



QUARTERLY U.S. RURAL ECONOMIC REVIEW, Q2-2013

Agricultural Markets Focused on Transition from the Old to the New Crop

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.

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Key Points:

- *U.S. economic growth slowed during Q2-2013, due to mounting fiscal drag from increased taxes and sequestration cuts in federal spending.*
- *The grains sector is now a tale of two markets – one defined by excessively tight old crop inventories and the other defined by buoyant expectations for a record-breaking new crop harvest this fall.*
- *With the old crop year winding down to its final months, the dwindling stocks continue to support near record basis levels.*
- *Planting delays in the U.S., along with smaller than expected winter wheat harvests, have spurred concerns and doubts about just how big the new crop supplies will be.*
- *Ethanol industry insiders and analysts are becoming increasingly concerned about the looming shortfall between the blend wall and the Renewable Fuels Standards (RFS).*
- *The animal protein and dairy complexes have realized steady improvement in returns as domestic demand has remained firm and feed costs have eased slowly. With outsized 2013 crops, those returns should continue to improve through the rest of 2013 and on into 2014.*
- *The still-shrinking cattle herd is dramatically limiting beef supplies, and hog producers are being cautious about expanding their herds in the face of continued high feed costs.*
- *Chicken remains the winner in the animal protein complex with domestic demand for broilers experiencing a sharp increase due largely to higher prices for substitute proteins such as beef.*
- *Today’s global communications landscape is in a state of upheaval, with demand surging in some sectors and shrinking in others. Technological changes combined with ongoing regulatory tweaks and adjustments add to the industry’s turmoil.*
- *Regulatory and tax policies continue to favor the development of renewable generation and associated gas-fired peaking facilities, but to disincentivize the development of baseload coal-fired generation.*

Preview

As the year progresses, global economic growth appears to be winding down. The euro region remains enmeshed in a prolonged recession while the U.S. economy appears to be slowing as fiscal drag from increased taxes and reduced spending offset strength in the housing and auto sectors. In turn, the emerging markets are feeling the impacts of the weak economic conditions of their two largest markets. China remains the global growth engine, but its growth rate has slipped below 8 percent. Heightened uncertainty concerning central bank actions in the U.S. and other regions is adding to market volatility.

While planting delays in the U.S. and production issues in the Ukraine and the Russian Federation are helping to firm agricultural prices, markets will remain volatile as limited old crop supplies must be aggressively rationed until new crop harvests begin. Granted, planting delays have hampered the U.S.'s crop potential, but near record crops are still possible with a normal growing season. Crop prospects across the U.S. vary widely with too much moisture drenching much of the Corn Belt and persistent drought wilting the Southwest. Improving profitability in the animal protein sectors, particularly for broilers, has generated significant optimism for late 2013 into 2014 if the large harvests materialize and the economy regains some momentum by the end of 2013.

Macroeconomic Outlook

The global economy appears to be on a moderate growth path, but its durability is in doubt. The recession in Europe and the weak growth in the U.S. are limiting the economic prospects of the emerging markets that rely on exports as the chief catalyst for growth in lieu of their own slowly developing consumer markets. Europe remains mired in recession, but the worst of the economic turmoil may be over. While the euro zone's temporary liquidity pressures have been relieved, its fundamental structural and solvency issues remain unresolved. Moreover, with German elections scheduled for September, it is unlikely that significant actions will occur until late in 2013. The European Central Bank stands ready to limit volatility in financial markets, but encumbered by strict fiscal

austerity programs, many European countries will be hard-pressed to keep their economies on an even keel, let alone to sustain any growth momentum. Economic growth in China remains subdued at less than 8 percent, but continued low inflation will permit some additional stimulus to sustain the current path in the face of declining export markets. Japan remains the bright spot among the developed countries, as aggressive currency devaluations and monetary stimulus are boosting growth after decades of stagnation. Sustaining this growth beyond 2013, however, will be challenging.

The U.S. economy has clearly lost some momentum after recording a subpar 1.8 percent growth rate in Q1-2013. While auto sales and housing continue to be the growth drivers, the fiscal drag from increased taxes and sequestration is weighing heavily on consumers. Uncertainties over immigration, health care reform, corporate taxes and financial regulation continue to dampen major plant and equipment investment. At the same time the mixed signals from the Federal Reserve regarding a tapering of quantitative easing have increased volatility in the financial markets. We're anticipating sluggish GDP growth in Q2-2013 followed by a return to the 2-2.5 percent growth path that now seems sustainable under current conditions.

On a trade-weighted basis, the U.S. dollar continues to move higher after bottoming in August 2011. From 2002 until 2011, the U.S. dollar index had fallen by nearly 40 percent. Since August 2011, however, the dollar index has climbed 12 percent with significant gains against the euro and the yen. Going forward, given that the U.S. economy is recovering more quickly than the euro region and also that Japan is aggressively pursuing devaluation of its currency, the U.S. dollar will likely move steadily higher on a trade-weighted basis. Although the rebound is from very low levels, a stronger U.S. dollar will erode foreign purchasing power and put downward pressure on commodity prices that are already weakening due to anticipated increases in global grain and oilseed supplies.

As of late June, the 2013 Farm Bill was on hold. The Senate passed its version by a vote of 66-27, but the House's version was defeated on June 20 by a vote of 195-234. The defeat was a disappointment for everyone

in U.S. agribusiness. At this point, it is still too soon to assess whether or how the Farm Bill will advance. A number of options are available, but the direction going forward and the implications for agriculture are at this point, completely unclear.

U.S. Agricultural Markets

Grain markets continue to ration the tight supplies resulting from the reduced 2012/13 crop year while also anticipating potentially record global grain harvests in 2013. However, planting delays in the U.S., along with the smaller than expected winter wheat harvests, have spurred concerns and doubts about just how big the new crop supplies will be. In this setting, the grain markets will likely remain highly volatile until well into the growing season. Despite concerns earlier in the year about wheat production in the U.S., Ukraine and the Russian Federation and also about the delayed U.S. plantings, the USDA continues to project record high global coarse grain production and near record wheat production in 2013. World soybean production is also projected at record-high levels.

The animal protein and dairy sectors realized steady improvement in returns during the first half of 2013, as domestic demand remained firm and feed costs eased slowly. Projected meat supplies and milk production for 2013 have increased slightly while expectations for a sharp production rebound in 2014 are predicated upon large grain and oilseed harvests. The still-shrinking cattle herd is dramatically limiting beef supplies, and hog producers are being cautious about expanding in the face of current high feed costs. Confronted with less competition from the red meat sector, the broiler industry has enjoyed dramatic improvements in profitability, and production is beginning to build. If the U.S. economy regains its momentum during the second half of 2013 and into 2014, the meat complex will do very well. The dairy sector has also seen improvement in returns but on a more limited basis. Milk production has begun to increase, but foreign market volatility has limited any significant and sustained increase in margins. Lower feed costs in late 2013 and into 2014 should bring significant improvement in margins provided that export markets recover.

“*Summer weather will now determine the size of the 2013 grain crop and price outcomes for the coming year.*”

Grains, Oilseeds, and Ethanol

The grains complex is now a tale of two markets – one defined by excessively tight old crop inventories and the other defined by buoyant expectations for record-breaking new crop harvests this fall. The drought of 2012 is now a distant memory in most of the grain belt, inasmuch as a cool, wet spring has impeded planting efforts and raised concerns about the potential for negative yield impacts. Summer weather will now determine the size of the 2013 grain crop and price outcomes for the coming year.

Corn

The 2012/13 crop year is winding down to its final months and dwindling stocks continue to support near record basis levels. The scarcity of supply has kept the futures market inverted throughout the current crop year, and futures contracts are expected to remain in backwardation until the 2013 harvest is accounted for in the December contract. The lack of carry in the market will remain a challenge for cooperatives and elevators across the grain belt through the summer and early fall months. However, despite the challenges associated with late planting through the spring, the market's expectations remain high for a large harvest, which would restore carry to the market for 2013/14.

Historically high prices and basis levels have thus far successfully rationed the short 2012/13 crop, preserving sufficient supply for domestic feed and industrial uses until the new crop becomes available. U.S. corn exports in 2012/13 will be the smallest in 40 years. However, overall demand for the U.S. crop (foreign and domestic) has shrunk to levels not seen since 2004/05. Global trade of corn has remained strong, but foreign

Exhibit 1: Prospective vs. Actual Acreage Plantings

	Prospective Acreage Plantings*				USDA June 28 Acreage Plantings Report*			
	Corn	Soybeans	Wheat	Total	Corn	Soybeans	Wheat	Total
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
2008	86	74.8	63.8	224.6	87.3	74.5	63.2	225

*Millions of acres.
Source: USDA

competitors such as Brazil, with much larger supplies, have dominated the world market. Heavy competition is expected to continue in 2013/14, as Brazil's third consecutive above-average corn harvest will again offer supply to the world at a discount to U.S. prices. The size of the new U.S. crop will determine the price spread between the two markets for the coming year and how much of the export market will come back to the U.S.

