



QUARTERLY U.S. RURAL ECONOMIC REVIEW

Transitions Ahead

This quarterly update is prepared by the Knowledge Exchange Division and covers the key industries served by CoBank, including the agricultural markets and the rural infrastructure industries.

Inside this Issue...

Cautiously Optimistic, Still2
Macroeconomic Outlook2
U.S. Agricultural Markets3
Grains, Oilseeds, and Ethanol3
Animal Protein and Dairy6
Other Commodities13
Farm Supply17
Rural Infrastructure18

Key Points:

- *The U.S. economy is expected to rebound going forward from the sharp contraction in the first quarter, bolstered by resilient consumer spending, a resumption of the housing recovery, inventory rebuilding, and robust job and income growth.*
- *Continued favorable crop developments and record-high animal protein and dairy prices are signaling transitions ahead for all agribusiness sectors.*
- *USDA acreage and yield estimates suggest record corn and soybean production in 2014, which, if realized, would replenish supplies for both crops to much more comfortable levels.*
- *The U.S. livestock industry has entered a new era of higher output prices, lower production costs, and favorable margins for producers and their input suppliers.*
- *Longer term, profitability in the livestock industry will be determined in large part by the resilience of consumer demand, both in the domestic and international markets, in the face of record high beef prices.*
- *Global dairy product prices plummeted during the second quarter. U.S. prices will eventually have to follow suit, although tight domestic stocks for a number of dairy products will provide a counterweight to the downward pressure.*
- *The growing season for specialty crops got off to a good start in March, but this year's crops will likely be disappointing due to the unrelenting California drought and the increasingly severe damage caused by citrus greening to Florida's citrus crops.*
- *The two major stories within the power and energy industries are the EPA's proposed CO2 emission ruling and the market's inability to replenish natural gas storage levels.*
- *The Federal Communications Commission (FCC) made headlines during the second quarter as it addressed a number of controversial, complicated issues that touch all communications providers and users.*

Cautiously Optimistic, Still

Wide-ranging uncertainties continue to cloud the horizon, but market sentiment remains cautiously optimistic about the global economy's growth prospects for 2014-15. The advanced economies are expected to carry the growth momentum in the near-term. In the U.S., severe winter weather and a sharp drawdown in business inventories led to a substantial first quarter drop in real GDP. The U.S. economy is expected to rebound sharply in the second quarter, but its ability to sustain economic growth in excess of 3 percent will require substantial, steadfast gains in business fixed investment spending. Europe edged out of recession, but its real GDP growth in the first half was subpar. Japan's first quarter real GDP growth approached a stunning 7 percent annual rate, but much of this growth spurt was the result of a sharp increase in consumer spending prior to the implementation of new consumption taxes. China's growth remained in the 7 percent range but a number of other emerging markets – Argentina and Turkey, for example – continue to record substantial current account deficits that left their currencies under significant downward pressure.

Crop development is now the critical concern within the agriculture sector. Planting of the major crops is virtually complete, and over 70 percent of the nation's corn and soybean crops are rated good to excellent. Winter wheat is not doing as well, however, with about 44 percent of the crop rated poor to very poor. Crop developments in other regions of the world are also progressing well, and potentially record grain and oilseed crops seem to be emerging. However, this upbeat assessment could change quickly as the crops are in a critical stage of development, but the grain markets continue to weaken in light of the favorable growing conditions. At the same time, supplies of current crops, particularly soybeans, remain very tight; and the price transition to new crop supplies will likely be volatile.

The animal protein and dairy sectors continue to enjoy near record prices and vastly improved margins as feed costs have declined sharply. The production responses to the record high prices have been muted by the lowest

“*Crop development is now the critical concern within the agriculture sector.*”

cattle inventory since the early 1950s, the Porcine Epidemic Diarrhea Virus (PEDv) reducing pig litters, and the reduced level of the broiler layer flock. Plus, much to everyone's surprise, domestic and foreign consumers have not exhibited significant resistance to these record-high price levels.

Macroeconomic Outlook

The cautious optimism about global economic growth reflects policy responses to a wide range of economic conditions, particularly among the advanced economies. European central banks are still pursuing policies to stimulate growth as the EU region emerges from recession and the major European banks continue to rebuild their balance sheets. The European Central Bank is trying to promote investment by further cutting interest rates and bringing the interest rate on deposits into negative territory, effectively charging banks to keep their excess reserves in the institution. Growth in Japan was spurred by increased personal consumption ahead of the imposition of a consumption tax to ease budget deficits. The Japanese government is prepared to provide further targeted stimulus if growth rates slow in the months ahead. Concerns for a hard landing in China seem to have eased although growth rates have slowed because of weakness in their major export markets in Europe. They also have capacity for further stimulus if needed. Some of the caution in the outlook relates to geopolitical developments in the Middle East and Ukraine that could dampen current global assessments.

While the U.S. experienced a significant contraction in economic growth in the opening months of 2014, most of this weakness resulted from the harsh winter weather and sharp drawdown in business inventories. Consumer demand remained resilient despite those weather conditions, and there should be some bounce back as

the year progresses. Consumers are more comfortable with their current debt levels, home prices have been rising, and the equity market continues to climb. Job growth has begun to accelerate, and unemployment levels are edging lower. Inventory rebuilding should be a positive factor going forward. But what's needed for sustained U.S. growth momentum in excess of 3 percent going forward is a re-set of business expectations accompanied by strengthening business fixed investment spending. Meanwhile, the rebound in the housing sector appears to have stalled as builders are reluctant to build inventory in an uncertain economic environment. The Federal Reserve has continued to taper its purchases of U.S. Treasuries and mortgage-backed securities and should be out of the market within the next few months. In anticipation of this transition in U.S. monetary policy, the foreign exchange value of the U.S. dollar is expected to strengthen in coming months.

U.S. Agricultural Markets

Continued favorable crop developments and record-high animal protein and dairy prices are signaling transitions ahead for all agribusiness sectors. The crops markets are transitioning from a period of extremely tight supplies to one of growing grain and oilseed inventories. At the same time, the animal protein complex is at an early stage of what promises to be an aggressive expansion of meat supplies. Milk production has been growing steadily worldwide, and a more favorable feed and forage cost environment is likely to accelerate this pattern. China remains the biggest wildcard on the demand side as it remains an active buyer in the global grain and oilseeds markets and continues to expand its presence in the global dairy trade.

These transitions in the commodity markets will extend into all of the related supply chains as the new pricing paradigm works its way through the marketplace. In recent years, we have seen major shifts in producers' demands for "speed, space and risk management options." This new price paradigm will accelerate the pace and scope of the supply chain realignments.

Grains, Oilseeds, and Ethanol

In the closing weeks of the second quarter, U.S. grain and oilseed prices gave back most of the gains that were made earlier in the year. Record low domestic soybean stocks continue to dwindle, and the pace of corn and wheat exports has declined as a result of favorable new crop conditions and more competitively priced foreign supplies. USDA acreage and yield estimates suggest record corn and soybean production in 2014, which, if realized, would replenish supplies for both crops to much more comfortable levels. We will remain in a weather driven market for pricing signals especially as the crop gets closer to pollination.

Corn

After some consternation about a late start to spring, corn planting progressed quickly and finished ahead of the five-year average. Early crop condition reports have indicated the highest ratings in 20 years. Current corn yield estimates would be a record high, and many analysts think there is room for upward revisions. After several years of disappointing corn yields due to poor weather, expectations are high that this year could break the streak and usher in another record crop, despite fewer acres being planted. However, a corn crop's potential is largely determined in July and August, so it will be several weeks until more reliable figures come into view.

The bearish market tone resulting from increasing supplies in the U.S. is further supported by the global situation. Many import-dependent countries replenished grain stockpiles in 2013/14 and thus, are expected to seek fewer bushels in the coming year. Current conditions in key foreign growing areas are also favorable, increasing the probability that global production estimates could be revised higher through the summer.

Logistics, and rail capacity in particular, will be front and center for elevator operators given the current outlook for additional bushels over last year's crop. Producers and elevator operators in the Northern Plains and Upper Midwest are particularly uneasy, given the severe impacts of poor rail service during 2013/14. Basis for corn,

wheat, and soybeans plummeted in the northern states as elevators were unable to secure enough trains to keep up with demand. The severe winter weather contributed significantly to the problem, and as the spring thaw arrived and export demand slowed, rail service returned to normal. However, there is widespread concern that a larger crop and more oil and gas production in the Bakken could cause grain shipping disruptions to be as bad or worse in 2014/15.

Speculative short positions soared during Q2, as bulls finally yielded to the fundamentals and gave way to momentum. Price movements going forward will be dictated by weather conditions. If those conditions remain favorable, downside price risk through the fall is substantial, with the chance of sub-\$4 December prices well within reason.

Soybeans

The relentlessly bullish soybean market of 2013/14 has finally shown some weakness. After a torrid pace of exports for much of the current crop year, market sentiment has turned as foreign demand for U.S. beans has subsided and analysts have become more confident that supplies will be sufficient to bridge to new crop supplies this fall. Basis levels have dropped, as has the historically wide price spread between August and November futures contracts. In mid-June, the old crop-new crop spread fell to a four month low over the course of just two weeks of trading. Behind much of this market

reversal is the mounting belief in the trade that the size of the 2013/14 crop was underestimated. Record imports of soybeans from Canada and South America have also helped to allay fears that demand could outstrip available supply in the U.S.

The same favorable growing conditions that are depressing corn prices are also affecting soybeans. And the USDA's June 30 acreage report added 3.3 million acres to its initial March estimate for soybean acreage, furthering the market's bearish tone. (See Exhibit 1.) If record large U.S. acres are accompanied by record yields, domestic stocks will easily go from the tightest on record to multi-year highs in just one season. This is the market's expectation as we move into Q3, but soybeans have an even later key development period than corn, so the crop size is far from certain.

Ample U.S. soybeans in the coming year would also lead to a larger crush volume. Soybean meal (SBM) production is slated to increase moderately in the new crop year even as the well-supplied global market limits U.S. export opportunities. SBM will face stiff price competition in a world market that will be better supplied with animal feeds than it has been in several years. As a result, USDA expects full season SBM prices to fall 23 percent in 2014/15.

