CoBANK KNOWLEDGE EXCHANGE

June 2018

QUARTERLY U.S. RURAL ECONOMIC REVIEW

Trade War Rhetoric Shifts to Reality

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…

Key Points:

- The risk of an escalating trade war is the greatest threat to the U.S. and agricultural economies in the near term. Nearly 70 percent of U.S. agricultural exports are sold to destinations that are under active negotiations or embroiled in trade disputes.
- The U.S. corn and soybean crops are in great condition entering July. Corn exports are well above normal while soybean exports have lagged from year-ago levels. Prices are under pressure from both favorable growing conditions and impending China tariffs.
- Domestic meat production is on the rise. In 2018, red meat output is expected to increase 3-4 percent and poultry production is forecast to rise 1.5 percent. The pork sector is at greatest of risk of trade impacts as the industry expands and tariffs are set to increase in Mexico and China.
- The dairy industry has stabilized and shown some recent strength. Production gains have slowed and exports have increased. The EU, however, has inked free trade deals that could limit U.S. export growth. The EU-Mexico deal and Mexico's impending July tariff increase on U.S. dairy both pose considerable risk.
- Drought conditions have expanded across the Southwest, with over half of California now in moderate to severe drought. Most specialty crops also now face rising trade barriers in China and Mexico which threaten future sales growth.
- Implementation of the U.S. Department of Energy's proposal to subsidize uneconomic coal and nuclear units will result in higher energy bills for consumers and curtail investments particularly in wholesale energy markets where capacity prices will experience downward pressure.
- The FCC will be auctioning off $1.98 billion of CAF-II funds in July to carriers that agree to buildout broadband in unserved and underserved rural areas. Dozens of companies are expected to participate in the multi-round reverse auction.

Executive Summary

The world's two largest economies, the U.S. and China, are driving growth in the global economy. At the same time, the emerging markets are benefitting from growth in the advanced economies and global trade has broadened the base for economic growth. Global growth is forecast to approach 4 percent over the next two years, which would be the strongest since 2011. The risk of an escalating trade war is the greatest threat in the near term. Trade concerns are particularly high for U.S. agriculture. U.S. agriculture is increasingly dependent on export markets and nearly 70 percent of U.S. agricultural exports are to destinations that are under active negotiations or embroiled in trade disputes. With large global supplies in most crop, animal protein and dairy sectors, competition for market share is significant and will impact the entire food, fiber and agriculture supply chain including prices received by U.S. producers. Net cash income in agriculture has declined sharply over the past few years and the erosion in working capital has increased the need for debt in a rising interest rate environment. While the aggregate balance sheet remains strong, there are significant variations in economic stress across commodities and regions.

Global Economic Environment

With emerging markets beginning to benefit from the improved growth in the advanced economies, the base for global growth has broadened and now appears more sustainable than in recent years. U.S. economic growth is solidly in the 3 percent range and Europe appears capable of 2 percent growth despite rising political issues. Japan is likely to continue its monetary accommodation and that should sustain growth in the 1-2 percent range. Growth rates in China and India are likely to continue in the 6-7 percent range and provide an added boost to Asian growth. The NAFTA economies continue to benefit from the strong U.S. economy but trade uncertainties may limit potential growth in the short term. At this point the rising oil prices do not seem to have tempered growth expectations significantly. However, OPEC production decisions and uncertainty over Iranian supply potential could make oil prices more problematic in the future.

Key factors to watch:

- **Ongoing trade negotiations and potential trade disputes** are the major concerns in the near term. The U.S. imposition of tariffs on steel and aluminum has elicited responses from other countries and is impacting the ongoing NAFTA negotiations. Growth expectations will need to be tempered if current trade discussions are prolonged or if there is any further escalation in the trade disputes.
- **Personal and corporate tax cuts will continue to boost U.S. economic growth.** Consumer spending has accelerated in response to reduced tax withholding and continued strong job availability. Corporate profitability has been boosted by the reduced corporate tax rates and business investment has moved sharply higher. This momentum will carry into 2019.
- **China continues to grow at a 6-7 percent annual rate** as it continues to encourage greater reliance on domestic consumer spending as an engine of growth. The One Belt One Road policies continue to build demand for the industries that have significant overcapacity (steel, rail, etc.). Trade issues with the U.S. are a source of concern.

