tempered valuation increases anticipated.

CRB Foodstuffs Index

1967 = 100



Source: Commodity Research Bureau, Haver Analytics

Energy Market Overview

Market Review

- A long and cold winter helped push natural gas prices to record levels in some parts of the country during the quarter, while storage levels reached their lowest marks in over a decade.
- Natural gas prices were very volatile in late January through the beginning of March, but have since stabilized, closing the quarter at $4.37/mmbtu, nearly the same as at the start of the year.
- Amidst the tensions in Ukraine, there were some rumblings that the U.S. could potentially serve as an alternative to Russia as a natural gas supplier to Europe. However, the first U.S. natural gas is not expected to enter European markets until 2016. Russia's actions in Ukraine have certainly added impetus to Europe's diversification strategy and its interest in the U.S. natural gas market going forward.
- The WTI / Brent spread has tightened from around $12 at the start of the quarter to under $7, almost entirely driven by an increase in WTI, with Brent prices remaining flat on the quarter.
  - One reason for this was the opening of the southern portion of the Keystone XL pipeline, which began delivering oil from Oklahoma to the Texas region in late January.
  - An analysis of the Keystone pipeline by the Obama administration was released around the same time, finding that the project would not likely change the amount of oil ultimately removed from Canadian oil sands, suggesting that building the northern section of the pipeline would have little impact on global climate changes.

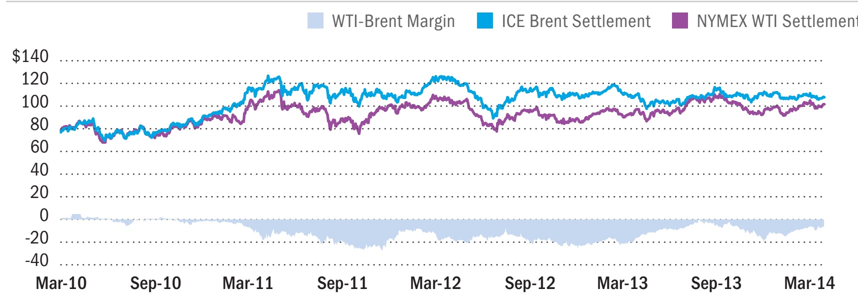
Outlook

- While the cold weather experienced during the first quarter led to unpredictability in natural gas markets, prices have since stabilized, with the futures curve remaining relatively flat.
  - It will be important to monitor natural gas supply response during the "fill" season to see if supplies can be adequately replenished before the onset of next winter.
- Natural gas-fired power plants accounted for just over 50% of new utility-scale generation capacity added in 2013, although this was less than half the capacity added in 2012.

Key Market Metrics

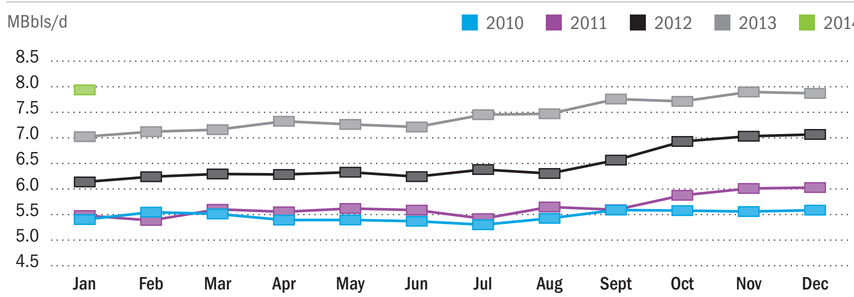
	QTD	Previous QTD	6 Months	1 Year	3 Years	5 Years
NYMEX WTI Crude Oil	**$101.58**	$100.32	$102.33	$97.23	$106.72	$49.66
ICE Brent Crude Oil	**$107.76**	$112.18	$110.02	$110.02	$117.36	$49.23
WCS Crude Oil	**$81.57**	$75.55	$70.43	$82.88	$91.22	$43.31
Henry Hub Nat. Gas	**$4.37**	$4.41	$3.56	$4.02	$4.39	$3.78
Alberta Nat. Gas	**$4.47**	$3.82	$1.82	$3.38	$3.58	$3.61
Wtd. Avg. $/kWh in U.S.	**N/A**	$9.88	$10.43	$9.71	$9.55	$9.65
OPEC Prod. (Mbbls/d)	**N/A**	29.9M	30.0M	30.6M	29.1M	28.2M
U.S. Oil Imports (Mbbls/d)	**7.4M**[1]	7.8M	7.9M	7.5M	9.2M	9.4M
U.S. Gas Output (Bcf/d)	**85.2B**[2]	84.9B	82.2B	81.8B	77.8B	73.0B