Interestingly, the 2014/15 U.S. soybean oil (SBO) situation appears to be more bearish than SBM in every sense except the one that matters – price. Soybean oil is not expected to get an additional boost from biodiesel producers going forward, like it has in the past. The biodiesel producer's credit was eliminated in 2013, and the current Renewable Fuel Standard (RFS) proposal, if approved, would plateau the blending requirements for the biofuel. The

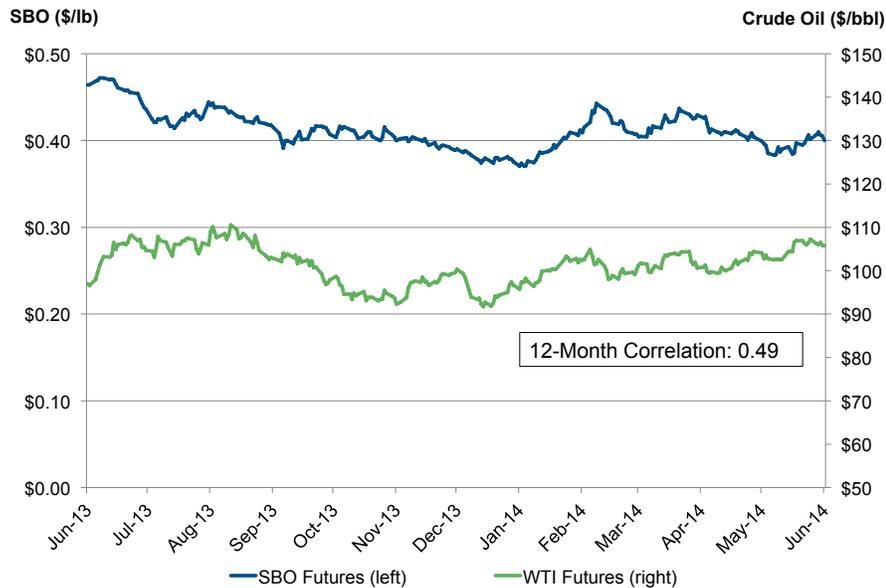
Exhibit 1. Prospective vs. Actual Acreage Plantings

	Prospective Acreage Plantings*				USDA June 30 Acreage Plantings Report*			
	Corn	Soybeans	Wheat	Total	Corn	Soybeans	Wheat	Total
2014	91.7	82.2	55.8	229.7	91.6	84.8	56.5	232.9
2013	97.3	77.1	56.4	230.8	97.4	77.7	56.5	231.6
2012	95.9	73.9	55.9	225.7	97.2	77.2	55.7	230.1
2011	92.2	76.6	58	226.8	92.3	75.2	54.4	221.9
2010	88.8	78.1	53.8	220.7	87.9	78.9	53.6	220.4
2009	85	76	58.6	219.6	87	77.5	59.2	223.7

* Million acres.

Source: USDA

Exhibit 2. Crude Oil and Soybean Oil Prices



Source: CME

U.S. is expected to import 20 percent less SBO in the coming year, but it will not be enough to offset the increase in domestically produced stocks. Fortunately for soybean processors, SBO and other vegetable oil prices are closely correlated with petroleum prices, and as such are unlikely to fall far if at all from current levels. (See Exhibit 2.)

Globally, the soybean market is poised for its second consecutive year of rebuilding in 2014/15. The USDA estimates that world soybean ending stocks will be 45 percent higher in 2014/15 than they were just two years prior in 2012/13. Brazil and Argentina are expected to again plant record large areas to soybeans in the coming year, and China's modest increase in imports will not be enough to offset the rising tide of world supplies. Many factors could alter this scenario in the coming months, but shifting weather patterns hold the greatest potential for disrupting current estimates.

Most meteorologists expect that we will shift from a neutral weather pattern to an El Niño in the next few months. This is usually favorable for U.S. crop production, but can lead to very dry conditions in South America and other oilseed producing regions. Even with

the El Niño caveat, however, soybean prices are expected to decline along with corn through the summer if growing conditions remain favorable. And if record yields accompany record domestic acreage, futures prices could fall from their lofty \$15+ highs earlier this year to \$11 or lower by harvest.

Wheat

The dichotomy between the U.S. and world wheat situations is widening. The U.S. stocks-to-use ratio fell to a six year low in 2013/14, while the world stocks-to-use finished unchanged from the year before. Early projections for 2014/15 indicate that world stocks will edge higher again, while U.S. inventories will be trimmed further.

A harsh winter in the U.S., combined with worries about Ukraine and Russia, added a significant price premium to the wheat market in the early months of 2014. But falling prices in the overall grain complex and easing concerns about Ukraine dragged prices down in May and June, erasing the premium of more than \$1.00 per bushel that had been added to the market. Concerns about the U.S. hard red winter (HRW) crop were valid, however. The drought and late freezes that hit the Plains were followed up by heavy rains prior to harvest, all of which damaged the crop. The wet conditions delayed harvest in many areas, and may have contributed further to quality issues. Spring wheat is also off to a slow start due to torrential June rains in the Northern Plains and Upper Midwest.

Less foreign production is expected in 2014/15, but the slight decline in output will be more than offset by a larger carry-in and less trade. U.S. wheat will be largely priced out of the world market, so exports are forecast to tumble in 2014/15. And with much cheaper corn and soybean meal available, wheat feeding should fall to a multi-year low. Thus, despite the second consecutive year of disappointing U.S. HRW crops, both the domestic and world stocks-to-use ratios should climb in 2014/15 – the

one from 24 to 27 percent, and the other from 21 to 22 percent, respectively. The 2014/15 season average price is projected to rise slightly year over year (YoY), from \$6.87 to \$7.00.

Ethanol

U.S. ethanol production and stocks climbed steadily in the second quarter; weekly output posted fresh highs and stocks inched closer to 2011 levels. Following the two-week price spike in late March and early April, ethanol futures swiftly fell more than \$1.00 per gallon, and then trended modestly downward through June. Although the price spread between ethanol and gasoline has widened since May, ethanol producer margins have remained favorable. Producer margins have been supported not only by resilient ethanol prices, but also by a record pace of distiller's dried grains (DDG) exports, and the highest volume of ethanol exports since 2011. On average, margins have ranged between \$0.25 and \$0.75 per gallon.

For the remainder of 2014, the ethanol industry faces an array of challenges and uncertainties. The June 20th deadline when the Environmental Protection Agency (EPA) was supposed to release the 2014 RFS blending requirements has come and gone. The industry now expects the ruling to be released sometime in July or August. RIN ethanol blending credit prices have moved from \$0.38 per gallon in early May to roughly \$0.60 as traders anticipate that delays could mean that the EPA's proposed blending requirements will be revised higher in the final ruling. This outcome would likely be positive for both the ethanol and biodiesel industries.

The ethanol industry is also being impacted by China's persistent rejection of corn and DDGs that contain the MIR 162 genetic trait. As part of the fallout, China has stated that they will no longer issue new permits for imported U.S. DDGs. Some analysts expect this stance to be short-lived, with China loosening the restrictions as its surplus inventories moderate. But if China's ban on new DDG import purchases remains in place for several months, it will undoubtedly hurt U.S. ethanol margins.

And lastly, ethanol producers will soon be operating in a market influenced by a much larger, and cheaper,

supply of domestic corn. The lower corn price will reduce feedstock costs but will also weigh down prices for all ethanol plant products including ethanol, DDGs, and corn oil. As a result, the direction of oil and gasoline prices will have a significant impact on ethanol plant margins. If gasoline prices slump, ethanol prices could be pulled even lower, causing operator margins to turn negative. Alternatively, if Middle East conflicts, or other market forces lift petroleum prices higher, ethanol producers will benefit.

Animal Protein Industries

The U.S. livestock industry has entered a new era of higher output prices, lower production costs, and favorable margins for producers and their input suppliers. This new mini-boom era will be the mirror image of what took place from about 2007 through mid-2013 when margins were often negative, producer balance sheets were eroding, and lenders closely monitored the health of their livestock accounts.

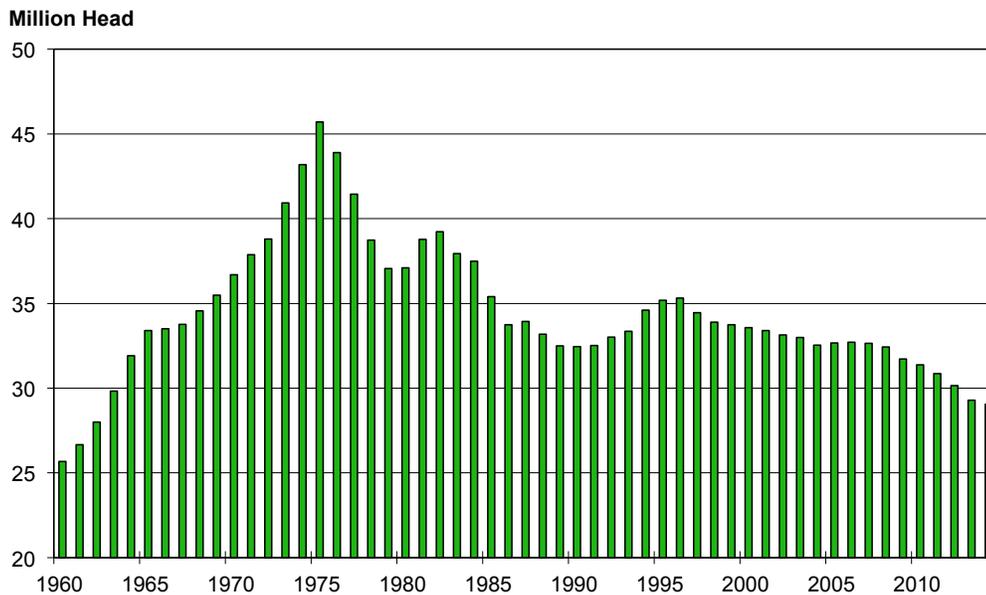
Going forward, the livestock industry's enhanced profitability is being propelled primarily by high animal prices combined with sharply reduced feed costs. In turn, the favorable operating margins will encourage the animal protein industries to expand over the next several years. The resulting increase in meat supplies will eventually lead to moderation in both retail meat prices and livestock prices, but it will take a while for these supplies to expand significantly. In the meantime, the combination of strong animal prices, weaker feed prices, robust foreign demand for U.S. animal products, and continued U.S. economic growth should support an excellent operating environment in the U.S. livestock sector.