- **European growth expectations have been tempered** somewhat by the political uncertainty in Italy and Spain combined with the ongoing Brexit negotiations that are scheduled for completion in March 2019. Italy and Spain have precarious coalition governments and are on a course to challenge fiscal commitments made to other EU members. Sovereign debt concerns are likely to be rekindled.
- **Central bank policy divergence is likely to widen for the balance of 2018** as the U.S. Federal Reserve appears to be the only major bank expected to move its policy rates higher. While other banks are reducing their liquidity injections through quantitative easing they continue to pursue accommodative monetary policies.
- **The U.S. dollar is likely to be pressured higher** as the divergence in monetary policy and relative growth rates continues to widen. Geopolitical concerns may also boost the dollar as a safe haven alternative.
- **Geopolitical risks remain significant in the Middle East** but may be tempered on the Korean peninsula if negotiations with North Korea are successful.

U.S. Economic Environment

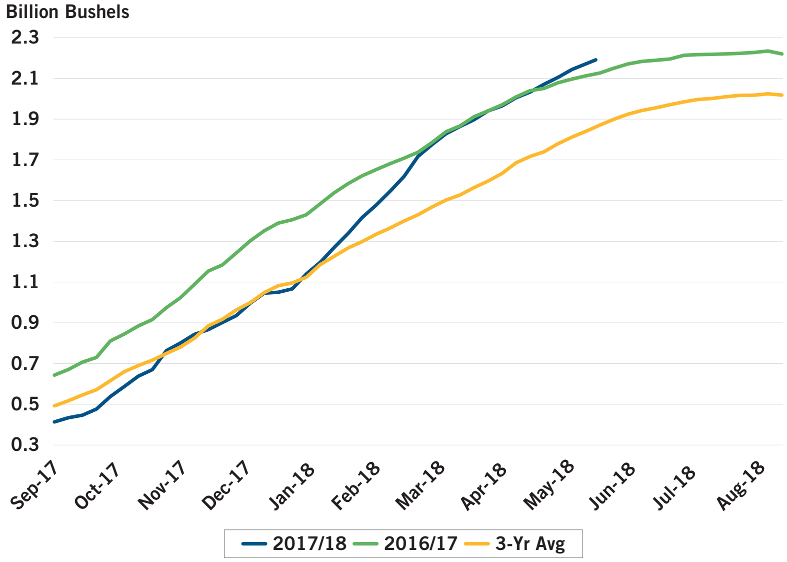
The U.S. economy has gained significant momentum over the past few months and the economic growth rate in the second quarter of 2018 will be significantly in excess of 3 percent and may even exceed 4 percent. Consumer spending has rebounded as consumer income is boosted by recent tax cuts. Housing prices now exceed the previous peak in 2006 and residential construction is accelerating to keep pace with strong housing demand. Business investment continues to grow stronger as profitability gains momentum as a result of corporate tax cuts and investment incentives. Inventory rebuilding and a reduced trade deficit will boost growth further. Growth rates around 3 percent for the balance of 2018 and into 2019 seem likely despite some clouds on the horizon. In the third quarter of 2018 the current U.S. business cycle will become the longest in U.S. history but also one of the weakest.

This optimism is tempered by several potential issues. The impact of the continuing trade uncertainties, the market reaction to the pace of Federal Reserve rate increases, the ongoing special counsel investigations and the tenor and outcome of the midterm Congressional elections. The imposition of steel and aluminum tariffs and the lack of progress in renegotiating trade agreements such as NAFTA are unsettling to the market and could worsen economic conditions if allowed to continue for an extended period. The Federal Reserve appears to be contemplating three more increases in the federal funds rate if economic growth continues on its current course. This would dampen interest rate sensitive sectors such as housing if long-term rates also move higher. The tenor and outcome of the midterm elections alongside the ongoing special counsel investigation will inject significant uncertainty into ongoing policy expectations.