In the near term, delayed plantings (and therefore delayed harvest) will strain old crop supplies and support cash prices well into September. This year's pre-September harvest is expected to be roughly half what it was last year, as many southern states contended with the same difficult weather conditions as the central and northern Corn Belt states. Planting and emergence in the eastern Corn Belt has been ahead of the five-year average, but only about 10 percent of national production comes from eastern Corn Belt states. In contrast, Iowa and Minnesota, which together account for roughly a third of U.S. corn production, have had the slowest progress in planting and emergence. The extent to which the late start will impact yields will be borne out only by the weather, although producers in northern states naturally incur a higher risk that an early frost could reduce yields.

In light of the planting delays, many analysts had anticipated a decline in this year's corn acreage, with some acres left unplanted and others sown to soybeans instead. However, the USDA's planted acreage reports released late in June revealed that corn plantings at 97.4

million acres would slightly exceed last year's 76-year high. (See Exhibit 1.) The expected lower plantings in the traditional Corn Belt states were offset by increased plantings in other areas, particularly the Southeast. Current market expectations indicate that corn prices will fall well over a dollar between the July and December contracts; but July weather will have the most significant impact on the crop and price expectations for the coming year.

Soybeans

Tight as supplies are for corn, those for soybean are even tighter. Due to the short 2012 domestic crop and to the anticipated bin-busting crop in South America, soybean demand was front-loaded in 2012/13. The U.S. soybean crush and exports proceeded at a torrid pace in the first half of the marketing year, but have slowed to a crawl since then as market demand has shifted to the more plentiful, less expensive South American supply. Brazilian soybean exports set a record in May, and shipments are not expected to slow for several more months. U.S. soybean processors have benefited from this demand for whole soybeans, as South American supplies have been slow to reach crush facilities. As a result, soybean meal prices have been well supported for several months, aiding crush margins and export demand in the U.S. Domestic crush facilities are also importing a record volume of soybeans, mostly from Canada and Brazil. Elevated meal prices will sustain crush margins for those processors that can obtain soybean shipments at a reasonable cost.

The cool, wet spring that has hampered corn planting has also slowed soybean sowing. Iowa, the leading soybean producing state, reported record March-May precipitation, more than 70 percent above normal, and many surrounding states experienced similarly wet conditions. As of mid-June, soybeans were being planted at the slowest pace since 1996. To the surprise of many analysts, the USDA's planted acreage reports released late in June indicated that soybean plantings at 77.7 million acres, if realized, would amount to about 500,000 acres above last year's level. (See Exhibit 1.) Come July, the USDA will resurvey soybean growers in 14 states to verify that their June 1st soybean intentions actually got planted. Favorable summer weather could bring new crop futures prices down significantly from the upper-\$12 range to the lower-\$11 range. Additionally, South America's record soybean crop will also enable Brazil and Argentina to compete in the global soy trade well into the U.S.'s 2013/14 crop year, curtailing gains in U.S. exports and limiting any upward price movements.

Wheat

Domestic wheat markets have been squarely focused on the slowly progressing winter wheat harvest and the equally slow spring wheat plantings. The late spring in many parts of the country meant a delayed break from dormancy for winter wheat along with a slower-than-normal developing crop. Persistent drought conditions in the southern and central plains have kept expectations low for hard red winter (HRW) production. Some early projections indicate that HRW production could be down as much as 20 percent year over year (YoY), which will limit feed use and exports during 2013/14. In the central and eastern U.S., soft red winter wheat yields are expected to fare much better, which should boost demand for new crop exports. However, wet weather has also delayed spring planting in many key wheat production areas.

The USDA's planted acreage reports released late in June estimated that area seeded to durum wheat will total 1.54 million acres, down 28 percent from the previous year. (See Exhibit 1.) Wheat planted acreage declined in all producing states except South Dakota. In particular,

“*The global wheat outlook contrasts sharply with the domestic wheat picture.*”

North Dakota growers are estimated to have planted just 850,000 acres, down 37 percent from last year and the third-smallest North Dakota durum wheat acreage on record. Area seeded to other spring wheat is estimated at 12.3 million acres, up slightly from 2012.

The global outlook contrasts sharply with the domestic wheat picture. Just about every major foreign competitor is expected to increase its wheat production YoY in 2013/14, with combined EU and Former Soviet Union (FSU) production expected to grow 15 percent. Absent unexpected weather concerns, world production could set a new record in 2013/14 – and trim U.S. exports from 2012/13 levels. The smaller domestic wheat crop and expectations for a much larger corn crop will cut wheat feeding by 20 percent or more, and also remove some of the support that corn provided to wheat prices in 2012/13. Wheat prices are expected to fall from 2012/13 levels, perhaps by as much as a dollar a bushel. Any surprises in foreign wheat production or domestic corn production would play a significant factor in price direction for U.S. wheat.

Ethanol

U.S. ethanol production has grown steadily since its rebound from a four-year low in January 2013. As ethanol prices improved relative to the prices of crude oil and gasoline, margins widened for plant operators, increasing the incentive to expand output. Ethanol producers have exercised discipline, however. Even though the level of production has risen 15 percent, stocks have fallen more than 20 percent, meaning that the industry has continued to produce below the level of consumption through the first half of 2013. The industry is now anxiously awaiting this year's corn harvest and the much anticipated decline in corn prices. Current crop projections would indicate that margins will improve for ethanol producers in the fourth quarter of 2013, and that production levels will rise.

Exhibit 2: Corn Ethanol RIN Prices



Source: Bloomberg

Industry insiders and analysts are becoming increasingly concerned about the looming shortfall between the blend wall and the Renewable Fuels Standards (RFS). This year will mark the first time since the ethanol mandate was implemented in 2005 that domestic ethanol production and consumption will fall short of the RFS blending requirements. This shortfall will have little near-term impact on the ethanol industry, as the blending requirements reside mostly with oil companies. Blenders now face the daunting task of blending ethanol into the nation's motor fuel above the 10 percent inclusion level, while E15 and E85 consumption remain much too low to meet EPA's requirements.

Many blenders will rely on Renewable identification Numbers (RINs) to meet their 2013 obligations. (RINs are used by the EPA to track ethanol production and ensure blenders' compliance with the RFS mandates.) However, as RIN prices have surged from only a few cents in January to roughly one dollar in Q2-2013, the debate over who is responsible for bringing policy and market dynamics into alignment rages on. (See Exhibit 2.) This will undoubtedly remain a hotly contested issue

through 2013 and into 2014 as corn ethanol blending requirements continue to rise until they peak in 2015. While the outcome of this policy debate will not significantly impact the ethanol industry in the short-run, it will determine the longer-run utilization rate and level of production for upcoming years.

Animal Protein

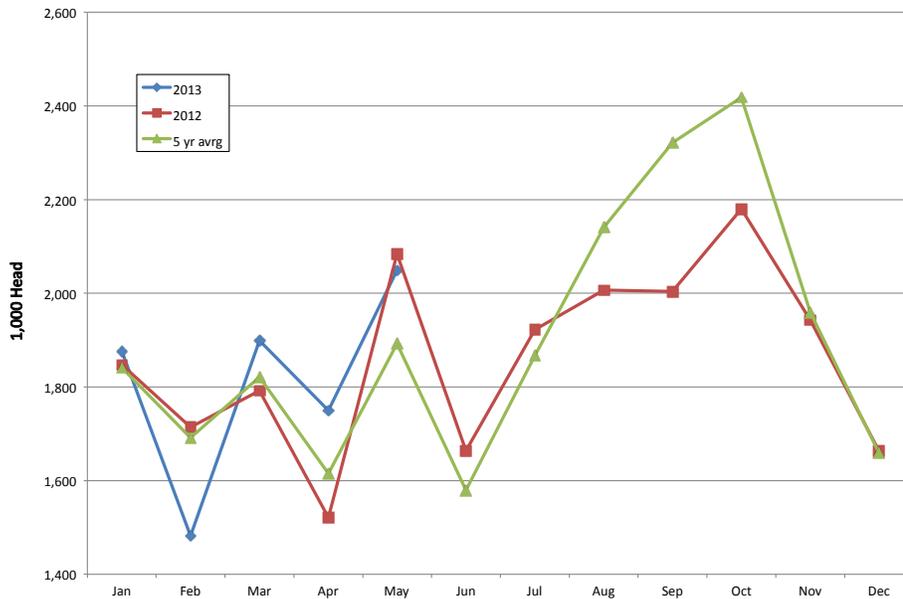
The beef herd continues to contract, with no bottom in sight for the foreseeable future. Meanwhile, the pork and dairy industries continue to hold steady with hopes of herd expansion in 2014. Chicken

remains the winner in the animal protein complex with domestic demand for broilers experiencing a sharp increase in Q2-2013 due largely to higher prices for substitute proteins such as beef.