Beef

The U.S. beef industry suffered the effects of both high feed prices and drought conditions over the last several years. In those bygone days, the run-up in production costs tipped operating margins into the red and spurred the nation's cow-calf operations to reduce the size of the U.S. "beef factory," shrinking the beef cow herd to a level not seen since the early 1960s. (See Exhibit 3.) On a per capita basis, the U.S. supply of beef is the lowest it's

Exhibit 3. U.S. Beef Cow Inventory

January 1, 1960-2014



Source: USDA

been since the early 1950s and will remain low through the latter part of this decade.

The dramatic decline in beef supplies has bolstered the prices of calves, fed cattle, and retail beef in 2014. Going forward, moderating feed grain prices, combined with improving moisture conditions, increased forage supplies, and record high calf prices will encourage cow-calf producers to start expanding their herds. However, it will take several years before this expansion produces significantly larger beef supplies and weaker cattle prices. In the meantime, cow-calf operations will continue to benefit from the market's widest margins in decades.

The key to changes in future beef supplies, and prices, is what takes place in the cow-calf production sector. The run-up in feed grain prices that began in the mid-2000s had an unprecedented impact on cow-calf operators' production costs and profitability. For example, data from the Kansas Farm Management Association indicate that total production costs for Kansas beef cow operations climbed from just over \$600 per cow in 2005 to more than \$1,000 per cow in 2013, an increase of nearly 70 percent. At the same time, their revenues were flat to declining until 2010, when smaller beef supplies started

to push prices higher. Even though revenues were increasing during the past several years, many cow-calf operations were still unable to cover all their production costs as recently as 2013.

Cow-calf operators' decisions about whether to expand hinge on profitability and availability of forage supplies. Production costs will decline sharply in 2014 compared to 2013 and could decline again in 2015 with a return to normal weather conditions across the U.S. Cow-calf

operators' margins have been excellent for the past year. The improved profit picture will encourage producers to begin holding back females from slaughter, especially if pasture and range conditions continue to improve in key beef producing states, leading to a gradual rebuilding of the nation's beef cow herd. However, reduced female slaughter in 2014 will not start to rebuild beef supplies until 2016 – and the supply increase in 2016 will likely be small. The real impact of herd expansion will not be felt until 2017 and beyond as cow-calf producers look for confirmation that feed grain prices will remain below the highs of recent years and that forage conditions will be adequate to support larger cow inventories. As a result, U.S. cow-calf operations should see sustained profitability through 2016.

The cattle feeding profit picture has also improved dramatically, with average feeding margins for yearling steers in the Southern Plains having increased to over \$100 per head in early 2014. The improvement in profitability is due to both strong slaughter cattle prices and declining feed costs as feeding costs of gain dropped from \$1.15 per pound in early fall 2013 to less than \$1 per pound in early spring 2014. Cattle feeders are margin

operators that benefit from reduced feed costs; but their costs for replacement cattle are surging, and as a result, their margins will tighten later in 2014 and into 2015.

Cattle feeders marketed 22.4 million head from U.S. feedlots in 2008, but those numbers have been declining since then. Using 2008 as a benchmark, industry feeding capacity exceeded actual cattle marketings by 4 percent in 2013. Looking ahead, available supplies of cattle suitable for placement on feed will decline over the next couple of years, leading to more competition among feeders to fill their feedlots. The result will be a tightening of cattle feeding margins by 2015 as cattle feeders compete against each other to fill feedlot bunk space and bid up feeder cattle prices. The beef processing sector faces a similar problem because processing capacity also exceeds the available supply of cattle. Processor margins will follow the typical seasonal pattern of peaking during the summer before falling back to year-earlier levels for the remainder of 2014 and into 2015.

Longer term, profitability in the cattle sector will be determined in large part by the resilience of consumer demand, both in the domestic and international markets,

in the face of record high beef prices. Beef exports have been growing and in 2013 finally exceeded the peak attained in 2003, prior to identification of BSE in the U.S. Although record-high beef prices could lead to modest declines in the beef export volume over the next couple of years, long-term export prospects will be tied closely to consumer income growth in importing nations. If consumer incomes continue to grow in key importing nations, beef export growth will resume when supplies start to increase. The unusually tight U.S. beef supplies per capita should support retail beef prices at record levels for the next several years, until supplies start to increase in 2017 and beyond.

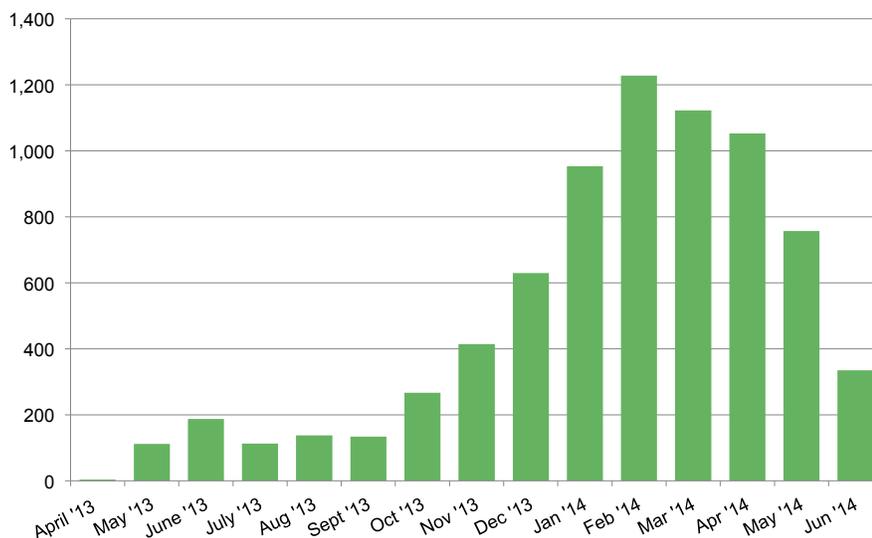
Pork

The unfolding saga of PEDv continues to cast a long shadow over the pork industry. In recent weeks, the number of newly confirmed cases of PEDv has fallen precipitously, tumbling to 335 cases in June from its peak of 1,228 cases in February. (See Exhibit 4.) However, the virus is known to be most virulent during the winter months, so hog farmers and other interested parties are unsure whether the recent decline signifies that the

virus has run its course or is instead a temporary respite. No one knows for sure, but the current consensus view is that the virus will flare up again next winter. In mid-June, the USDA granted a conditional license on a newly developed vaccine for PEDv. “Preliminary studies have been promising, and they’ve shown sufficient data that we think the vaccine will be effective,” said a spokesperson for the USDA. Everyone in the industry is optimistic that this vaccine will indeed prove to be effective, but time will tell.

Total pork supplies were down just 1 percent from a year ago during the first half of 2014 as 4 percent fewer animals arriving at market was largely offset by 3 percent heavier weights.

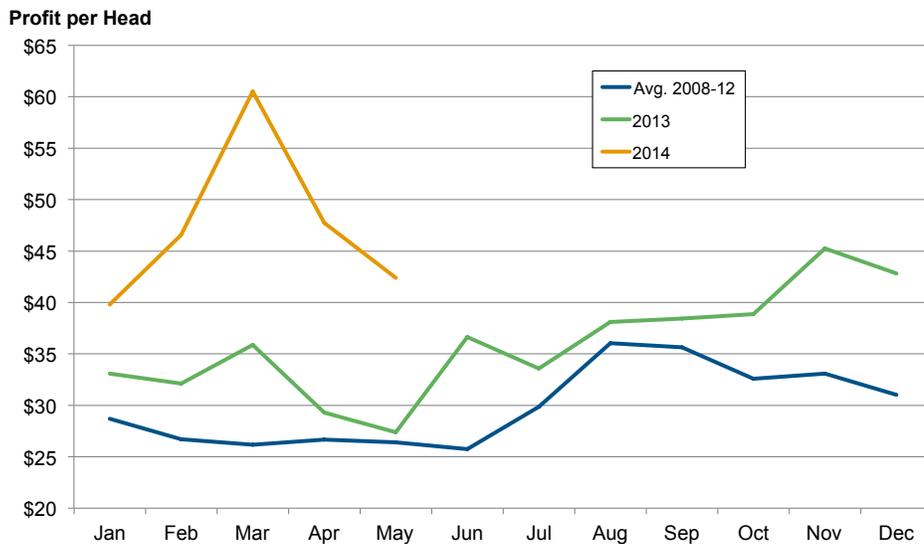
Exhibit 4. Number of New PEDv Cases By Month



Source: American Association of Swine Veterinarians

Exhibit 5. Pork Processors Margins

Cutout Value Minus Liveweight Hog Price, per Head



Source: USDA-AMS and USDA-ERS; Compiled by LMIC.

The full impacts of PEDv death losses from this past winter will result in further reductions of animal numbers in July through September. USDA inventory counts suggest that summer hog numbers will only be down about 4 percent, compared to a year earlier. However, many industry analysts believe that slaughter volume could drop by as much as 10 percent in August and September when the most extreme winter death losses become evident.

Pork producers have responded to record-high hog prices and record profitability by increasing market weights and thereby substantially compensating for death losses from PEDv. In May, hog weights were up nearly 5 percent compared to 2013, and are expected to continue on this path into the summer. If so, pork supplies this summer may not change much from year-ago levels. Fall pork supplies could actually expand somewhat as producers intend to farrow 2 percent more sows in spring 2014. Although PEDv may reduce litter size, high market weights may again compensate for smaller animal numbers. At this point, however, the actual impact of PEDv losses on summer and fall animal numbers is still a matter of speculation.

So far in 2014, pork supplies have been curtailed only 1 percent, yet hog prices have climbed more than 25

percent YoY. This combination suggests that demand is very strong due to the record-high beef prices, the smaller-than-expected increases in poultry supplies, and robust export demand. There could also be elements of speculative buying related to the uncertainty around actual death losses from PEDv.