U.S. Agricultural Markets

Weather and trade concerns remain the focus of commodity markets. Nearly 70 percent of U.S. agriculture exports are destined for China, Mexico, Canada, Europe, Japan and S. Korea. Trade negotiations or trade disputes are underway with virtually all of these customers. Equally important our competitors for these markets are aggressively seeking new trade relationships that may challenge our historical supply chain commitments. Against this backdrop the commodity markets have steadied and are assessing the 2018/19 crop potential. Global supplies of most commodities are large and the size of the coming harvest will be a critical price determinant. The strong world economy is boosting export markets but competition for market share is significant. While drought conditions prevail in several areas of the U.S. it is still too early to precisely gauge the likely crop output. Current prospects point to prices somewhat above last year but trade negotiations will have an outsized influence on price direction. Animal protein and dairy sectors continue to expand but they find themselves with a price outlook similar to the crops sectors. Trade tensions are particularly troublesome for the pork and dairy sectors that have significant markets in Mexico.

EXHIBIT 1: Total Export Commitments, Corn



Source: USDA-NASS

Current market conditions would indicate very limited improvement in net farm cash income in 2018. Rising interest rates, higher fuel costs, relatively high land rental rates and little price relief from other inputs will continue to put downward pressure on profit margins. Total debt and debt-to-income levels are rising as working capital generated in earlier years is reduced and producers seek increased debt financing. There does remain significant variability in economic conditions by commodity, region and business structure.

Grains, Oilseeds, and Biofuels

The 2018 corn and soybean crops are off to a solid start, with good conditions and generally favorable weather. The USDA projects lower ending stocks for corn, soybeans, and wheat in 2018/19 thanks to higher demand (wheat and soybeans) or lower production (corn and soybeans). Weather risks abound this time of year, but long-run forecasts through the summer indicate generally favorable weather for much of the Midwest with normal to above average temperatures and normal precipitation for July, August, and September.

Trade negotiations continue to play a key role in market activity. In the second quarter, U.S.-Chinese trade relations seemed to improve on the surface and then deteriorated. Soybean markets rallied on a May 20th announcement from Treasury Secretary Mnuchin's that stated the trade war was on hold. However, in mid-June, both the U.S. and China announced 25 percent tariffs that would impact $50 billion of the other's goods, and China's tariffs are aimed squarely at U.S. agriculture. The proposed tariffs include soybeans and are slated to take effect on July 6.

Meanwhile, the Trump administration has moved forward with steel and aluminum tariffs on imports from Canada, Mexico, and the EU. This directly impacts the agricultural sector by raising the costs of inputs on things like machinery. Indirectly, these tariffs have prompted the impacted countries to impose retaliatory tariffs on agricultural products. Moreover, these tariffs complicate ongoing NAFTA trade negotiations, which is unlikely to be resolved this year.

These trade tensions have strained relationships with U.S. trade partners. This is the number one risk as the U.S. grain sector looks to empty bins and set up sales for the next marketing year.