Beef

Contrary to analysts' prior expectations of initial steps toward rebuilding the beef herd in 2013, it is now clear that the cattle inventory will shrink further this calendar year. The USDA forecasts 2013 beef production at 25 billion pounds, down 2 percent YoY, while 2014 beef production is forecast even lower at 24 billion pounds. Persistent drought in parts of the southern plains and western states, coupled with deteriorating to non-existent forage conditions, spurred large feedlot placements during the first half of 2013. (See Exhibit 3.) Although the feedlot inventory is below year ago levels – a reflection of the smaller overall herd size – the number of cattle placed on feed-year-to-date is 2 percent higher YoY. March and April placements averaged 10 percent higher YoY. While May placements dropped 2 percent YoY, they exceeded industry expectations of a 3 percent YoY decline.

Exhibit 3: Monthly Cattle Placed on Feed



Source: USDA.

Slaughter rates are reflecting a similar story, with beef cow slaughter up 4 percent during the first half of 2013. In fact, over the past eight weeks, beef cow slaughter rates have been 17 percent higher YoY. Although feedlot placements and slaughter rates are expected to slow through the summer months, due to tight supplies and improved pasture conditions in the Midwest and northern plains, both sets of data point to a further decline in the total cattle inventory with heifers previously destined for breeding purposes having been re-routed into feedlots destined for slaughter.

Beef packer margins were surprisingly strong in Q2-2013 due to record high cutout prices in May spurred by retail promotions for high quality choice beef cuts for the Memorial Day holiday. Beef prices, as well as packer margins, are expected to trend lower during Q3 as retail features subside and seasonal price erosion takes hold. Cattle feeders were still experiencing negative margins through Q2-2013 due to high feed prices and seasonally lighter cattle placed on feed. However, feeder margins are expected to widen in the second half of 2013 provided that the greatly anticipated bumper crops materialize.

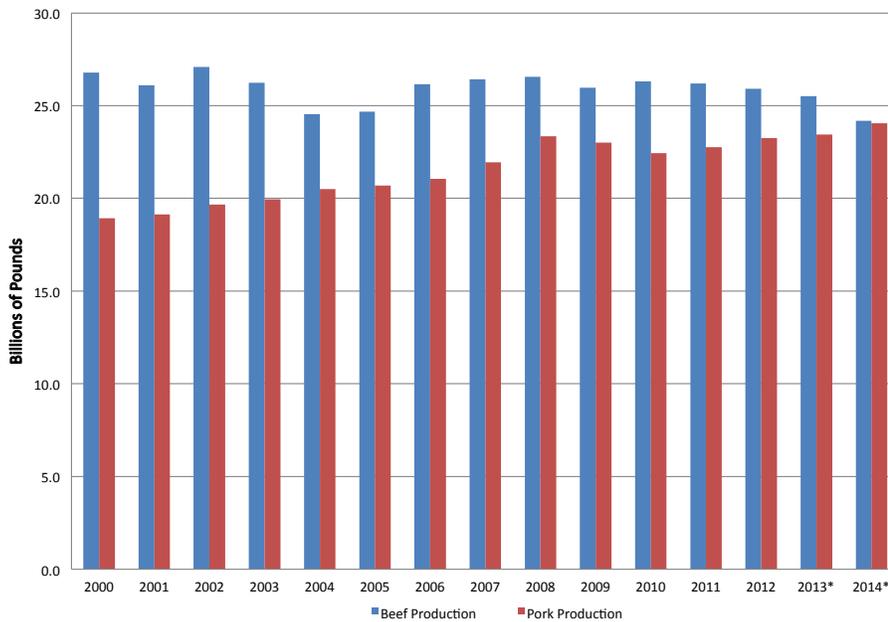
Exports of U.S. beef are expected to soften YoY in Q2-2013 and to remain sluggish throughout the remainder of the year. A stronger U.S. dollar and tight supplies are pushing U.S. beef prices upward, making U.S. beef less competitive with that of other beef producing countries, such as Australia, Uruguay and Brazil. Indeed, in response to those competitive pressures, beef imports into the U.S. strengthened during the first half of 2013, with April imports at 232 million pounds – making the U.S. a net importer of beef in April. Exports to South Korea were down 55 percent YoY in April, while exports to Russia were zero (due to the ban on ractopamine-fed U.S. beef). Exports to Mexico and Canada also declined due to high prices for U.S. beef.

The one bright spot for U.S. beef exports is Japan. Despite the weak yen – usually a negative for U.S. beef exports – Japanese demand for U.S. beef has been booming. April beef shipments to Japan were 96 percent higher YoY. Japanese demand for low value beef cuts, such as briskets and chucks, has been particularly strong given consumer preferences for U.S. grain fed beef. Unfortunately, Japan's demand alone is not enough to boost export markets for U.S. beef. With export markets softening, the U.S. domestic market will have to absorb this additional beef supply usually consumed by foreign markets.

Pork

Pork production is expected to expand through 2014, with analysts projecting a modest 2 percent increase in production during 2013. (See Exhibit 4.) The hog industry is currently in a holding pattern, but producers remain hopeful that feed prices will decline in Q4 and pave the way for a cautious herd expansion beginning in early 2014. The recent outbreak of porcine epidemic

Exhibit 4: Yearly U.S. Beef and Pork Production



Source: USDA
*2013 and 2014 forecast estimates

diarrhea (PED) virus could put a kink in the industry's growth expectations. The virus is not harmful to humans or meat quality, but it does lead to high piglet mortality rates due to diarrhea and dehydration. Mortality is rare among finishing and breeding hogs, although performance may be impaired. As of late June, over 200 outbreaks were confirmed in 13 states, while the source of the outbreak remains unknown. Right now, the industry is waiting to see how quickly the virus spreads. Market analysts are anticipating up to a 1 percent decline in the number of lightweight market hogs (hogs under 50 lbs) in Q2, translating into a decrease in the number of pigs available for slaughter in Q4 and into early 2014.

Slaughter rates have been weaker than expected, with barrow and gilt slaughter up only 1 percent in Q2 versus the 2 percent increase implied in the USDA's Hogs and Pigs Report for March 2013. The lower slaughter rates reflect the industry's current holding pattern. Lower slaughter rates were reflected in strong hog prices in Q2, but packer margins are expected to be somewhat compressed through the summer given rather tight hog supplies, due to seasonal declines in hog production. Buffering those tight summer

pork supplies, however, are unusually large supplies of pork in cold storage. At the end of May, the amount of pork in cold storage was 662 million pounds, up 4 percent YoY.

Export markets remain a thorn in the hog industry's side, with exports year-to-date down 14 percent YoY. The stronger U.S. dollar, the persistent trade barriers against ractopamine, and an expected 2 percent increase in world pork production have all contributed to disappointing pork exports during the first half of 2013. Pork exports are expected to remain disappointing well into the latter half of 2013. Total pork exports were down 12 percent in April, with the biggest drops occurring in shipments destined for Russia,

China and Japan. Russia continues to ban all exports of U.S. pork due to ractopamine, with no resolution in sight. Although China has agreed to receive some shipments of U.S. pork provided that they are guaranteed to be ractopamine-free, China's domestic production of pork has increased, softening domestic pork prices and leading to decreased demand for more expensive U.S. pork imports. Japan, the largest consumer of U.S. pork exports, decreased its demand for U.S. pork by 11 percent YoY in April due to the strong U.S. dollar.

In recent weeks, the talk in the hog industry has been the purchase of Smithfield, the largest hog producer and pork packer in the U.S., by a Chinese firm, continuing the trend of foreign (and domestic) consolidation within the protein complex. Most industry analysts agree that if the purchase is finalized, Chinese ownership could be a stabilizing factor for U.S. pork export markets. China has increased its consumption of U.S. pork over the years, and Chinese ownership of a major U.S. pork producer means a diminished likelihood of future trade barriers targeting U.S. pork products.

Poultry

Strong domestic demand for chicken, coupled with reduced supplies, supported a profitable atmosphere in the broiler complex. Increases in chicken promotions at the retail level and a slight recovery in the food service sector boosted demand and pushed prices to new highs during Q2. Breast meat prices jumped to record highs, averaging 34 percent higher YoY in May, while the national composite whole broiler price remains 34 percent above its five-year average. Although chicken prices usually post seasonal declines during the second half of the year, prices are expected to remain above year-ago levels through Q4 due to strong demand, high beef prices and limited production.

On the supply side, broiler cold storage stocks were 6 percent higher YoY in May, while stronger wholesale markets are keeping the stocks to use ratio at a healthy range of 22 percent. Broiler meat production totaled 3.3 billion pounds in May, up 2 percent from April. The average liveweight of birds slaughtered in April rose to 5.9 pounds, a 1 percent increase YoY. Liveweights have steadily increased over the past few years, due to increased industry demand for larger birds. Liveweights are expected to continue to rise modestly for the remainder of 2013.