Crude Oil Exchange Prices



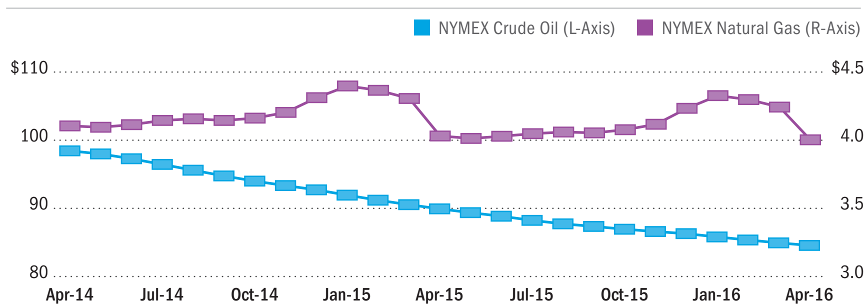
Source: Haver Analytics, TIAA-CREF analysis

U.S. Crude Oil Production



Source: Energy Information Administration, Haver Analytics

Futures Curve – Crude Oil & Natural Gas



Source: Haver Analytics

[a] West Texas Intermediate; [b] Brent Crude
[1] Items are as of 2/28/14; [2] Items are as of 1/31/14

Infrastructure Market Overview

Market Review

- Continued demand for established infrastructure assets in politically stable markets has kept valuations high and competition intense in the infrastructure market.
- The U.K. government laid out its funding plan for its infrastructure investment program through 2020, with electricity generation and transportation garnering the majority of the focus.
  - Regulatory changes in the U.K. water and gas sectors have also prompted multiple secondary sales by foreign investors.
- Balance sheet pressures are forcing European strategics to sell portions of their premier North American assets and seek financial partners for their future pipeline.
- Australian infrastructure market remains active amidst a wave of privatizations of some of the country's largest infrastructure assets, including the sale of the Port of Botany and Kembla last year, along with the ongoing sale processes of the Port of Newcastle and Queensland Motorway. These long term, stable assets are well received in the market.
- In February, Public Private Partnership (P3) legislation was introduced in Kentucky as the state plans to become the 34th state to enact P3 statues. Multiple U.S. and global construction companies are currently competing for about 10–15 active P3 opportunities in various states, some of the most notable being Maryland's Purple Line light rail project, Ohio's Portsmouth Bypass, and Florida's I-4.
- Prominent infrastructure funds continue to seek capital commitments in the market, including Alinda Global Core Infrastructure Fund, First Reserve Energy Infrastructure Fund II and Morgan Stanley Infrastructure Partners II. Through 1Q as of March 5, two funds have closed with $2.8B in aggregate capital.

Outlook

- Competition for the core infrastructure assets is expected to remain high in 2014 as institutional and strategic investors look to deploy more capital. Valuation for quality brownfield assets is expected to remain high, with some concern of assets becoming mispriced.
- Government infrastructure spending continues to decline in developed economies. In the U.S. budgetary constraints have pushed government spending on infrastructure as a percentage of GDP to a 20-year low (1.7%). Private investment partnerships are expected to play a key role in helping to fill the funding gap.