Fewer hogs will be marketed this summer due to the heavy piglet death losses that occurred last winter. Reduced supplies of market hogs will likely result in potential plant shutdowns of one day a month in the early part of the summer. These shutdowns

could extend to two days a month by the end of summer. Fortunately, pork processor margins have been favorable so far this year, but overall profitability is expected to narrow as hog numbers become more restricted as the summer progresses. (See Exhibit 5.) Hog marketings should begin to recover to more adequate levels in the fall, allowing processors to run closer to full shifts.

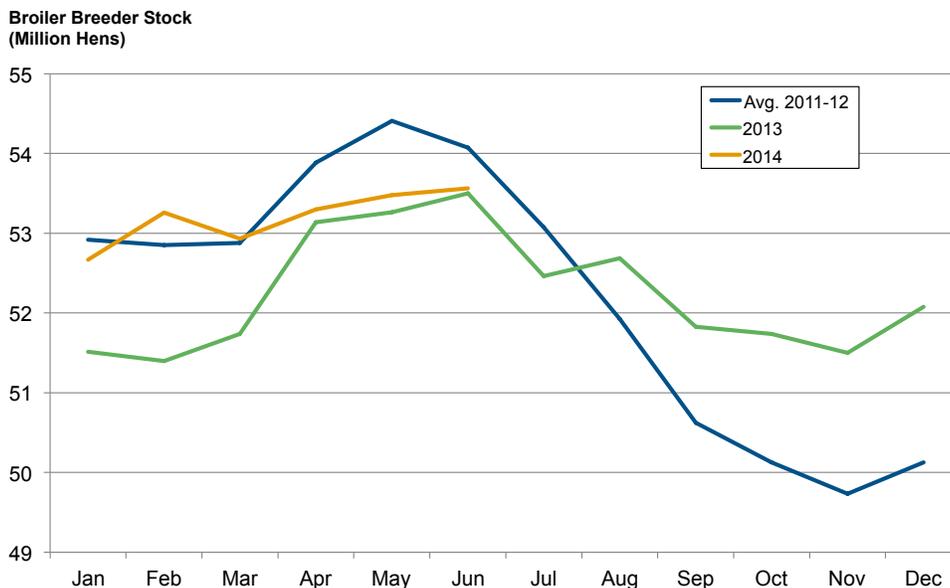
Record high prices will also help compensate pork producers for the death losses from PEDv. Total revenues for the entire industry are expected to reach a record high in 2014, with prices on a liveweight basis averaging about \$81 per hundredweight this year compared to a previous annual high of \$66 in 2011.

Margins for producers who have not been impacted by PEDv will exceed \$60 per head this year. Support for these margins will continue to come from high hog prices, low corn prices, and declining soybean meal prices. With these healthy margins, the current year should be a boon and balance sheet builder for the fortunate producers whose pigs have not been affected by PEDv.

The biggest negative economic impacts from PEDv will be felt by consumers in the form of record high retail pork prices. Analysts are expecting that these prices

Exhibit 6. U.S. Broiler Hatchery Flock

(Millions of Hens)



Source: USDA-NASS, *Chickens and Eggs*.

will be about 9 percent higher in 2014 than a year ago. Total revenues, margins, and profits for pork processors should thus reach healthy, if not record-high, levels this year. Paradoxically, the PED virus has bolstered the industry's overall financial results. However, those producers with heavy PEDv death losses may not share in those financial benefits due to lower numbers to sell even with higher prices. But producers with little or no PEDv death losses will gain the financial benefits of the disease through higher hog prices with little or no impact on number of hogs sold.

The expansion of the sow herd has already begun. Low sow slaughter numbers suggest that the industry began to move toward expansion starting in September 2013 when corn prices dropped sharply. Since then, sow slaughter has been down about 6 percent, compared to a year earlier. Breeding herd numbers are expected to rise a couple of percent above a year earlier by late summer and early fall. If PEDv can be better controlled, this projected increase in the breeding herd sets the stage for a 2 to 4 percent increase in pork supplies in 2015 with live hog prices likely moderating to the mid-\$60s. But total production costs are expected to remain between \$55

and \$60 per hundredweight, providing continued profitability through 2015.

Poultry

Broiler meat production is expected to grow a modest 1.4 percent in 2014 from a year ago, with a similarly small gain in 2015. While there is still uncertainty about the course of feed prices in the coming year, prices for a number of broiler products have been strengthening and the forecast for exports is again strong.

Producers have been somewhat constrained in their attempts to expand the

nation's chicken flock by the limited supply of broiler hatching eggs. When the broiler-producing industry reduced production in 2011 and 2012, the hatchery supply flock was also reduced, and it has not yet been rebuilt to prior levels. (See Exhibit 6.) The number of chicks being placed for growout each week during January-May 2014 averaged just 0.3 percent below what it was a year-earlier, and it looks like weekly chick placements will average slightly below year-ago through the summer and into at least early fall.

Although slaughter has stayed below record levels for the last several years, total pounds produced have not. A number of operations have switched to larger chickens to facilitate production of boneless, skinless (b/s) breast meat, and average liveweights across the industry have increased by 1 to 2 percent a year over the past six years. These higher weights and more deboning have generated record amounts of b/s breast meat production. In 2014, most of the increase in broiler meat production is expected to come from heavier average liveweights, as some producers continue to adjust their production mix to best meet customer needs. Going forward, broiler product demand is expected to be influenced

by a gradually improving domestic economy, continued strength in export demand, and the towering prices of beef and pork.

The limited expansion in broiler meat production and high prices for many beef and pork products have combined to push wholesale prices for many broiler products gradually higher. Wholesale prices for b/s breast meat averaged \$1.49 per pound in 2013, 15 percent higher than in 2012. An additional 4 percent hike is expected for 2014 to an average \$1.56 per pound for the year.

Prices for whole birds are following much the same pattern. After having increased 16 percent in 2013 to average \$0.97 per pound, prices for large-size whole birds are expected to gain approximately 9 percent in 2014 to average \$1.05 per pound for the year.

Prices for leg quarters have been mixed, higher at times as a result of large export shipments but lower at other times as a higher proportion of large chickens slaughtered provided additional dark meat. According to EMI Analytic's projections, fresh leg quarters

are expected to average \$0.46 per pound in 2014, approximately 4 percent lower than last year's \$0.48 per pound annual average.

Although feed costs are projected to remain above historical levels for the next several years, corn and soybean meal futures markets indicate that feed ingredient costs will be lower than those experienced in 2011-13. Analysts at EMI Analytics project that operators' financial results will remain significantly above the 1998-2000 index baseline until at least early 2016. Overall, integrators' margins are expected to remain strong, unless costs turn higher, demand stops improving, or production expands more significantly than expected. However, some companies will experience different results depending on sales mix, contract positions for inputs and sales, levels of export exposure, and other factors.

Dairy

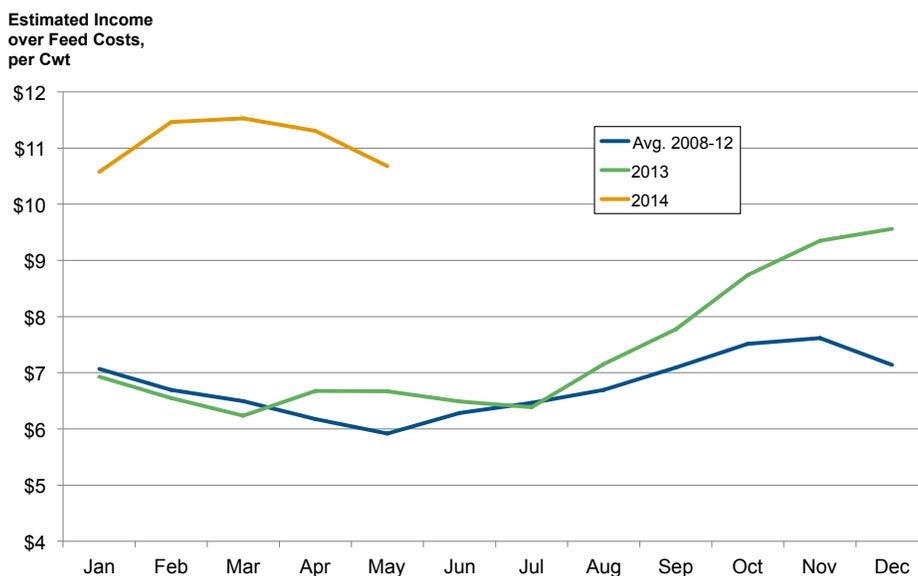
The first half of 2014 has seen the continuation of record-breaking highs in dairy product prices, prompting many analysts to ask how much longer this surge can last.

Most analysts agree that global milk supplies are on the rise, and that global dairy product prices will trend downward in coming months. There's much less consensus, however, about how quickly prices will decline, and how far they'll fall over the next 6 to 12 months.

Despite the higher milk prices and lower feed costs, U.S. milk production is growing at a subdued pace. The USDA projects a slow and steady increase in milk production for 2014 at a modest 0.9 percent YoY. This restraint seems to be a result of the extreme winter that constrained production in the Midwest region, and that was only partly offset by a disappointing spring flush that failed to revive supply. In

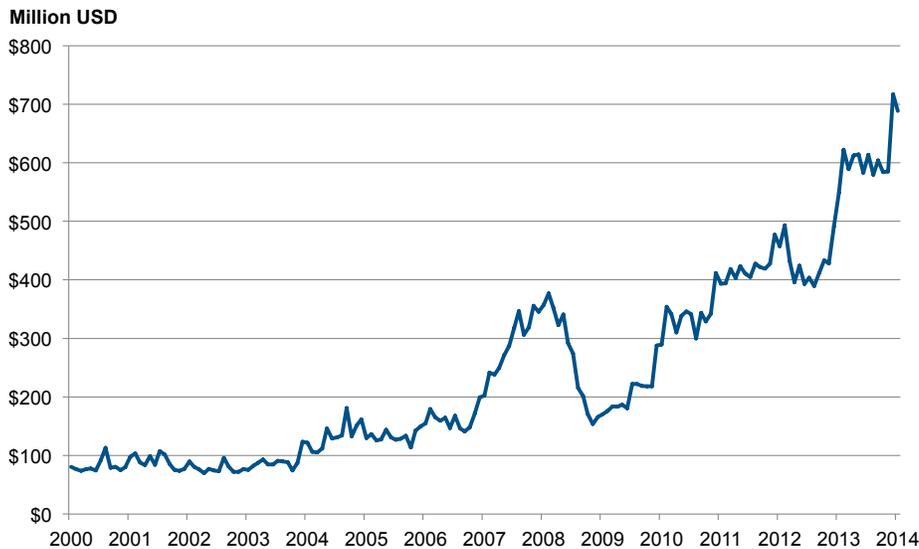
Exhibit 7. Dairy Producer Margins

Income over Feed Costs, All Milk



Source: University of Wisconsin, Understanding Dairy Markets.