Broiler exports fared well in 2013. Broiler exports totaled 2.4 billion pounds during the first four months of 2013, up slightly from the 2.3 billion pounds exported a year ago. April exports alone were 2.5 percent higher YoY at 613 million pounds. The gain in exports was attributable to increased demand from Mexico and China. April exports to China rose 69 percent YoY – calming industry worries of decreased poultry consumption in Asian markets given the bird flu outbreaks earlier in the year.

Despite the recent strong prices and healthy demand, the broiler industry is not expected to boost production as quickly as history would generally suggest. The key reason is the limited number of hens in the hatchery flock, which will dampen the speed at which the flock can expand. High feed costs have limited the number of pullets placed for hatchery layers, keeping placements below YoY levels since February. Although the hatching

flock has been productive, there are still fewer chicks available to replace aging hens, and hens are being retained longer. As the laying flock ages and the laying rate decreases, hatchability rates are expected to edge downward through 2013. Until the hatchery supply flock can increase numbers, it will be at least a year before any dramatic increase in broiler production is realized.

The turkey industry is suffering. Weak margins continue to spur production cuts, and are expected to continue through the latter half of 2013. Turkey hatchery data point to further industry contraction during the remainder of 2013, with poult placed for grow out during the first four months of 2013 down 30 percent YoY. Given these decreases, turkey production is expected to fall 4 percent by the end of 2013.

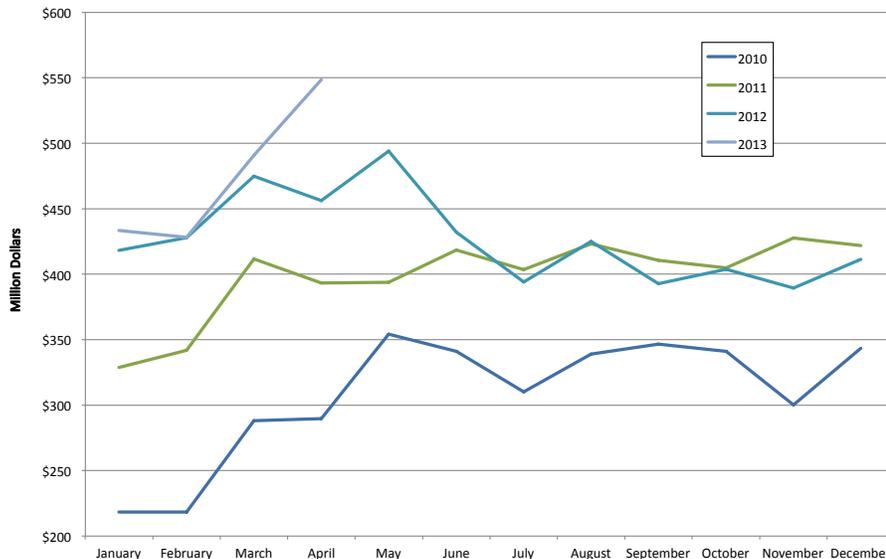
Although turkey meat production was expected to decrease YoY in Q2-2013, May turkey production amounted to 508 million pounds, up 5 percent from the five-year average. May production was bumped up both by an increase in the number of birds slaughtered and by an uptick in average bird weights. Turkey liveweights are expected to increase 1.4 percent during 2013, due to increased breast meat and deli turkey demand, compelling producers of de-boning toms to grow larger birds. Turkey cold storage stocks continue to contract from 2012 levels, with Q2 cold storage stocks expected to decrease 5 percent YoY. Although April prices for most turkey parts were below year-ago levels, prices have begun to edge up from Q1 thanks to lower production and decreased cold storage stocks.

Turkey exports took a hit in April. They fell 13 percent YoY, mainly due to decreased shipments to Mexico, the largest overseas market for U.S. turkey. The 6 percent decline in turkey shipments to Mexico is likely attributable to substitutions of U.S. broiler meat within the Mexican market. Given decreased production and the increased value of the dollar, U.S. turkey exports are expected to remain below year-ago levels for the remainder of the year.

Dairy

At mid-year the dairy industry is in reasonably healthy shape, despite the continuing high feed costs. Class III milk prices rallied to nearly \$20/cwt in April before

Exhibit 5: U.S. Dairy Product Exports



Source: USDA FAS

settling back to the \$17.80-\$18.00/cwt range from May into mid-June. Through the first five months of the year, milk production YoY remained relatively flat before increasing 0.8 percent in May. Like the other livestock sectors, dairy producers are hoping for outsized 2013 crops and lower feed prices. In turn, lower feed costs in combination with strong export markets and sustained consumer demand should spur increases in herd size, productivity, and production, towards year-end.

For the last several months, milk production and cow numbers have been declining in western states, as milk prices have lagged (in California) and feed costs have remained stubbornly high. Until recently, Midwest producers had held at least some competitive advantage over their western counterparts through producing versus purchasing most of their own feed. However, when spring finally arrived, winterkill had claimed nearly 2 million acres of alfalfa across Minnesota and Wisconsin. Midwest hay prices are now nearly double their typical range at \$380 per ton, and the alfalfa re-planting and reduced harvest will significantly pressure the margins of those affected. This development is expected to push several smaller Midwestern producers out of business.

Going forward, the Class III milk price is expected to climb to just above \$19.00/cwt on average during Q3, driven by tight supplies relative to domestic and export demand. Then, as production increases in response to these market pressures, the Class III milk price is expected to moderate. Consequently, producers should enjoy improved margins for the remainder of the year, with feed costs per hundredweight of milk production moderating from \$9.11 in April to \$8.31 on average for the year and then to \$7.00 for 2014. This scenario paints a favorable picture for producers, with 2014 margins forecast to be their highest in five years, which should spur herd

expansion moving into the new year. For all of 2013, the Class III price is expected to average \$17.80-\$18.20 versus \$17.44 in 2012, and early projections for 2014 place the Class III price in the \$17.00-\$18.00 range.

Outside U.S. borders, production has yet to rebound. New Zealand, currently in its low production season, is getting winter rains to ease the threat of long-term drought, but their export sales will remain relatively light for the next few months given the sharp fall-off in their late season production. Weather and pricing issues have kept Australian production below year ago levels, as well. In Europe, a very wet and delayed spring weakened its seasonal flush, while continuing high feed costs are deferring any near-term expansion plans.

After bottoming out at year end 2012, U.S. dairy exports have climbed through the first four months of the year. (See Exhibit 5.) Production shortfalls in New Zealand and contraction in Europe have helped U.S. sales rally as April exports reached a record-high 15.7 percent equivalent of milk production. Leading the way were unprecedented milk powder sales, while cheese, lactose and whey protein concentrate sales continued to exceed year ago levels. Overseas demands from China, Southeast Asia and the Middle East have remained

robust, while Mexican purchases have been mixed. U.S. products are currently competitively priced in world markets, so near term export sales should remain strong.

Greek yogurt continues to be the shining star of the U.S. dairy case. Sales in 2012 surged more than 50 percent to \$1.6 billion. In 2007 Greek yogurt had accounted for a mere 1 percent of yogurt sales; but just 5 years later, its share has grown to nearly 40 percent. Greek yogurt is expected to drive overall yogurt sales from \$7.3 billion in 2012 to \$9.3 billion in 2017, despite lagging sales of traditional yogurt. And, Greek yogurt is now making its way into snacks, cereals and desserts, as well. Overall, spoonable (non-frozen) yogurt currently consumes roughly 3 percent of the U.S. milk supply.

All is not rosy in the Greek yogurt world, however. A recent article in *Modern Farmer* characterized the acid whey by-product of traditional (strained) Greek yogurt as a “toxic environmental hazard.” Andy Novokovic of Cornell University points out, however, that the acidity of the traditional Greek yogurt by-product is akin to that of bananas, tomatoes or maple syrup, and that “acidic” does not mean “toxic.” In fact, the acid whey is typically fed back to cows, or used as fertilizer or bio digester fuel. Regardless, the *Modern Farmer* article has put industry leaders Chobani and Dannon on the defensive, while processors who use ultrafiltration technology (and add thickening agents) are now positioning themselves as the environmentally friendly Greek yogurts. In the meantime, food scientists are searching for a higher value use of acid whey, and the industry hopes consumers won't be dissuaded from their new found passion for Greek yogurt by this latest controversy.

Dairy product prices should remain relatively firm, given continued robust exports and solid domestic demand. Cheese prices are projected to rally into the \$1.80-\$1.90 per pound range going into fall before settling back into the \$1.75 range at year end. Butter inventories are being whittled down, which should move prices from \$1.55 per pound to the \$1.60-1.65 range. And nonfat dry milk prices should remain strong, in the \$1.68-1.73 per pound range.