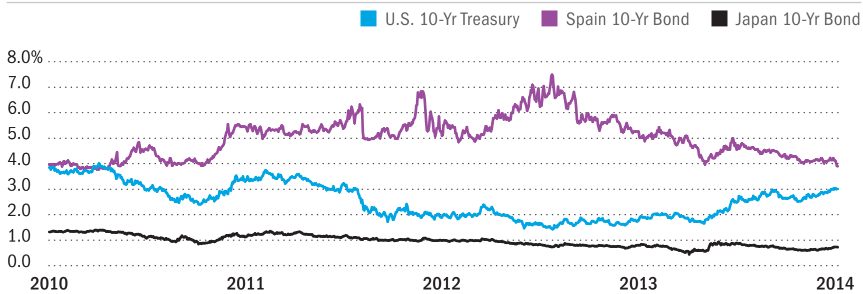
[1] Items are as of 2/28/14; [2] Items are as of 1/31/14

Key Market Metrics

	QTD	Previous QTD	6 Months	1 Year	3 Years	5 Years
U.S. Pop. Growth from '00	**12.0%[1]**	11.9%	11.7%	11.3%	9.7%	8.0%
U.S. Inflation Rate (Y-o-Y)	**1.1%[2]**	1.5%	1.2%	1.5%	2.7%	-0.4%
Y-o-Y U.S. Real GDP Growth	**N/A**	2.6%	2.0%	1.3%	2.0%	-3.5%
U.S. Deficit as % of GDP	**N/A**	2.5%	4.3%	4.3%	9.0%	9.8%
U.K. Deficit as % of GDP	**N/A**	3.7%	4.1%	4.3%	3.2%	4.4%
FTSE Utilities*	**408.8**	415.5	407.9	394.7	387.0	284.2
FTSE Constru./Manufact.*	**618.4**	628.8	597.7	548.5	561.3	295.7
U.S. Inv. Priv. Structures**	**$473B**	$473B	$471B	$429B	$341B	$508B
Freight Transport Index	**113.6[3]**	116.8	114.8	113.7	109.2	95.9

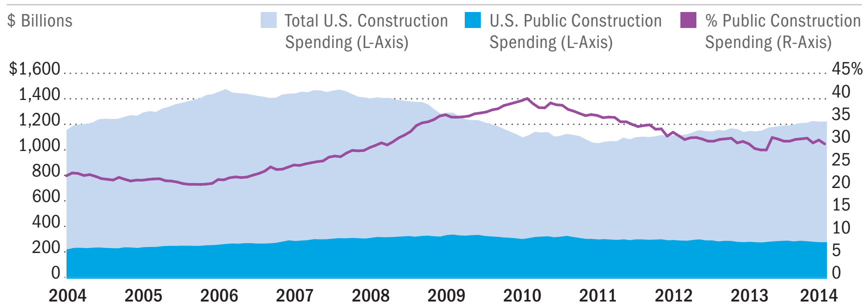
* Global, Total Return Index; ** Total investment ($) in non-residential structures in the U.S.

10-Year Benchmark Government Bond Yields by Country



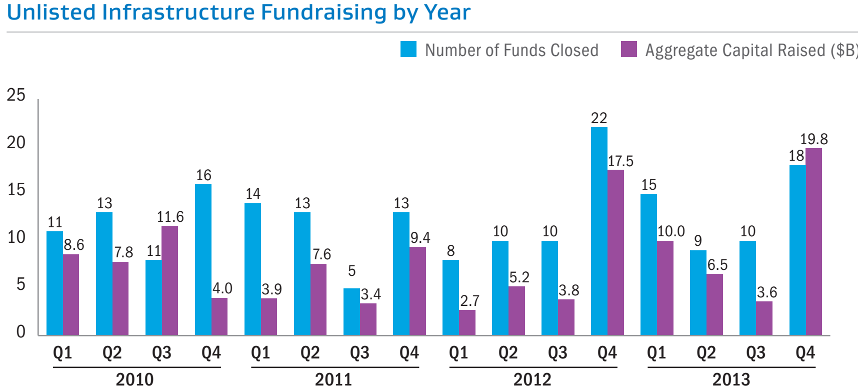
Source: U.S. Treasury, Banco de España, Ministry of Finance Japan, Haver Analytics