Exhibit 8. Value of U.S. Dairy Exports, 2000-14 (Average Monthly Value)



Source: USDA-FAS

California, producer optimism has been reined-in by the unrelenting drought and its impact on locally-grown feed prices, and yet plans for increases in production and processing remain steady. The USDA projects milk production to grow by less than 1 percent from June 2014 to June 2015. In the longer term, however, U.S. production should continue to increase in response to the sustained period of favorable margins for the average dairy producer. (See Exhibit 7.)

At the farm level, the dairy herd has begun to expand. Live cattle futures are posting record-high contract prices with Q4 contracts trending even higher. Cow slaughter for the first five months of the year was 11 percent below a year ago, and replacement heifer costs are on the rise. Drought, harsh winter weather, low cull rates and high feed costs over the last several years have introduced a cattle scarcity that has propelled lean beef prices to towering heights, up nearly \$50 per hundredweight YoY. With the sharp decline in feed prices, the cost of raising a heifer calf to milk is now about \$1,500 per head less than it was last spring. Dairy farmers added 10,000 cows to their herds in May, bringing the total increase in the nation's cow herd to 50,000 head since it began to grow last December. Going forward, dairy farmers will continue to cull less while adding more cows. As a result, the cow herd size will

continue to grow, and so will overall milk production.

U.S. dairy exports through April have posted phenomenal growth. (See Exhibit 8.) For the first four months of the year, the YoY increases in export volumes amounted to 114 percent for butterfat, 39 percent for cheese, 11 percent for nonfat dry milk/skim milk powder, 11 percent for whey, 3 percent for lactose, and 70 percent for milk protein concentrate. On a total milk solids basis, U.S. dairy exports were equivalent to 16.2 percent of total U.S. milk production for the first four months of the year, up from

13.7 percent for the same period a year ago. In short, U.S. dairy exports have been on a tear.

Continuing gains in milk production in Oceania and the EU have begun to apply downward pressure on world prices. New Zealand production is expected to grow 2-3 percent in the 2014/15 season, which began in June; and this growth follows on the heels of the 9.5 percent hike that occurred in the previous season. Similarly, during the first four months of the year, EU milk production grew about 6-7 percent from a year ago. As a result, global dairy product prices plunged during the second quarter, falling 10-20 percent for different products. U.S. prices will eventually have to follow suit, although tight domestic stocks for a number of dairy products will provide a counterweight to the downward pressure. In light of the hefty gains in world milk production and the sharp declines in world prices, analysts are doubtful that the YoY gains in U.S. dairy exports will be as strong during the second half of 2014 as they were during the first half.

China continues to play a pivotal role in the global dairy market as a major importer. It alone accounted for an estimated 25 percent of total global dairy trade in the first quarter. Chinese demand continues to trend upward in tandem with the growth of its middle class –

a demographic of income-elastic dairy consumers that appears to be here to stay – with all of this growth accommodated by imported dairy products. In recent months, however, Chinese purchases from abroad appear to have gotten ahead of consumption. The resulting slackening of import volumes into Chinese ports, while worrisome, seems to be a hiccup that reflects a temporary overstock of the more shelf-stable components. Once those stocks are depleted, China should reappear in the marketplace hungrier than ever and seeking competitively priced product. Overall, fluid milk consumption in China is on the rise as consumer tastes evolve and products such as pasteurized and ultra-high temperature milk as well as fermented beverages continue to experience gains in popularity. Demand for lactose, whey protein concentrate, dry whey, skim-milk powder, whole-milk powder and cheese remains strong.

The EU's dairy industry remains a sleeping giant, held in suspended animation by production quotas that are set to expire in mid-2015. The lifting of the quotas is likely to alter the global competitive landscape, and exacerbate the downward trajectory of global prices. This correction in global prices is likely to occur while U.S. milk production is accelerating. If the downward trend hits EU and Oceania markets first, their exported dairy products will be that much more attractive to China while U.S. production starts to ramp up at a faster rate than the current 1 percent a year – a situation that might hit the U.S. dairy industry with a one-two punch.

Other Commodities

Rice

With a rebound in mid-South rice plantings in 2014 and good growing conditions through June, the outlook calls for solid yields and the largest domestic rice crop in four years. Total output is projected to be up 12 percent YoY, largely due to a 16 percent expansion in area planted. 2014 will signal a large boost in long-grain rice supplies, mostly grown in the mid-South. Long-grain production is estimated to be up 22 percent YoY. In contrast, medium- and short-grain production is forecast to be down 10

percent, and the smallest crop since 2008/09. Medium- and short-grain varieties are grown predominantly in California, where yields are usually the highest in the country. But this year, the persistent California drought is expected to crimp yields and output.

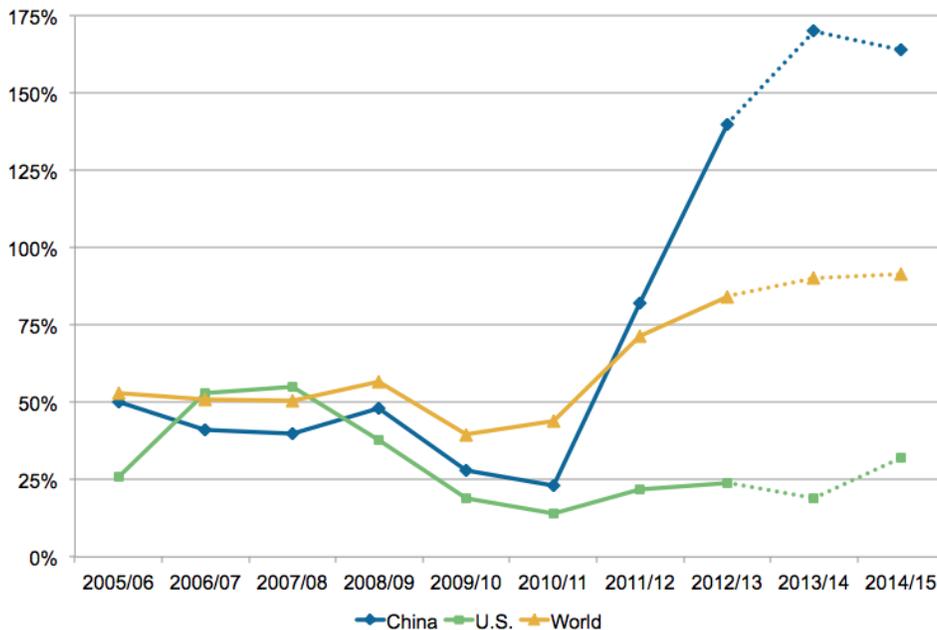
Consumption is likely to follow the production trends by class, with long-grain domestic use slated to rise by 11 percent and exports expected to expand by 16 percent from last year's 17 year low. U.S. rice will once again compete on price in the world market, following the least cost competitive year on record in 2013/14. Long-grain prices are forecast to tumble from a season average farm price of \$15.40 per hundredweight in 2013/14 to \$13.30 in 2014/15. Conversely, medium- and small-grain exports are expected to be on par with last year, at the lowest level since 2008, as prices could ratchet up more than \$1.00 per hundredweight to an average farm price of \$18.70.

Globally, Thailand is expected to reclaim the role of leading exporter in 2014/15. After a successful military coup in May 2014, the Thai rice subsidy program which paid growers more than 50 percent above market value (and almost bankrupted the country) was ended. The burdensome record-level stockpiles accumulated since 2011 are steadily being sold off. Total world production will set a new record for the fifth consecutive year, but consumption is also on the rise and should slightly more than offset the gain in supplies. Therefore, the global stocks-to-use ratio will fall marginally, while the U.S. stocks-to-use ratio is expected to climb from 15 percent to 16.2, the same level reached in 2012/13.

Cotton

The headline story for cotton continues to be the steadily increasing world inventories. (*See Exhibit 9.*) Global stocks and the stocks-to-use ratio are expected to rise for the fifth consecutive year in 2014/15. China, which has single-handedly elevated world cotton prices and inventories since 2011 through its purchasing program, will soon begin its second year of pull-back from those policies. China alone accounted for 43 percent of the world's cotton imports in 2012/13 and is estimated to account for a third in 2013/14. Looking ahead to 2014/15, that figure is

Exhibit 9. Cotton Ending Stocks as a Percentage of Annual Use



Source: USDA-FAS

projected to fall to 23 percent, as China slashes its imports by another 40 percent. With a record 2014 carry-in double that of 2012/13, China will not reduce the size of its ending stocks in the coming year. But it should succeed at keeping its stockpile from growing.

China's policy reversal will reverberate in the U.S. as exports will again fall in 2014, following a 20 percent decline in 2013/14. U.S. production is forecast to rise 16 percent as a result of larger planted area and the expectation that recent rains in western Texas will lower the abandonment rate considerably from last year. The persistent drought in Texas has kept the abandonment rate there historically high since 2010. The bump in domestic production is currently expected to push the U.S. stocks-to-use ratio from 19 percent in the current marketing year to 32 percent in 2014/15.

With U.S. supplies set to grow while world supplies remain abundant, cotton prices are precarious and likely to fall through harvest time if the favorable summer weather continues. The season average farm price is projected to decline from \$0.78 per pound in 2013/14 to \$0.70 per pound in 2014/15.

Sugar

The sugar markets, both domestic and global, appear to be relatively steady as they approach the final quarter of the 2013/14 marketing year (October-September). Domestic cane and beet production fell significantly in 2013. But the decline in output has been partially offset by a higher carry-in and larger imports. The domestic stocks-to-use ratio is estimated to fall to 15 percent in the current year from 17.9 percent a year ago.