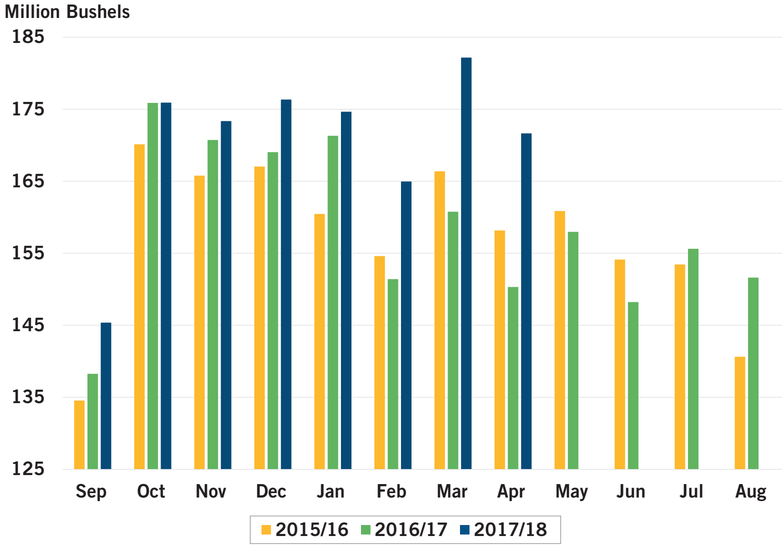
Corn

Corn is off to a strong start with over 75 percent of the crop rated good to excellent. Planting was slow to get started because of lingering winter cold and wet weather. May allowed for tremendous planting progress across much of the Midwest.

However, planting in the Northern Plains was slow due to unrelenting wet weather that kept farmers out of the fields. In these areas, some farmers may have switched from corn to soybeans, were forced into a prevent-plant situation, or may experience production issues due to delayed planting. As a result, production in these areas may decline from initial expectations.

The current weather outlook supports healthy crop growth through the summer. However, there are concerns that the current drought in the Southwest and Southern Plains could spread into the Midwest, with parts of the Delta and Western Corn Belt already experiencing abnormal dryness or drought.

EXHIBIT 2: U.S. Soybean Crush, Monthly



Source: USDA-NASS

U.S. corn demand has been stout this year with the USDA estimating a record total use for 2017/18. The export front has been surprisingly strong with total export commitments now higher year-over-year (YoY). (*See Exhibit 1.*) Year-to-date (YTD) exports have surpassed 1.5 billion bushels, and the weekly export figures since the beginning of April have been staggering. Only four weeks have ever recorded more than 70 million bushels in weekly exports, and three of them were posted in April and May of 2018. This is unheard of for spring months, when average weekly exports are closer to 40-45 million bushels. One potential explanation for such surprising export figures is that buyers are stocking up in fear of a trade war with the U.S. Mexico and the EU, which have been impacted by the U.S. steel and aluminum tariffs, are the largest buyers of U.S. corn YTD.

In stark contrast to the first quarter, sorghum is a trade bright spot following China's decision to close its anti-dumping investigation of U.S. sorghum. However, much of the sorghum originally available to Chinese buyers has already moved to alternative buyers including ethanol plants. Additionally, hopes for a resolved U.S.-Chinese trade dispute has sorghum producers holding onto stocks.

In the southern hemisphere, dryness remains a problem for Brazil's Safrinha corn crop. Rainfall in April and May was well below normal, and cool temperatures hindered crop development. Production has been hurt, but it is unclear by how much production will decline as harvest has not started in earnest. A short Safrinha crop would further boost U.S. corn exports at the end of 2017-18 and going into 2018-19.

Soybeans

Similar to corn, soybean crop conditions are remarkably strong. Currently, 75 percent of the crop is rated good to excellent with only the Northern Plains a concern due to late planting.

U.S.-China trade relations have dampened the U.S. soybean outlook with even larger impacts expected later in the year if tensions do not ease. U.S. soybean exports to China have slowed in line with seasonal trends as Brazil has taken over as the world's major soybean exporter. China's reduced foreign matter (FM) limits have also held up some U.S. cargoes going into China. If trade tensions remain high through harvest and into the new marketing year, the impacts will become increasingly severe for U.S. soybean exports and prices.

While soybean export commitments and YTD exports remain behind year-ago levels, soybean meal exports have exceeded year-ago levels. Soybean meal export commitments are the largest ever for this time of the marketing year and have added much needed support to the complex. In response to positive margins and strong export demand, the U.S. crush has been on a torrid pace since January. (*See Exhibit 2.*) If meal export sales slow, meal prices could decline precipitously and drag down crush margins.