Other Commodities

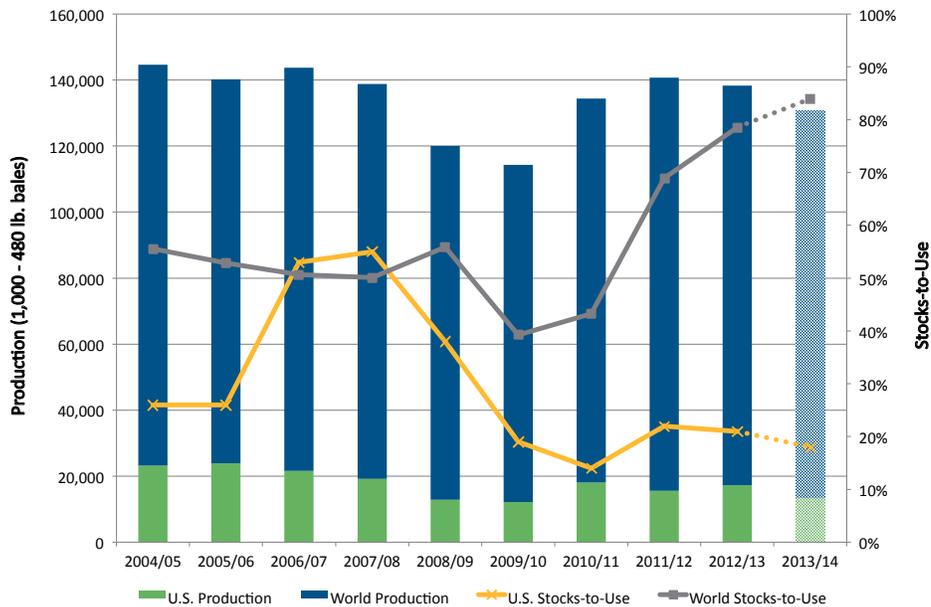
Rice

The rice market is facing a similar situation to that of wheat, in that domestic production and consumption are falling even as world production and use are rising. U.S. rice production and carryover are expected to be significantly smaller in 2013/14 than a year ago, causing domestic supplies to fall 6 percent YoY. In turn, firming prices should slow domestic and export demand for U.S. rice to the second-lowest level since 2000/01.

The USDA's acreage planted reports released late in June estimated that area planted to rice will amount to 2.47 million acres in 2013, down 8 percent YoY. Area for harvest is forecast at 2.45 million acres, down 9 percent YoY with all rice-producing states posting declines except Mississippi due to unfavorable spring weather conditions and higher returns for competing commodities. When combined with reduced yield expectations, U.S. production is forecast to fall to its lowest level since 1998/99. Much of the production decline will come from long grain varieties in the South, while medium and short grain production (mostly grown in California) will not fall as dramatically. Heavy, persistent spring rains in the mid-South made it difficult for producers to plant, which will delay harvest and likely have a negative impact on yields.

Foreign production, conversely, is expected to set a new record in 2013/14. All major Asian exporting countries are forecasting larger crops than last year, and several Asian importers are expecting to harvest record crops. Global rice consumption is also set to reach an all-time high in 2013/14, but the U.S. is likely to miss most of the expanded opportunity for world trade. Smaller U.S. supplies could drag down long grain exports by 15 percent, and short and medium grain exports by as much as 10 percent. On the upside, prices should remain somewhat competitive with South American rice, allowing the U.S. to compete more effectively in some world markets and decouple from the bearish tone of the Asian market. Look for both the U.S. and world stocks-to-use ratios to rise marginally, with the U.S. at 15.5 percent and the world forecast at 22.8 percent.

Exhibit 6: U.S. and World Cotton Stocks and Production



Source: USDA-FAS

Cotton

After building domestic ending stocks for three consecutive years, U.S. cotton production in 2013/14 is set to fall to a four-year low and far below what it was a year ago. (See Exhibit 6.) The USDA's planted acreage reports released late in June estimated that area planted in cotton will total 10.3 million acres this crop year, down 17 percent YoY. American Pima area is estimated at 226,000 acres, down 5 percent YoY. Planted area estimates for Arkansas, Louisiana, New Mexico, and Oklahoma are all at record lows.

With the loss of planted acreage in the South in favor of soybeans, and the expected abandonment in Texas due to persistent drought, U.S. ending stocks for the 2013/14 crop year are forecast to fall more than 25 percent YoY. As a result, new crop prices are expected to climb into the 73-93 cents range, compared to 72 cents per pound for the 2012/13 crop year. The U.S. is expected to remain the world's largest cotton exporter and to maintain its share of world trade at roughly 29 percent, but exports are nonetheless projected to decline by 19 percent. The drastic reduction in domestic supply will support prices through the marketing year. However, the combination

of firm cotton prices and expected weak synthetic prices will continue to undercut cotton's share in foreign textile mills.

World cotton production is also expected to decline, but by a relatively modest 3 percent YoY. As global supplies shrink and ending stocks are trimmed, most major exporters will have less cotton available for world trade. Thus China, the world's leading importer, is expected to import only 11 million bales in 2013/14, 45 percent less than a year ago. However, as inventories fall in most countries and stocks continue to climb in China, albeit at a slower rate, China's share of world stocks is slated to rise from 59 percent in

2012/13 to 64 percent in 2013/14. The strengthening of the yuan against the U.S. dollar should provide added economic incentive for China to continue its strategy of stockpiling more of the world's cotton.

Sugar

Worldwide and U.S. raw sugar prices have edged lower since the beginning of Q2-2013 and remained choppy through the last couple weeks of May. The nearby world raw sugar price was 18.49 cents per pound in April 1, 2013, and fell 7 percent over the second quarter. Similarly, the nearby U.S. raw sugar price was 21.7 cents per pound on April 1, 2013, and fell 12 percent over the second quarter. The spread between the world and U.S. raw sugar prices thus narrowed slightly from 3.2 cents per pound on April 1 to 2.1 cents per pound in mid-June. Ample domestic and world sugar supplies should prevent prices from rising substantially in the near term.

Going forward, U.S. sugar prices are likely to continue trending flat to slightly lower in response to the projected 6.2 percent increase YoY in domestic 2012/13 production to 9.05 million short tons, raw value (STRV). Sugar beet production for 2012/13 is expected to

decrease slightly, with less of the 2013/14 crop being harvested before October. In contrast, sugar cane production is expected to increase 9.1 percent YoY due to bumper crops in Florida and Texas. U.S. Imports are expected to increase slightly. Total use is projected to remain unchanged at 11,735 STRV, with ending stocks totaling 2.231 million STRV and equating to a stocks-to-use ratio of 19 percent. The USDA's 2013/14 projections suggest lower domestic production of 8.58 STRV, significantly higher imports and slightly higher food/other use resulting in a stocks-to-use ratio of 22.4 percent.

On June 17, the USDA announced a new, temporary program designed to manage the domestic sugar surplus. The USDA intends to purchase sugar from domestic cane and beet processors in exchange for credits under the Refined Sugar Re-export Program. The exchange for credits is supposed to lower imports into the U.S. while costing less than sugar forfeitures. As designed, the program will remove 1.5 tons of sugar from the market for each ton exchanged and should save around two-thirds of the cost of forfeitures. The time window for required exports or sugar transfers has also been extended from 90 days to 270 days. These changes are temporary and make no permanent changes to the current re-export program rules.

While world sugar production is anticipated to increase 2.8 percent, higher production costs and expanded use of sugar in ethanol production in Brazil may impact world sugar prices over the long haul, as Brazil is the largest sugar producer and exporter. A recent USDA report indicates that Brazilian costs of production and world surplus/deficit measures have an appreciable impact on world raw sugar prices. The report takes into account the cost of sugar production in Brazil, the effect of medium-term world sugar supply and demand imbalances, and the errors in supply and demand forecasts of previous years due to unanticipated events. Brazilian sugar production is expected to increase around 6.8 percent.

Two factors will influence the amount of sugar from Brazil that will be blended into ethanol. First, Brazil has increased the mandatory amount of ethanol that is to be blended into gasoline to 25 percent after having reduced

it to 20 percent in 2011 due to poor yields. Second, higher and rising gasoline prices are likely to increase ethanol's attractiveness.

Specialty Crops

Florida's citrus season will soon wrap up, and the USDA is estimating total production for the 2012/13 season to be around 134 million boxes, a 9 percent drop YoY. The decrease in production is mainly attributable to increased fruit drop from drought-stressed trees and citrus greening. Although May rains alleviated drought conditions, bolstering growers hopes for favorable growing conditions next season, citrus greening put a major dent into this year's crop. In fact, in response to citrus greening's impact on the Florida citrus industry, the USDA has allocated \$6 million to fund greening research, while the Florida State Legislature has also earmarked considerable funds dedicated to greening research.

Despite the citrus greening problem, Coca-Cola and other partners announced recently that they intend to plant 25,000 acres of orange groves in Florida. This additional acreage will constitute a 5 percent increase in Florida's total orange acreage. With Florida's total commercial citrus acreage having decreased 36 percent from 2000 to 2012 due to citrus greening, this announcement of an additional 25,000 acres will aid in efforts to recover from the steady production decline of the past 12 years.