Looking ahead to the upcoming crop year, fewer changes are expected. A slight decline in U.S. production should largely be offset by a commensurate

increase in imports, most of which will come from Mexico. Moderately higher prices in the U.S., spurred by the 2013/14 decline in supplies, will draw imports from the U.S.'s NAFTA and WTO trading partners. Preliminary estimates for the 2014/15 stocks-to-use ratio project a modest rise to 15.8 percent.

Globally, the 2014/15 marketing year will look much like 2013/14. Total production is expected to remain flat as increased output in China, the EU, India, and Thailand largely offset declines in drought-impacted Brazil, the U.S., and Mexico. The world stocks-to-use ratio is projected to fall slightly in 2014/15, from 27 to 26 percent. World prices are expected to remain relatively flat.

Specialty Crops

The growing season for specialty crops got off to a good start in March, but this year's crops will likely be disappointing, in varying degrees. Two problems loom large. One is the unrelenting California drought, and the other is the increasingly severe damage caused by citrus greening to Florida's citrus crops.

“*California’s drought persists
and shows no signs of easing.*”

California’s drought persists and shows no signs of easing. California has entered its third consecutive year of drought; and unlike past drought years, California’s major agricultural producing regions are facing significant water restrictions, with the exception of the Imperial Valley which draws its irrigation water mostly from the Colorado River. Late season rainstorms in February and March provided a slight improvement in reservoir levels across the state; but by the end of California’s rainy season in late April, the reservoirs were still only 61 percent of their historical levels – well below the levels needed to lift the state out of its drought conditions. According to the latest estimates, statewide water restrictions will reduce the supply of surface water to Central Valley agriculture by 6.5 million acre feet, a loss of about 33 percent from the normal supply.

At the same time, statewide growers have stepped up their reliance on groundwater, and increased pumping is expected to provide an extra 5 million acre feet of groundwater above what they would normally have drawn, partly offsetting the sharp curtailment of surface water. But this short-term relief comes at the expense of a drawdown of reserve groundwater storage along with a substantial increase in overdrafting of groundwater, which often leads to water-quality deterioration. Growers are hoping that this palliative will enable them to get through the year with minimal damage to their crops and that drought conditions will have lifted by next year. However, if the drought persists into 2015, the resulting damage to California’s crops then will be much more severe than it would be otherwise. In any event, state legislators have begun to discuss the possibility of imposing statewide regulations on the use of groundwater.

California’s specialty crops will all be adversely affected by the drought, but some crops will be harder-hit than others. The less profitable field crops such as corn silage, alfalfa, or other feed grains will be impacted the most, as many growers have elected to fallow much of their field crop acreage and divert the water that they would have used to irrigate these crops to other more profitable crops. Given the steep decreases in water allocations and the need to water the highly-profitable permanent

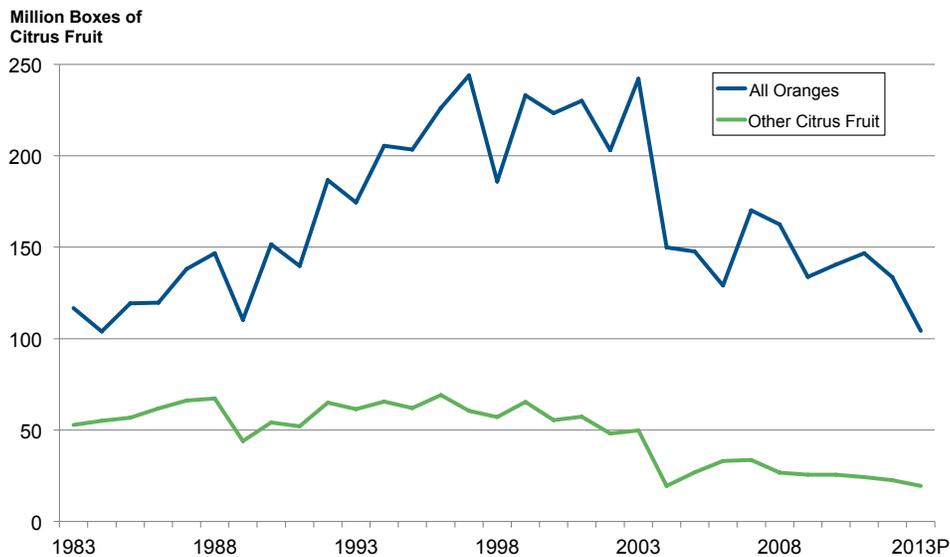
plantings, roughly 9 million acres of California’s irrigated cropland, equal to about 8 percent of the total, are expected to remain fallow during 2014. The hardest-hit crops are expected to be cotton, broccoli, garlic, peppers, and rice, as well as the feed grains.

California growers with permanent plantings should fare relatively well and be affected only slightly by the drought. Within this category, the state’s tree nut producers have been enjoying record-high demand and profitability in recent years; and as such they will likely be among the least affected by the drought, because they have the financial wherewithal to secure adequate water supplies. Still, some growers will incur higher energy expenses as they rely more heavily on pumping groundwater while other producers may be forced to purchase additional water rights at costly levels. Moreover, to the extent that nut growers do end up limiting the water they use for irrigation, they will end up with lower yields, pre-harvest drops, and smaller nut sizes.

Other crops involving permanent plantings include citrus, other tree fruit, and wine and table grapes. These growers are all expected to limp through the 2014 season. Citrus production in the eastern San Joaquin Valley will likely post year-over-year declines due to a damaging frost in December and reduced surface water allocations. Certain districts within the eastern San Joaquin Valley have very few existing wells and limited access to groundwater, which will further stress trees (and growers). Water allocations in the southern San Joaquin Valley have also been constricted while groundwater quality issues remain a concern. More citrus fruit is expected to be directed to juice production instead of fresh pack, due to lower fruit quality and increased fruit-drops due to the drought.

California’s table and wine grape growers face an economic situation similar to the tree nut growers,

Exhibit 10. Florida Citrus Fruit Production



P: USDA Forecast
Source: USDA-NASS.

with strong demand and high profitability insulating them to a large degree from the water restrictions. Still, grape growers are reportedly trimming canes back to prevent stunted growth and yields in 2015 due to slight reductions in irrigation amounts. The large wine companies are able to buy bulk juice from around the world to supplement any shortfall in domestic production. Additionally, with the previous two years having provided adequate supplies of grapes, the domestic wine makers have filled their tanks and have ample inventories of fermenting grapes.

Meanwhile, on the other side of the country, Florida's citrus growers are bracing for one of the worst crops in nearly 30 years – or perhaps even longer. (See Exhibit 10.) Pre-harvest fruit drop is decimating this year's orange crop, and the USDA's latest projection pegs Florida's total 2013-14 production at 104 million boxes, down sharply from last year's 134 million boxes and the prior year's 147 million boxes. Industry insiders attribute the problem of pre-harvest fruit drop to citrus greening (also known as Huanglongbing or HLB). The problem appears to be getting worse with each passing month,

and the USDA correspondingly has cut its forecast for the 2013/14 crop every month since the start of the year. Florida's total orange crop could end up falling below 100 million boxes this year for the first time since 1965/66.

Aware of the worsening devastation, the government has announced that it will provide another \$31.5 million to fund research for combatting HLB. The Farm Bill of 2014 allocates \$25 million to this research, and the USDA has announced that it will offer another \$6.5 million in supplementary funding.

Florida scientists have been studying this problem for nearly ten years, but they still have not yet found a cure for ridding citrus trees of the Asian citrus psyllid, the vector that transmits the HLB bacterial disease.

Florida's citrus growers' current ills also threaten the industry's longer-term viability. Florida's orange groves currently encompass about 57 million trees, and the industry customarily replaces trees as they mature and become less productive. Orange trees in Florida usually last about 15 years, give or take a couple of years, so grove owners typically replace roughly 4 million trees a year. Lately, however, with the dramatic toll that citrus greening has exacted on Florida's trees, and also considering that young trees are more susceptible to infection than mature trees, grove owners have curtailed their replacement of trees to only 1-2 million a year. With no remedy to the citrus greening problem in sight, it is likely that the total number of Florida's orange trees will continue to shrink, thereby exacerbating the year-over-year reductions in the production of oranges.

Fewer oranges are creating stresses and strains on Florida's citrus packinghouses and processing plants.

The number of such facilities has declined sharply in recent years, in synch with the downtrend in citrus production. Despite the decline, there are still too many facilities today, and the excess capacity is causing continued margin compression. Industry insiders expect to see continued consolidation in coming years, with lots of chatter about which ones will survive or not.

Farm Supply

Thus far this year, nutrient prices have been following their normal cyclical pattern. These prices swung higher during the spring planting season; and as the planting season drew to a close, these prices receded, just as they usually do. With grain prices having fallen sharply on a year-over-year basis, nitrogen prices will likely post a similarly sharp decline in coming months, given that manufacturers have shown a proclivity to price their input products in line with grain prices. Hence, many retailers are anticipating lower nitrogen prices in time for the fall fill, and are thus closely monitoring their inventory levels. An inventory overhang heading into the fall filling season has the potential to cut into margins in a falling price environment.

Ammonia prices remained relatively flat throughout the second quarter. Although most of the planting has been completed in the Corn Belt, side dress activity has produced some additional late-spring seasonal demand. Retailers in some areas have experienced shortages of ammonia supply for side dress activity, but prices have been sinking as fertilizer producers look to place as much volume into the spring season given the likelihood of fall fill tons selling at significantly lower prices compared to current cash levels. Ammonia prices are expected to drift lower as the spring application season comes to a close.

Urea prices ratcheted lower during the closing weeks of the second quarter as the spring planting season wound down. The Northern Plains (SD, ND and MN) comprise one of the largest demand areas for urea. Weather conditions there impeded planting progress and kept urea demand at manageable levels even though the season started with imported stocks that were below year-

ago levels. The slow (weather-induced) planting pace allowed suppliers to keep inventory in place. However, the extended planting season in the Northern Plains and additional demand from the Texas rice market will likely keep prices firm around current levels.