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

- NCREIF's Timberland Property Index (U.S.) posted strong total annual returns of 9.7% for 2013, with the Pacific Northwest producing the highest regional returns. Increases in U.S. timberland values were driven by an improving housing market, robust export demand for logs, lumber and pellets (led by China), and modest reductions in the discount rate for property valuations.
  - Total housing starts at year-end 2013 increased 18.3% year-over-year to 923,400, and inventories of new homes available for sale remain near 50-year lows in 1Q 2014.
  - U.S. log and lumber export volumes to China increased 43% and 19%, respectively, in 2013. U.S. pellet producers exported 48% more in 2013 than the year prior, 14% above RISI forecasts. Additionally, China's pulp and paper product trade deficit widened in 2013 and 1Q 2014.
  - Reductions in discount rates for core timberland property valuations reflect higher confidence in wood products and timberland markets. Total U.S. timberland transaction value was approximately 27% higher in 2013, despite decreases in deal flow and transacted acreage.
- Hancock Natural Resource Group agreed to terms with Chilean board manufacturer Masisa SA for the purchase of approximately 153,205 acres of Chilean timberland for $203.6 million (approximately $1,329/acre).

Outlook

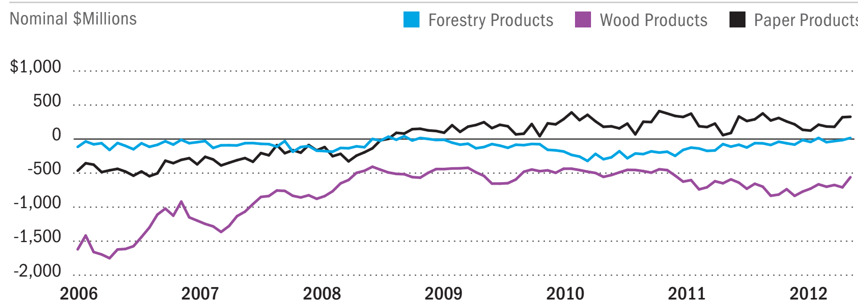
- Growth in China's housing market — driven by urban migration, reconstruction of existing urban housing, and socialized housing projects — will continue to be a key growth driver for the global log and lumber trade.
  - This should continue to support prices from the Pacific Northwest and New Zealand in the near-term. In the long-term, other global supply regions are expected to provide diversified supply resources for the Chinese market.
- The U.S. housing market and economy continue to improve at a steady pace, although several factors (including rising interest rates, home prices, and moderate job growth) continue to impede more rapid growth.

Key Market Metrics

	QTD	Previous QTD	6 Months	1 Year	3 Years	5 Years
Total Res. Construction	**$365B[1]**	$364B	$346B	$325B	$245B	$255B
Housing Starts, SA (Vol)	**907k[1]**	1,024k	873k	1,005k	600k	505k
Building Permits (Vol)	**1,014k[1]**	991k	974k	890k	583k	513k
U.S. S. Sawtimber Index	**N/A**	$25.14	$24.01	$24.61	$25.94	$27.40
CME Lumber ($/1,000BF)	**$336**	$360	$344	$391	$303	$171
NBSK U.S. Pulp Index	**$1,020**	$990	$948	$901	$985	$657
Paper&Paperboard Prod.*	**6,597k[1]**	6,705k	6,646k	6,593k	6,974k	6,202k
Industry Capacity Use (%)	**69%[1]**	72%	72%	69%	60%	51%
World Timber Index	**$1,051**	$1,082	$993	$931	$936	$332