Due to weak export demand this year, soybean basis has remained relatively feeble. While basis has strengthened more than it did in 2017, basis appreciation remains weak compared to corn and the five-year average for soybeans. Look for basis to strengthen this summer if the trade environment improves or futures prices level off.

One area of note globally has been the now-resolved trucker strike in Brazil. Truckers began blocking roads with their trucks in late May causing several soybean exporters in Brazil to delay soybean shipments because soybeans could not make it to ports. The government's announcement of minimum freight rates for trucking has significantly slowed soybean shipments within the country as sellers seek higher prices to cover the increased transportation cost.

Brazil also continues to wrestle with political and economic challenges. The Brazilian real has weakened significantly this quarter, making Brazilian soybeans more attractive to international buyers. While this situation may boost sales in the short-run, continued economic and political uncertainty may hinder export growth longer-term. Presidential elections this fall will be a key determinant in whether risk increases or subsides in Brazil going forward.

Wheat

Severe drought in the Southern Plains has continued through the second quarter. Hard winter wheat harvest is underway with expectations of low yields and high abandonment. While low yielding, farmers are hoping the wheat will have higher protein levels. This would allow elevators to blend lower-protein, lower-quality wheat they have been carrying for several years with this year's high-protein wheat. Initial reports indicate that protein levels are higher than last year.

Wheat prices have been supported by drought across the globe, not just in the U.S. Since April, Western Russia and Ukraine have only received 50 percent of the normal precipitation. The combination of lower yields and fewer acres will reduce Russian wheat output substantially. Australia is also dry as its winter wheat crop is being planted. Potential production shortfalls would help to reduce large global stocks.

In stark contrast to the Southern Plains, the major soft winter wheat growing areas in the Midwest had nearly ideal growing conditions. And with a 2017/18 ending stocks-to-use ratio of nearly 75 percent, these additional supplies will weigh on markets.

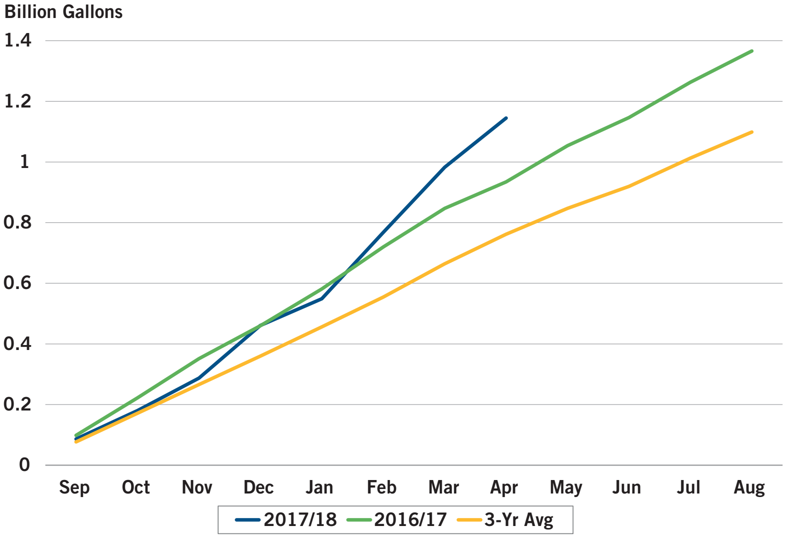
Spring wheat was forecast to take significant acres from corn and soybeans in the Northern Plains. Wet weather this spring, though, may have forced some farmers to shift to soybeans. The wet spring delayed planting which will likely reduce spring wheat production either as a result of fewer planted acres or lower yields.

Biofuels

Debate around the Renewable Fuels Standard (RFS) continued this spring, and a potential compromise announced in May was scuttled. This most-recent move supports compliance credit (RIN) prices that have been under tremendous pressure from RIN price cap proposals and a significant uptick in the number of small-refinery exemptions being granted. Potential policy changes pose considerable risk to ethanol producers.