UAN prices fell slightly during the closing weeks of the second quarter. While demand for side dress applications is strong in many areas of the Corn Belt, the delays in these applications likely placed downward pressure on prices. Plus, strong ammonia and urea sales in the springtime appear to have dampened weaker demand for UAN. Lower prices in the medium term for competing forms of nitrogen are likely to translate into lower prices for UAN, so many retailers are said to be anticipating lower prices for the fall fill tons. Inventory overhang may be a concern heading into the fall fill season.

The phosphate market remains strong in contrast to weakening nitrogen markets. Tight supplies heading into the spring and likely to continue into the fall fill season have spurred many industry players to book supplies earlier than usual. Strong global seasonal shipments to India, South America, Turkey and early domestic demand have supported the DAP/MAP market. Domestic production delays are likely to provide additional support to the phosphate market. Prices are likely to remain steady but could potentially move higher in the short term. As we move forward into the fall fill season and more tons become available for placement, phosphate prices may edge lower.

Like the phosphate market, potash prices also remained firm through much of the second quarter, increasing slightly in the last few weeks. Tight domestic supplies and delayed shipments from Canada due to a congested rail system are improving, albeit at a slow pace. Steady demand in the domestic market has kept prices elevated over what they were in the previous quarter. If and when the logistical bottlenecks subside, potash prices are likely to head lower as supply constraints diminish. Until then, however, the tight supplies should keep prices fairly steady.

Rural Infrastructure

Power and Energy

Market activity within the power and energy sectors was relatively calm during Q2 2014. However, the EPA's proposed CO2 emission ruling and the market's inability to replenish natural gas storage levels have kept the industry abuzz. Weather during the summer will be a significant driver of power output and the generation mix. Above average temperatures, coupled with below average natural gas inventories, could result in upward pressure on the price of natural gas, supporting fuel switching and boosting power prices. Prolific production of domestic natural gas and expansion of associated infrastructure through 2014 could help ease some market volatility resulting from low gas inventories.

Natural gas storage levels remain well below the historical average. According to RBN Energy, recent seasonal averages on the CME NYMEX Henry Hub natural gas forward curve reveal that the spread between prices for next winter and this summer amounts to just \$0.08 per million British thermal unit (MMBtu) – an amount that provides very little incentive for storage injection. In fact, many analysts and traders expect that the largest storage injection of the season has already occurred, with injections totaling more than 100 billion cubic feet (Bcf) during each of the five weeks from May 9 to June 6. Storage levels will likely fall short of where they were last year at the beginning of heating season. With 21 weeks remaining in the traditional injection season, the Energy Information Administration (EIA) estimates that an average weekly injection of 87 Bcf would have to occur to bring inventories to the agency's forecasted end of October level of 3,424 Bcf, which is 392 Bcf below levels at the same time last year.

The continued expansion of domestic natural gas production and midstream infrastructure will likely help relieve some upward price pressures from the projected low gas inventories through Q3. The EIA predicts natural gas production to grow 4 percent in 2014, averaging 73 Bcf/d. Most of this growth will be centered on the Marcellus formation, resulting in production outpacing regional takeaway capacity. Price differentials between

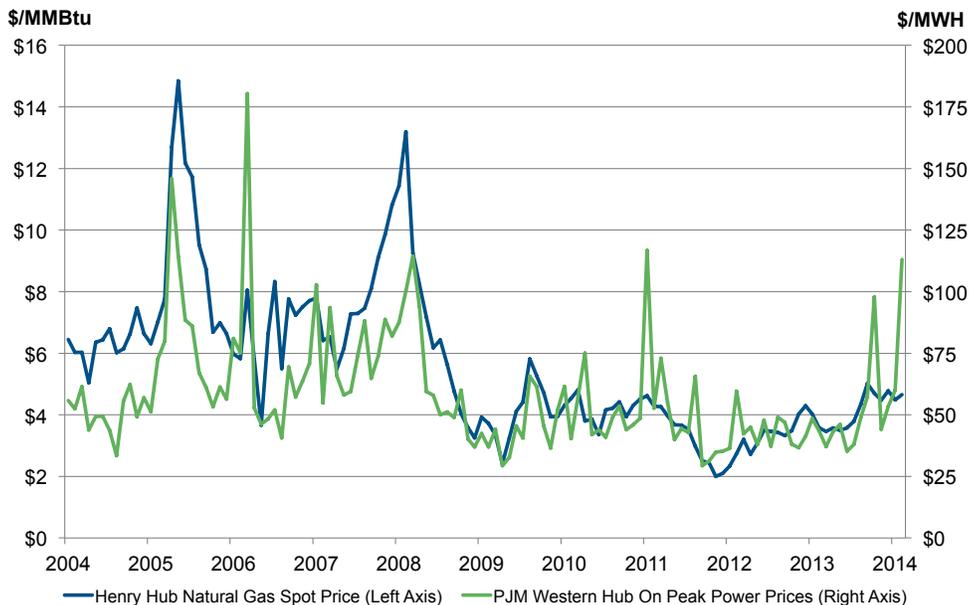
“Prolific activity among domestic natural gas producers, particularly within the Marcellus formation, will help keep a lid on Henry Hub spot prices.

the Marcellus and other regions are driving the expansion of takeaway pipeline capacity out of the Marcellus. Recently completed projects will allow more gas to move north, into the New York and New England demand centers. Furthermore, there are several proposed projects to move natural gas south, reversing flows on pipelines that historically sent natural gas from the Gulf Coast to consumers in the Northeast.

Prolific activity among domestic natural gas producers, particularly within the Marcellus formation, will help keep a lid on Henry Hub spot prices, which are projected to average around \$4.50 per MMBtu through 2014. However, relative to this time last year, Henry Hub spot prices have increased 30 percent, triggering an 8 percent decline in natural gas-fired generation and a 5 percent increase in coal-fired generation. Nonetheless, natural gas remains competitive and continues to drive down power prices, squeezing margins of merchant operators. (See Exhibit 11.) As a result, increased merger and acquisition (M&A) activity is expected to continue through 2014 as utilities reduce exposure to competitive power markets.

Longer-term trends in new power generation capacity suggest a continued move towards natural gas and renewables. According to the latest data from the EIA, 2,728 megawatts (MW) of new utility scale capacity were placed in service between January and April of this year. The majority of this new utility scale capacity was natural gas at 49 percent, followed by solar and wind at 32 percent and 16 percent, respectively. The remaining 3 percent was split between landfill gas, biomass and batteries.

Exhibit 11. Natural Gas and Power Prices



Source: Bloomberg

The U.S. solar market is off to a very strong start this year, driven by utility scale installations. This segment will likely continue to grow throughout the rest of the year, installing 3.8 gigawatts (GW) onto the grid by the end of 2014. Growing demand from the U.S. has helped stabilize module prices following their protracted decline since 2011. In fact, module prices are set to rise from \$0.72/watt to \$0.80/watt by the end of 2014 driven by higher polysilicon prices, increasing wages in China, and U.S. import tariffs on Chinese solar panels.

The U.S. Department of Commerce upheld preliminary countervailing duties (CVD) against Chinese solar manufacturers on June 4, 2014, imposing duties between 18 and 36 percent on Chinese-originated solar modules, laminates, panels and building integrated materials. Although the CVD case is directed at the Chinese solar products export industry, it also impacts Taiwanese solar cell producers to the extent they use Chinese ingots or wafers in their production process and then ship those cells back to China for assembly into solar products. Chinese manufacturers will likely turn to outsourcing their operations to other countries such as Mexico. Despite higher prices for solar modules over the

mid-term as a result of import duties, solar will likely receive a boost over the coming years as states scramble to meet the EPA newly proposed CO₂ emission ruling.

According to SNL Energy, the Clean Power Plan, as the proposed EPA emissions rule is called, is designed to lower overall emissions by setting individualized goals of lowered carbon intensity rates from power plants in each state. The states must then submit a plan explaining how they propose to meet those goals. If it works as planned, the proposed rule will reduce greenhouse gas emissions by 19.2 percent by

2030 from 2012 levels. The EPA's Clean Power Plan is predicated on four major "building blocks":

- Improving the efficiency of coal plants,
- Using more underutilized existing gas-fired generation and less existing coal-fired generation,
- Adding zero-emission renewable generation while preserving existing nuclear generation,
- Improving demand-side energy efficiency.

The EPA is expected to issue a final ruling in June 2015, and states have until June 30, 2016 to develop plans for EPA approval. However, it is likely that these dates will be extended as stakeholders argue and negotiate concessions. Until the final ruling is approved, electric utilities will likely delay investment decisions, further slowing growth in capital expenditures on power generating assets.

Water Utilities

The water utilities all face daunting challenges, regardless of size, scope or location. According to Black and Veatch's 2014 annual report on the U.S. water industry,

40 percent of utilities said they would need to enact 5 to 10 percent annual rate increases for the next decade just to cover costs. More than 20 percent said they need yearly rate hikes exceeding 10 percent, which would double rates in about seven years.

The significant rate hikes that are reportedly required by water utilities highlight the dire state of water and wastewater infrastructure, reduced government funding, and the effects of declining per capita consumption. However, despite all the pressures that are converging on the U.S. water utility industry, the utilities have done next to nothing about actually implementing rate hikes or increasing capital expenditures. In fact, their biggest single spending commitment through 2014 is to combined sewer overflow corrections, according to Global Water Intelligence. This is in response to the EPA's consent decrees aimed at controlling stormwater runoff. Beyond investments in combined sewer overflows, severe droughts in Texas and California have spurred some activity focused on shoring up water resources and associated distribution systems. It seems that only catastrophes or heavy-handed government regulations can spur the U.S. water industry into action.

“*The water utilities all face daunting challenges, regardless of size, scope or location.*”

Over the last decade, water utilities have been focused on protecting finished water and the required distribution systems, with very little attention placed on protecting raw water supplies from contamination. However, the pendulum is beginning to swing back to the other side as awareness of supply side risks grows. Approximately two-thirds of U.S. drinking water comes from surface water and the remainder from groundwater. Increased drought conditions are reducing both surface and ground-water supplies, forcing many water providers to look for drought-resistant water sources (i.e., water efficiency

and conservation). Furthermore, drought conditions have helped ignite a record number of wildfires in recent years. Beyond the obvious devastation caused by wildfires, they also pose significant water quality challenges for utilities.