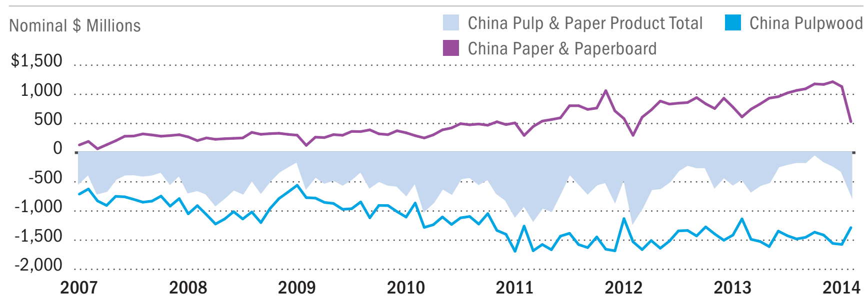
* U.S. Total Production, in Tons

U.S. Trade Balance in Key Timber Categories



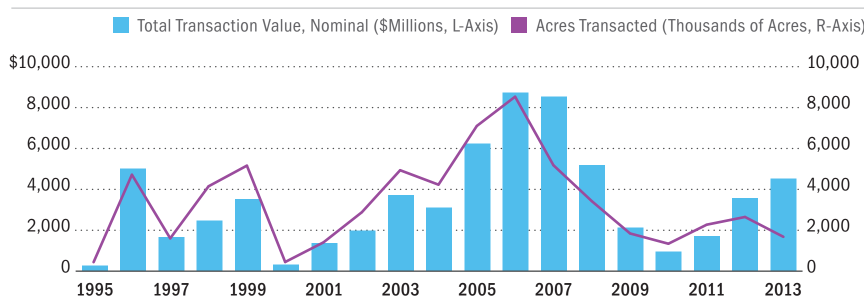
Source: U.S. Census Bureau, Haver Analytics

China Pulp & Paper Products Trade Balance



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

Total U.S. Timber Transactions, Value and Volume



Source: RISI, TIAA-CREF analysis

[1] Items are as of 2/28/14; [2] Items are as of 1/31/14

Agriculture Market Overview

Market Review

- Agri-commodity prices have been firm-to-improving in 1Q 2014 on strong global demand led by China, constrained supply resulting from global weather conditions, and risk premiums for grains due to political unrest in the Black Sea region.
  - Chinese imports of soybeans in 1Q were 41% higher than a year earlier and could reach a record 70.5 million tons in the 2013/14 season.
  - Drought in California, Australia, and southern Brazil are putting pressure on producers and increasing upside volatility for prices.
  - Political unrest between Russia and Ukraine, the 5th and 6th largest global exporters of wheat and 7th and 3rd exporters of corn, respectively, has induced a risk premium on grain prices.
- A new five year Farm Bill was passed in 1Q. The bill is viewed as neutral-to-positive for U.S. farmers and the agricultural industry.
  - The repeal of direct payments to farmers is mitigated by increased funding and improvements to the risk management programs (crop insurance), helping to maintain satisfactory "safety nets" for farmers.
- Cofco Corp, a Chinese state owned company, acquired a 51% stake in Dutch grain trader, Nidera, for $1.2 billion, and a 51% stake in the agribusiness unit of Singapore-listed commodities trader, Noble Group Ltd., for $1.6 billion.
  - These strategic acquisitions position Cofco to improve its control over food security issues and indicates its desire to create a global trading company analogous to Japan's Marubeni, or the four major ABCD grain trading companies (Archer Daniels Midland, Bunge, Cargill and Louis Dreyfus).