Apple growers in Washington, Michigan, and the Northeast have reported strong fruit sets for the 2013 apple crop, thanks to ideal May weather and pollination conditions. This comes as a relief for Michigan and Northeast growers who suffered devastating losses due to frosts and drought conditions during the 2012 season. Growers are currently focused on thinning out the current crop and are expecting strong fall harvests.

After a cool spring delayed almond blooms by two weeks, California almonds are off to another good start with growers throughout the state reporting strong nut sets on trees. The USDA estimates 2013 almond production will be 2 billion pounds, a 6 percent YoY increase. The 2013 crop is expected to be the second largest in history, a shade below the 2011 crop. Contributing to this year's

expected growth in production will be increases in bearing acreage as well as in the yield per acre. Bearing acreage in 2013 is expected to be a record high 810,000 acres, up from 790,000 acres in 2012, while yields per acre are expected to increase by 3 percent YoY. The 2013 pistachio crop is also off to a strong start with warm weather conditions during the spring bloom leading to strong nut sets across California.

“*Hive health was weak going into the 2012/13 winter due to a perfect storm of disease and drought conditions.*”

Water continues to be a concern for tree nut growers in California. Little rain has fallen in key tree nut growing regions since December, and water allocations for irrigation continue to be lowered due to below-normal snow pack in the Sierras. Although growers are expected to have enough water for this year's tree nut crops, many growers are worried about water allocations after the 2013 harvest and whether they will be able to adequately irrigate orchards in preparation for the 2014 crop.

Honey bees have been dominating the news, with reports of increased hive loss during the 2012/13 winter. Although almond growers reported ample pollination for their 2013 crop, growers of other specialty crops are becoming increasingly worried about the dwindling supply of honey bees. The 2012 drought wreaked havoc on bee populations, with early estimates indicating that 31 percent of managed hives were lost during the 2012/13 winter, following the 22 percent hive loss during the previous 2011/2012 winter.

Hive health was weak going into the 2012/13 winter due to a perfect storm of disease and drought conditions. Drought conditions limited the amount of forage area for bees to collect pollen, leading to malnourished bees that were more susceptible to disease through the

winter months. Stack these conditions onto a cold and wet spring, which delayed blooms across the nation, and hives were further weakened. Although a one year uptick in hive loss does not necessarily represent a pervasive trend, honey bee populations have been steadily decreasing since 2006, when Colony Collapse Disorder was discovered. Honey bees are instrumental in pollinating over \$15 billion in U.S. crops, many of them specialty crops such as almonds, apples and berries. With the decreased numbers of honey bee colonies, growers will be cautiously preparing for a potential shortage of bees to pollinate their 2014 crops.

Farm Supply

In Q2-2013, fertilizer prices receded from their 2013 highs in response to lower farm income expectations reflecting closer-to-trend yields and lower crop prices. If realized, this decline in farm income would likely dampen fall fertilizer application rates. Ample global fertilizer supplies are also likely to weigh on prices as the crop year moves into the summer/fall fill season. As the planting season wraps up, the planting delays could cause shifts away from corn acreage, thus altering fertilizer product demand as well. Last year's drought, which severely diminished the river level, has given way to a wet spring that has now constricted river traffic due to an overabundance of water.

Ammonia prices remained relatively flat in the first half of 2013. As wet weather delayed planting, some growers may shift from anhydrous to side dress applications of alternative forms of nitrogen. Anhydrous ammonia prices may move lower in the short term as the spring application season winds down and prices of alternative nitrogen products, mainly urea, continue to trend lower. Some fertilizer producers have ramped up summer/fall fill programs at attractive prices.

Urea prices have fallen from their April 2013 highs. Weaker international demand and increased tonnage continue to weigh on the urea market. The unusually wet spring has slowed domestic demand for urea in the Dakotas through Wisconsin, leaving rice acres as the largest source of near-term demand. Urea prices have

trended downward since the start of Q2-2013 and are expected to run flat to slightly lower in the near term.

Mid-Corn Belt UAN prices held steady to slightly higher during Q2-2013. Owing to the planting delays, growers may decide to switch from ammonia to urea or UAN for post-planting applications. Given lower prices for competing forms of nitrogen, and as retailers work through pre-booked inventory and move into summer/fall fill, UAN prices are likely to abate.

Phosphate prices held steady early in Q2-2013 as the planting season began. As spring progressed, phosphate prices followed a downward trajectory, with Midwest DAP prices down 9 percent since January. Some phosphate producers are curtailing supplies to support prices, but imports will continue to apply downward pressure on domestic prices in the near term.

Lackluster potash demand continues to weigh on prices. Midwest potash prices remained relatively flat over Q2-2013 and are expected to hover near current levels in coming months. Retailers are reluctant to build inventory amidst low demand, and are generally buying on an as-needed basis. Near term potash prices are likely to remain flat to slightly lower.

Rural Infrastructure

Communications

Today's global communications landscape is in a state of upheaval. Broadband speeds are accelerating and have already climbed to astounding heights, the number of Internet users continues to grow, new devices and connections are coming on the market and being adapted at unprecedented speeds, and video consumption is soaring. Some analysts are predicting that 48 percent of the global population, roughly 3.6 billion people, will become Internet users by 2017, up from 28 percent in 2012. At the same time, it is expected that machine-to-machine devices will balloon the number of connected devices from 12 million to 19 million and that 3 trillion Internet video minutes will traverse the globe every month – equivalent to 1.2 million video minutes every minute. While these trends offer significant

opportunities, the cost of building a robust network to support the surging demand is substantial, and communications providers must evaluate their business models to ensure they can cover their operational expenses and also recoup the investment.

Rural wireline companies continue to work to meet demand and build non-regulated broadband-based revenues to replace their declining regulated revenues. These companies have diversified into a number of different broadband-based services and products to help fend off competition and boost their bottom lines. As a result, the incumbent local exchange carriers (ILECs) reduced their share of primary voice lines in the U.S. to no more than 42 percent at year-end 2011, and their share is expected to continue to fall 5-7 percent a year in coming years. Building a strong suite of services may also help guard against wireless broadband substitution. A recent report stated that 1 percent of U.S. households cancelled their home Internet subscriptions in 2012, opting instead to rely upon their wireless Internet access (though this is not a viable option for heavy Internet users).

Many wireline companies have diversified into video, cloud services, home security and monitoring, and other related services. Though some have shied away from providing tech support, those rural local exchange carriers (RLECs) that have opted to offer in-house tech support will likely be amply rewarded. Analysts expect that 95 percent of U.S. households will have a home network by 2016, which should spur demand for technical support. RLECs may also begin to see stiffer competition for their enterprise business, as cloud-based unified communications carriers edge out from urban areas. In the eyes of many small-to-medium sized businesses, these carriers often offer identical services as the local facilities-based provider – and do so at a lower cost.

While some RLECs have been successful in moving to a non-regulated revenue business model, the uncertain regulatory environment has stymied or stalled many investments and potential merger and acquisition (M&A) activity in rural areas. Although the Federal Communications Commission (FCC) has begun to implement new rules with regard to one-time

broadband deployment funding, ongoing reporting requirements, Universal Service Funding and intercarrier compensation, the commission continues to adjust and tweak these programs, offering little predictability for the future. Furthermore, annual reporting requirements related to recent FCC actions are becoming progressively more cumbersome. Rural providers may receive some relief if new legislation that calls for an annual report on the impacts of the FCC's Universal Service Fund reforms is ratified.

“Rural wireline companies continue to work to meet demand and build non-regulated broadband-based revenues to replace their declining regulated revenues.”

With confirmation hearings for the next FCC Chairman set to begin at the end of June, the third quarter is likely to be devoid of significant regulatory actions, as the FCC will likely focus on staff changes and other administrative issues. President Obama nominated a communications industry veteran, Tom Wheeler, for the chairman position. Mr. Wheeler has served as the chief executive for both the National Cable Television Association and the Cellular Telecommunications and Internet Association in the recent past. Having a chairman who truly understands the industry will be a positive, but Mr. Wheeler has long served the interests of the larger players in the industry. Meanwhile, rural lobbyists will be working overtime in the coming weeks to try and solidify pro-rural actions while an interim chairman remains in place.

Spectrum is still key in the wireless business, with rural operators focusing on gaining favorable terms in upcoming auctions for spectrum and network deployment support. Wireless operators continue to benefit from the rapid adoption of smartphones and

tablets, and they will also benefit greatly as more machine-to-machine connections come online in the next three to five years. M&A activity will continue at a steady pace as some rural players opt out of the market, while others jockey to expand their coverage areas. The FCC is focused on ensuring that the U.S. marketplace has sufficient spectrum, while largely ignoring other issues that are especially important to rural segments of the network, including roaming. In the coming months, rural advocates will work diligently to provide information to the FCC that will allow rural providers to remain competitive in upcoming spectrum auctions. Industry insiders were expecting Verizon's move to usage-based billing and T-Mobile's play to offer unsubsidized handsets and no contracts to cause a shake-up within the industry; however, these two changes have had little impact on the companies' subscriber numbers. Evidently, consumers are indeed open to new and different wireless billing structures, and carriers in turn can be more flexible and inventive in modifying not only their pricing plans but also their business models.