According to a report by the Water Research Foundation and the EPA, wildfires reduce raw-water quality as a result of soil erosion or of added inputs of organic carbon, nutrients and other constituents. Severely burned watersheds can cause increased flooding, peak flows and debris flows. The American Water Works Association (AWWA) suggests these effects may necessitate changes in water treatment operations and significant capital expenditures. Risks associated with reduced water quality induced by forest fires remain in place for years.

Depletion and/or the contamination of water resources pose risks to all water utilities and further increase the cost of providing reliable and safe services. Higher operating costs could place a significant financial burden on water utilities that are plagued with water supply issues, especially considering that many water utilities currently operate in the red and are unable or unwilling to raise rates.

Communications

The Federal Communications Commission (FCC) made headlines during the second quarter as it addressed a number of controversial, complicated issues that touch all communications providers and users. While FCC actions promise far-reaching impacts, industry players must continue to adapt to policy changes, as well as to the insatiable global demand for more and more bandwidth and ever changing technology if they are to remain relevant and successful providers.

Following the D.C. Court of Appeals' ruling in January that several of the FCC's initial rules from 2010 exceeded its authority, the Commission released a revised set of proposed Net Neutrality rules in May, inciting a firestorm of media coverage and debate. In its purest form, Net Neutrality means that no traffic traveling the Internet may be prioritized over other traffic, theoretically preserving an open Internet that fosters a “virtuous cycle” of innovation and economic growth. However, Internet

“*Net Neutrality has always been a solution in search of a problem.*”

Service Providers (ISPs) have long prioritized traffic in order to efficiently manage their networks. Today’s Net Neutrality debate centers on whether ISPs should be able to prioritize traffic from specific content or edge providers for a fee.

The FCC’s latest proposed Net Neutrality rules consider permitting “fast-lane” prioritization, and may even allow Internet Service Providers (ISPs) to charge edge providers, such as Apple, Google, and Amazon, for this fast-lane access so long as they are transparent about these practices. These deals may be subject to a case-by-case evaluation by the FCC, however.

The Commission also asked for input on an outright ban of paid prioritization or some types of the practice. Congress has weighed in and introduced bills in both the House and Senate banning paid prioritization. Unfortunately, the highly publicized peering/interconnection deal between Netflix and Comcast (which notably does not involve ranking traffic) has muddied the debate and has many stakeholders, especially small business advocates and consumers, railing against any form of traffic prioritization. The FCC’s website crashed after a cable talk show host called for fans to weigh in on the topic. Proponents of the proposed rules are quick to point out that network traffic has always been prioritized in order to deliver optimal service, that peering agreements have been in place between ISPs and data-centric edge providers for many years, and that the level playing field which is held up as the hallmark of the Internet has remained unspoiled. In fact, barring ISPs from prioritizing traffic to maximize the network backbone and recouping payment from edge providers’ heavy use of the network would most likely result in price hikes for the end user.

The proposed Net Neutrality rules may also require ISPs to set a guaranteed minimum speed for both end-users and edge providers and prohibit ISPs from blocking access to lawful content or throttling competitive traffic. The Commission also left the door open to reclassify broadband as a Title II (or common carrier) service, which would subject broadband to heavier regulation, and seeks comment on a “third way” that would deem

broadband as a special Title II classification and impose a very limited set of rules. Opponents warn that subjecting broadband to any increased regulation would cause a sharp decline in network investment.

Though the FCC seems intent on finalizing and implementing a set of Net Neutrality rules by the end of this year, consumer demand and technology will likely be the ultimate governors. The reality is that consumers’ chief concern is focused on the last mile or the final connection between the ISP and the user. As AT&T has publicly stated, it simply does not make good business sense for an ISP to choose which last-mile traffic should be prioritized on behalf of the user (barring emergency and similar lifeline information). And edge providers will likely move their file servers closer to the edge of the ISP network in order to deliver the best possible consumer experience. Technology will also continue to improve, compressing data so it can move faster over the network, and perhaps ultimately allowing the end-user to prioritize their own personal traffic. Commissioner Ajit Pai may well be correct in his assessment that, “Net Neutrality has always been a solution in search of a problem.”

Many RLECs were disappointed when the Tenth Circuit Court ruled that the changes to Universal Service Funding (USF) and Intercarrier Compensation (ICC) implemented in the 2011 Transformation Order are indeed within the Commission’s authority. On the heels of the Court’s decision, the FCC released a host of rules covering a number of universal service-related issues, including the official end of quantile regression analysis (QRA), the rate-floor phase-in over several years, a clearer definition of “reasonable request,” and the Safety Net Additive extension. The FCC also began to address how the second phase of Connect America Fund dollars will be deployed to help drive broadband into unserved areas and sustain existing voice and broadband services. Additionally, the Court decision upholds the recently

clarified ICC rules and the transition to a bill-and-keep methodology, whereby communications providers will bill the end-user for switched access costs.

While RLECs may view the Court's ruling as a loss, the decision clears the path for new, predictable mechanisms that provide support for a ubiquitous broadband network. Rural providers would do well to continue to advocate before the FCC and Congress to institute changes to USF reforms that will foster further broadband deployment. Despite the significant progress toward clarity at the FCC, Congressional work on a rewrite of the Telecom Act will be stalled until at least after the 2016 election.

Also during the second quarter, the FCC took several steps to make additional spectrum available for commercial use. The Commission announced a November 13, 2014 date for the AWS-3 spectrum auction, offering the most significant amount of spectrum since the 700 MHz auction in 2008. The FCC also announced the framework for two separate programs that will authorize sharing of federal spectrum and increase the utility of certain spectrum for unlicensed use. Additionally, the Commission outlined some of the 600 MHz Incentive Auction proceedings. The multi-part auction allows broadcasters to sell spectrum licenses back to the FCC, which will then be made available during a forward auction for commercial use.

Commission actions also clearly affirmed Chairman Wheeler's preference to regulate based upon consensus. For example, small, rural wireless carriers saw that consensus advocacy won in the 600 MHz auction proceedings, which ensured the availability of small geographic licenses that give this group a meaningful avenue to participate. And national carriers lauded the FCC for spectrum holding guidelines that allow them room to bid in upcoming auctions.

Cable providers received some relief in April when the FCC issued rules to govern retransmission consent negotiations that should result in reduced programming costs and fewer programming blackouts related to retransmission consent negotiations. It's a welcome ruling considering that cable providers continue to feel competitive pressure from over-the-top (OTT) providers.

Nearly 50 percent of U.S. households subscribe to at least one paid OTT content provider, such as Netflix or Hulu Plus, according to a new Leichtman Research Group study. This study also found that the percentage of Netflix customers that are also cable subscribers dropped from 88 to 80 percent between 2010 and 2014, adding solid evidence that OTT is spurring some to "cut the cord." Cable companies are working to retain customers with the addition of TV Everywhere solutions. Although Viacom reports that TV Everywhere users watch 64 percent more television, awareness of TV Everywhere products is low, and nearly 50 percent of users report technology issues with the service.

Looking ahead, regulatory activity is likely to slow considerably due to the arrival of the summer season and a regulatory logjam created by recent mega-merger announcements. In February, Comcast announced its \$45 billion bid to acquire Time Warner Cable (TWC). In May, AT&T announced its intent to acquire DirecTV in a roughly \$67 billion deal. If successful, the Comcast/TWC transaction will go down in the history books as the tenth largest merger in the U.S. And the AT&T/ DirecTV deal would make AT&T the second largest pay-television service provider in the country, a title it already holds in the wireless mobile voice and data service category. The two deals total more than \$130 billion dollars and, according to Bloomberg Industries, represent the greatest amount of pay-TV assets ever considered by regulators. If approved, the proposed transactions would result in two multi-media behemoths serving nearly 56 million U.S. subscribers. The deals, of course, add considerable fuel to the Net Neutrality debate, and anticompetitive watchdogs purport that no real consumer benefit will come from either merger. A rumored Sprint and T-Mobile deal to be announced in coming weeks would add another \$30 billion merger into the mix and an increased level of complexity to the already complicated decision making process.

Outside of the U.S. regulatory stage, broadband connections and use continue to surge. The United Nations' International Telecommunication Union reports that 40 percent of the world's population, or nearly 3

billion people, will use the Internet by the end of 2014. Cisco's latest forecast estimates that global IP traffic will increase nearly three times over the next five years, due to the growing number of subscribers, faster broadband speeds and increased video consumption. In fact, Cisco projects that the amount of IP traffic generated in 2018 will be greater than all global IP traffic generated between 1984 and 2013! Additionally, sometime between 2013

and 2018, the majority of traffic will come from devices (including personal devices and machine-to-machine (M2M) equipment) versus personal computers. Despite the regulatory challenges, the projected growth of IP traffic certainly gives reason for rural communications providers to stay the course and map out a plan for a successful business well into the future. ■

This quarterly update is prepared by the Knowledge Exchange Division and covers the key industries served by CoBank, including the agricultural markets and the rural infrastructure industries. We also want to recognize the contributions of four outside consultants: Professors James R. Mintert and Christopher A. Hurt of Purdue University wrote the sections on the beef and pork industries; Sue Trudell, Vice President of Express Markets, Inc. Analytics, wrote the section on the poultry industry; and analysts at Plus One Strategic Communications LLC prepared the overview of the communications industry.

Terry Barr

Senior Director, Knowledge Exchange

Daniel Kowalski

Senior Manager

Luke Brummel

*Economist, Grains, Oilseeds, and Ethanol;
and Farm Supply*

Taylor Gunn

Economist, Power, Energy, and Water

Sarah Stanfield

Economist, Dairy Industry

Leonard Sahling

Manager, Knowledge Exchange

**CoBank's Knowledge Exchange Division welcomes readers' comments and suggestions.
Please send them to KEDRESEARCH@cobank.com.**

Disclaimer: The information contained in this report has been compiled from what CoBank regards as reliable sources but is provided for general informational purposes only and is not advice. CoBank does not make any representation or warranty regarding the content, and disclaims any responsibility for the information, materials, third-party opinions, and data included in this report. In no event will CoBank be liable for any decision made or actions taken by the user while relying on information contained in this report.