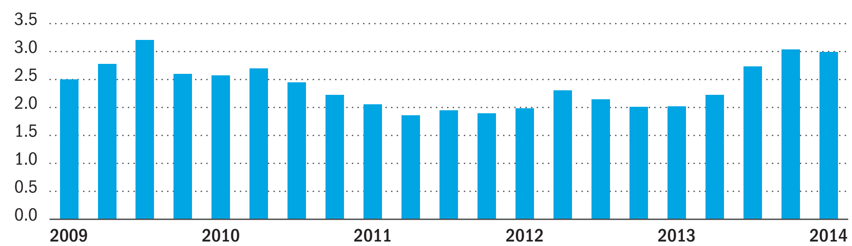
Outlook

- Price movement for most agri-commodities is expected to remain volatile.
  - U.S. soybean acreage is forecast to increase 6%, reaching an all-time high as the soybean-to-corn price ratio weighs on farmers' planting decisions. However, continued strong Chinese demand could counterbalance downward pressure on prices.
  - Corn supplies have improved considerably, although downward revisions to U.S. production and planted acreage could continue to support prices.
  - The probability of El Niño weather events adversely affecting the Brazilian sugarcane harvest is likely to keep sugar prices elevated.
- Farmland markets are indicating greater signs of stability compared to growth observed in prior years.

Key Market Metrics

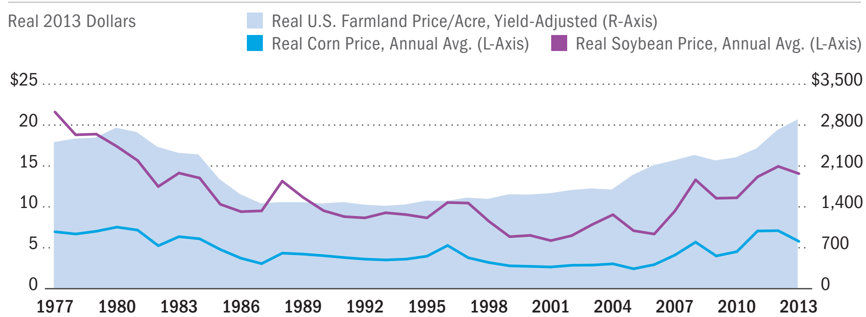
	QTD	Previous QTD	6 Months	1 Year	3 Years	5 Years
Corn ($/bu)	**$5.02**	$4.22	$4.41	$6.42	$6.93	$4.05
Soybeans ($/bu)	**$14.64**	$13.12	$12.83	$13.91	$14.10	$9.52
Wheat ($/bu)	**$6.97**	$6.05	$6.78	$6.64	$7.63	$5.33
Sugar ($/100 lbs)	**$17.77**	$16.41	$17.48	$17.69	$27.11	$12.67
Cotton ($/100 lbs)	**$93.52**	$84.64	$86.11	$87.39	$200.23	$46.47
Ethanol ($/gallon)	**$3.46**	$1.91	$1.95	$2.36	$2.66	N/A
S&P GSCI Agri. Index	**400.9**	358.4	373.4	447.1	529.7	285.0
CRB Foodstuffs Index	**432.4**	364.7	404.8	410.2	500.8	294.8
FAO Food Price Index	**212.8**	205.8	203.7	214.8	234.6	145.7

Soybean-to-Corn Price Ratio, Quarterly Averages



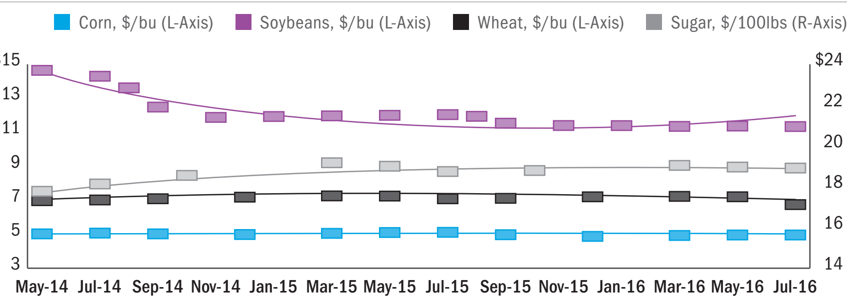
Source: U.S. Department of Agriculture, Haver Analytics, TIAA-CREF Analysis

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



Source: USDA, Haver Analytics, TIAA-CREF analysis

Futures Curve - Key Agricultural Commodities



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