On the video front, rapidly rising costs of content and dwindling subscriber numbers are challenging the once very lucrative cable business. Even communication giant Verizon said that its programming costs are increasing 3-4 percent a year, forcing it to raise its own rates. Some companies are attempting to justify their rate hikes to consumers by offering TV-anywhere products, which are finally beginning to gain some traction in the marketplace. Daily video viewership on PCs, smartphones, tablets and e-readers has reached 42 percent of U.S. adults between the ages of 18 and 42. Industry insiders are questioning how long consumers will tolerate price hikes. Cable providers continue to ballast their performance with broadband subscribers, and are finding some diversification success in targeting enterprise customers. The sector is still seeing some M&A activity, with upgraded systems bringing in the best multiples. Senator John McCain sought to give video providers a helping hand in proposed legislation that would require content providers to unbundle programming packages, a new take on the FCC's previous attempts to encourage cable companies to provide a la carte packages. It is likely that consumer

behavior and market demands will dictate changes to the cable business model long before legislative and regulatory actions are successful in doing so.

The uncertain regulatory environment has had little discernible impact on the rural data center and fiber transport sectors. In fact, these two areas are thriving due to the growing global Internet trends. Data centers continue to increase capacity at astonishing rates. Sawis, CenturyLink's data center subsidiary, recently announced plans to add 85,000 square feet of space to its global markets. And the "Data Center Risk Index, 2013 Edition" reported that among 30 of the most influential global markets, the U.S. poses the fewest risks that are likely to impair the operation of a data center. Data center hotbeds, such as North Carolina, that were feared to have a capacity glut as little as one year ago are now thriving. M&A activity for 2013 in the data center segment is projected to top the 17 deals seen in 2012. Some of the larger data center operators, particularly those specializing in colocation, may be gearing up for an IPO in the second half of 2013. Fiber transport companies are looking to accommodate their customers' growing demands by leasing dark fiber, or strands of fiber optic cable that is dedicated solely to individual clients. Though analysts purport that the fiber companies that own all or the majority of their network will be best positioned to handle the astronomical volume of data that will be traversing the network in coming years, some companies are opting to lease network capacity. Again, merger and acquisition activity is expected to equal or better 2012 levels this year, as the larger fiber transport companies seek to increase footprints and add capacity to existing networks.

Power and Coal

Net power generation in the U.S. increased about 5 percent YoY during Q1-2013. Heating degree days in Q1-2013 were up 75 percent from a year ago. As a result, total net generation of electricity in the U.S. in early 2013 was near the top of the five-year range. Winter temperatures were cooler than normal throughout the eastern two-thirds of the U.S., but were above normal in the western third of the country, particularly in California, Nevada, and Arizona.

In recent months, coal-fired generation has regained some of its market share from natural gas, due to increased overall power consumption and higher prices for natural gas. Coal's share of U.S. power generation has increased to 40 percent from 35 percent during the past year. At the same time, natural gas' share slipped to about 25 percent from the record-high 33 percent attained in April 2012. This seesawing indicates that fuel switching to coal still occurs when natural gas prices rise to approximately \$4.00 per MMBtu and above.

With power demand nationwide having strengthened in early 2013, on-peak spot electricity prices are running well above year-earlier levels. Wholesale power prices in recent months have traded in the range of \$35-50 per MWh in most regions of the country, well above what they were a year ago. Wholesale price increases YoY ranged from 15 to 25 percent in the mid-Atlantic and Texas to 50 to 60 percent in Louisiana and New England and up to 60 to 80 percent in the West Coast markets. As of March 2013, the year-to-date average power prices paid by residential, commercial, and industrial customers were all slightly above what they had been a year ago.

An additional 2,755 MW of new capacity have been added to the U.S. power grid so far during 2013 through April, including 1,866 MW (68 percent) of natural gas fired capacity, 324 MW (12 percent) of wind capacity, 359 MW (13 percent) of solar capacity, and no coal-fired capacity. These capacity additions were offset by 2,196 MW of plant retirements nationwide thus far in 2013, mostly nuclear or oil-fired units.

Recent trends involving large additions of gas-fired and renewable power, along with the retirements of coal-fired generation, are likely to persist over the next several years. Regulatory and tax policies continue to favor the development of renewable generation and associated gas-fired peaking facilities, but to disincentivize the development of baseload coal-fired generation. For example, in June 2013, Colorado Governor John Hickenlooper signed a bill doubling the renewable energy target for rural electric cooperatives from 10 percent to 20 percent by the year 2020.

The wind power industry posted a record year of activity in 2012, as uncertainty over whether Congress would extend the Production Tax Credit for wind power generation led to a flurry of new wind power projects before year-end 2012. In January 2013, the Production Tax Credit was extended as part of the “fiscal cliff” negotiations in Congress. This latest extension of the Production Tax Credit applies to all projects under construction as of December 31, 2013, even if those projects will not be completed until 2014. Due to the flurry of activity that occurred in the closing months of 2012, wind project activity has slowed down in the opening months of 2013 but is expected to ramp up later in the year.

As a result of current regulatory policies, coal is likely to remain relatively inexpensive on an energy-content basis for the foreseeable future. Central Appalachian coal prices have declined from about \$92 per ton in early 2011 to approximately \$67 per ton today. Decreasing power consumption last year caused coal stockpiles at electric power generators to be well above the five-year average throughout 2012. However, owing to increased coal-fired power generation in early 2013, coal consumption is up about 5 percent from a year ago, while coal inventories are down about 1 percent from a year ago.

Natural Gas

Natural gas spot prices have been hovering around \$4.00 per MMBtu in recent months, after having bottomed out below \$2.00 per MMBtu in Q2-2012 in response to the abundant excess supply of natural gas that was then present in the marketplace. Market conditions have tightened since then, due to the return of colder temperatures this past winter (November 2012 through March 2013) to levels close to the 10-year winter average, after the abnormally low gas demand associated with last year’s unusually warm winter. Analysts at the Energy Information Administration (EIA) are projecting that spot prices at the Henry Hub will average \$3.92 per MMBtu in 2013 and \$4.10 per MMBtu in 2014 – well above the \$2.75 per MMBtu averaged in 2012.

Storage inventories of natural gas began the 2012-13 winter season at an all-time high level of over 3.9 trillion

“*Regulatory and tax policies continue to favor the development of renewable generation and associated gas-fired peaking facilities, but to disincentivize the development of baseload coal-fired generation.*”

cubic feet (tcf) in November 2012. However, the more normal 2012-13 winter caused a higher withdrawal of natural gas from storage than had been experienced in recent years, shrinking the inventories down to 1.67 tcf by April 2013, which was below the five-year average for that time of year. Gas storage inventories jumped sharply in the closing week of May 2013, but working gas in storage as of May 31 was still at 2.25 tcf – and just 69 billion cubic feet (bcf) below the five-year average.

Natural gas production appears to have leveled off, despite the recent run-up in natural gas prices. Thus far in 2013, dry natural gas production has remained flat when compared to the first several months of 2012. Analysts at the EIA are projecting that domestic natural gas production will total 70.0 billion cubic feet per day (bcf/d) in 2013 and 70.7 bcf/d in 2014, up slightly from the 69.2 bcf/d pumped in 2012. Meanwhile, natural gas imports from Canada are approximately 5 percent below 2012 levels and LNG imports are about 15 percent below last year’s volumes, causing a modest tightening of the U.S. natural gas balance.

The natural gas rig count continues to fall, dropping from 818 rigs in December 2011 to 354 rigs as of the end of May 2013. At the same time, the oil rig count has climbed from 1,196 rigs to 1,410 rigs over that same time period. Because shale wells exhibit a very rapid decline in performance for both oil and gas, it is interesting to finally see a leveling off of natural gas production after several years of substantial increase. Given the strong draw of gas inventory in storage during the winter 2012-13 season, the near-term gas bubble

may continue to shrink during the winter 2013-14 season, assuming normal weather conditions.

Going forward, natural gas demand for power generation is expected to continue to increase, driven by the power supply trends described above. Natural gas consumption for power generation has grown 61 percent over the past 10 years, from 5,672 BCF in 2002 to 9,137 BCF in 2012. Although natural gas usage for power generation dipped in early 2013, its usage for power generation is now expected to increase sharply as the industry heads into the early summer months.

With natural gas prices abroad continuing to tower over domestic prices, many U.S. gas companies are keenly interested in building LNG export facilities to take advantage of the disparity in prices. In April 2012, Cheniere's Sabine Pass terminal became the first facility to win approval from the Federal Energy Regulatory Commission (FERC) to export LNG from the U.S. In May 2013, FERC approved a second LNG export facility in Freeport TX. Approximately twenty-five other LNG export projects are currently seeking similar approval in North America. The combined increase in natural gas demand for power generation and LNG exports is expected to continue to put upward pressure on natural gas prices over the next three to five years.

At the same time, the natural gas industry's production forecasts for the Marcellus Shale have doubled during the past two years. As a result, natural gas demand in the Northeast is likely to be almost entirely met from northeastern gas production in coming years, whereas it used to be largely met by the U.S. Gulf Coast pipelines. This shift will change the gas flow patterns throughout the U.S. and will require substantial midstream infrastructure investment totaling as much as \$200 billion over the next 10 to 15 years.

Oil and Natural Gas Liquids

As with natural gas in the Marcellus Shale, oil production in shale plays, particularly in the Bakken (North Dakota) and in the Eagle Ford (southwest Texas), have doubled industry's consensus production projections from only two years ago. This windfall has created some interesting

challenges for the industry. First, in the Bakken, oil production has rapidly outpaced outgoing pipeline capacity. Because long-haul pipeline capacity takes such a long time to plan and build, the industry has responded by transporting its Bakken crude oil by rail. As of March 2013, 71 percent of crude oil production leaving North Dakota was doing so by tanker rail cars. In contrast, pipeline takeaway capacity in the Eagle Ford is less problematic than in the Bakken, as large pipelines built since 2011 take Eagle Ford oil directly to markets in Houston and Corpus Christi.

A second issue facing both Bakken and Eagle Ford producers is that the oil produced from shale is typically light in gravity. However, many Gulf Coast refineries already have more light oil and condensate than they can process with their existing equipment, resulting in discounts of nearly \$20 per barrel for wellhead condensate purchases. Refiners such as Valero are re-configuring their Gulf Coast refineries to handle this lighter crude oil and condensate. Additionally, there are several condensate "splitter" projects being developed in the field and at Gulf Coast terminals that can process light oil and condensate into distillate fractions such as kerosene and diesel that are in higher demand both domestically and internationally. Finally, some of this light oil and condensate is being exported to Canada, where heavy oil and bitumen producers require lighter liquid hydrocarbons to be used as diluents for their processes and pipeline transportation needs.

Another challenge involves natural gas liquids (NGLs), which are byproducts of natural gas production and are currently trading at prices below those of a year ago. When natural gas is pumped out of the ground, it contains many other substances – the NGLs – besides the methane gas that is sold as natural gas to final users. The five NGLs – ethane, propane, butane, isobutene, and natural gasoline – are separated from methane at plants located near the drilling fields, and the methane gas is then sent on through the gas pipelines. Consequently, the supplies of NGLs expand or contract directly in sync with the production of natural gas (methane), and the sharp increase in domestic natural gas production of recent years has been accompanied by an equally sharp

increase in the supplies of NGLs, thus weakening NGL prices. Nearly three quarters of these NGLs have been heading to the country's main NGL hub in Mont Belvieu TX, and there have been bottlenecks experienced in both transporting the NGLs to Mont Belvieu and fractionating them once they arrive.

In response to the growing supply of NGLs, the industry has announced 15.5 BCF per day of new NGL processing capacity development, with two-thirds of this growth planned for the Northeastern U.S. and Texas. The U.S. currently has 65.6 BCF of NGL processing capacity from 517 plants, which typically operate at about 68 percent of capacity. Hence, the 15.5 BCF of newly developed capacity would amount to 23 percent of existing capacity and 35 percent of current average throughput.

Along with the new processing capacity, the industry is also planning to add over one billion barrels per day of NGL pipeline capacity from the Bakken and the Rockies to the midcontinent region of the U.S., and it also includes expanded pipeline capacity from the midcontinent, West Texas, and the Northeast to the Gulf Coast. Earlier this year, Oneok completed a 60,000 bbl/day NGL pipeline from the Bakken to the Midwest. Enterprise will construct an 82,500 bbl/day expansion of its existing pipeline to move Rocky Mountain NGLs to Mont Belvieu; and Williams and Boardwalk have proposed a 200,000 bbl/day NGL pipeline to move liquids from the Marcellus and Utica shales in the Northeast to the Gulf Coast. Meanwhile, additional salt cavern NGL storage and export terminal capacity are being developed along the Gulf Coast to support the export of NGLs and alleviate the short-term imbalances between NGL production and consumption within the U.S.

In early July, the spot price for West Texas Intermediate (WTI) crude oil climbed above \$100 a barrel for the first time in over a year. However, judging by the WTI futures contracts, oil prices are expected to edge lower during the second half and end the year slightly below \$100 a barrel. With oil prices remaining strong, U.S. domestic oil production has increased dramatically in recent years. Domestic oil production in 2012 was 29 percent above what it had been in 2008. The U.S. now imports about 45 percent of its oil supply, down from more than 60

percent in the mid-2000s. Nonetheless, the oil markets are global in scope, and geopolitical events in the Middle East and growth in the U.S. monetary supply have kept oil prices at elevated levels, despite the increase in the domestic oil supply. Furthermore, restrictions in the use of fracking technology in some areas, restricted access to federal lands, delayed approval of the Keystone Pipeline from Canada, and offshore drilling restrictions have all hindered even further potential increases in North American oil supply.

Meanwhile, U.S. liquid fuels consumption edged up 1.0 percent YoY in Q1-2013, largely due to colder weather with heating degree days in the Northeast 21 percent higher than a year ago. Longer-term, however, liquid fuels consumption is trending downward at a modest clip. U.S. liquid fuels consumption totaled 18.55 million bbl/day in 2012, 10.8 percent below its peak level in 2005. Higher petroleum prices have encouraged more efficient use of petroleum products, including higher fuel consumption standards for motor vehicles, as well as substitution of more economic fuels for oil. U.S. crude oil stocks continue to be well above the five-year range, and refiners are increasingly turning to export markets as an outlet for their refined products.

Although WTI crude oil prices have been on the rise in recent weeks, retail gasoline prices have been edging lower. The average retail gasoline price nationwide was \$3.57 a gallon (all grades, all formulations) for the week ended on July 1, versus \$3.71 a gallon a month earlier and \$3.65 a gallon on average for the first six months of the year. Gasoline prices had been as low as \$3.20 per gallon in late 2012 and tend to rise towards the end of the first quarter and beginning of the second quarter of every year, as futures markets anticipate increased summer demand. Analysts at the EIA are projecting that retail gasoline prices will edge down to \$3.55 a gallon on average in 2013 and to \$3.43 in 2014, from \$3.69 a gallon in 2012.

Water Industry

Water utility officials nationwide unanimously selected aging water infrastructure as the industry's top concern, according to a recent survey conducted by Black &

Veatch, a consultancy. The nation's pipelines, tunnels, dams, pumping stations, and storage and treatment facilities are all aging, many to the point where they exceed their useful lives by wide margins. Water main breaks and system leaks represent not only an inexcusable waste of one of the nation's most precious resources, but also a drain (literally) on the utilities' revenue sources. Moreover, the problem is getting worse, not better. "The current rate of replacement of aging [water] collection and distribution systems nationwide is less than 1 percent for most utilities," according to Black & Veatch. At that pace, water utilities across the country will replace their infrastructures every 100 years, whereas the useful lives of most of these assets are generally no longer than 50-to-60 years.

With so many water infrastructure assets buried underground, it's hard to know just how severe the aging infrastructure problem is. In 2011, the U.S. Environmental Protection Agency (EPA) completed its assessment of capital investment needs of public water systems for delivering drinking water to their customers. Its bottom-line estimate is that those cap-ex needs will total \$384 billion (inflation-adjusted) dollars over the next 20 years. Previously, the EPA had similarly estimated that the

capital investment needs of those same water utilities for wastewater treatment facilities, sewer overflows, and storm water management systems will amount to nearly \$300 billion over the next 20 years. All in, the nation's needed capital expenditures (cap-ex) for water infrastructure will total nearly \$700 billion over the next 20 years, requiring an annual outlay of about \$35 billion.

Funding these sizable cap-ex needs will be a challenge for the water utilities. In the past, these utilities have relied partly on low interest loans from the drinking water State Revolving Fund (SRF), which is funded in turn by the federal government. However, in the current fiscal environment featuring sequestration and a pressing need for the federal government to curtail its discretionary spending, many long-standing government-funded programs have ended up on the chopping block. And the drinking water SRF is no exception. The Administration's proposed budget calls for an 11 percent cut in the drinking water SRF and also for a 25 percent cut in the Clean Water SRF. The actual cuts in funding are likely to be even greater than these proposals. Going forward, the water utilities will be even more hard-pressed to fund their cap-ex needs than they have been in the past. ■

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.

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