Also on the policy front, the EPA proposed 2019 renewable fuel volume obligations in late June, pitching an overall increase in required renewable fuels from 19.29 billion gallons in 2018 to 19.88 billion gallons. Under the proposal, all of the mandated growth would come from advanced biofuel blending and corn ethanol requirements would be unchanged from 2018. Additionally, the EPA proposed a 2.43 billion gallon requirement for biomass-based diesel in 2020, up from 2.1 billion gallons in 2018 and 2019. The proposal did

EXHIBIT 3: Ethanol Exports, YTD - Marketing Year



Source: USDA-FAS

not address the EPA blending waivers that were extended to refiners earlier in 2018, and both oil and agricultural interests expressed points of contention related to the proposal. Both sides will undoubtedly fight for additional changes before the final blending obligations are released in Q4.

Far from the policy discussions in Washington, DC, ethanol plants have continued to increase production amid modest profitability and policy uncertainty. The four-week production average covering May 2018 was the largest for that four-week period on record. Profits have been hit by low ethanol prices and relatively high corn prices. Corn price increases often outpaced any ethanol price increases this spring. Current operating margins are hovering around 25 cents per gallon – right around the level required to cover fixed costs.

A DDGS price rally that started in earnest at the end of 2017 with strong demand and relatively tight supplies has reversed sharply over the past several weeks. DDGS followed rising soybean meal prices through much of the first half of 2018, and in the latter half of June, DDGS have also followed meal prices lower. Prices for DDGS are now around $145/ton in the Eastern Corn Belt according to USDA reports.

The bright spot for the ethanol industry is exports. Year-to-date ethanol exports are more than 200 million gallons above year-ago levels. (*See Exhibit 3.*) While exports to China have shut down amid the U.S.-China trade tensions, other trade partners including the EU, Colombia, Singapore, and OPEC countries have expanded their purchases. Brazil continues to be the largest U.S. ethanol importer with exports to Brazil ahead of last year's pace. Brazilian buyers continue to import U.S. ethanol despite the tariffs that are still in place.

Farm Supply

Spring fertilizer applications were slow to get started due to cold weather and a wet spring in much of the Midwest. Despite this slow start and a forecast of lower principal crop acreage in the U.S., wholesale fertilizer prices did not let up in the second quarter as potash and phosphorus have moved higher. Urea prices at the Gulf moved lower seasonally, but remain well above year-ago levels. After years of declining fertilizer prices, it appears prices have forged a bottom and are beginning to move higher.

Crop protection prices, meanwhile, are expected to remain elevated amid continued lower chemical production in China. Chinese chemical manufacturers have not been able to increase production after the Chinese government began environmental inspections of its heavy manufacturing industry late last year. The lower production is a problem for agricultural retailers as it will increase the costs of crop protection products at the manufacturer level while farmers will keep downward pressure at the retail level.

The Bayer-Monsanto deal closed at the beginning of June. As Bayer offloaded assets to alleviate regulatory concerns, BASF has emerged as a major seed and crop protection player. No immediate impact will come from the closing, aside from name changes.

Two recent announcements indicate the seed and crop protection industry may be shifting its global focus in the near term to South America. Corteva Agriscience (the to-be Dow/DuPont agribusiness spinoff) and Embrapa (Brazil's state-owned Agricultural Research Corporation) have agreed to pursue joint research to enhance Brazilian agriculture. Also, the Chinese company that acquired Dow/DuPont's seed corn business in Brazil, Longping, outlined major investments in Brazil with goals to double its market share in seed corn and enter the soybean seed business.

Partnerships and investments like these make sense in the long-run context of global corn and soybean acreage. The U.S. and North America have largely maxed out corn and soybean acreage. However, South America has expanded immensely over the past 50 years and has additional acres to incorporate. Additionally, South American farmers are intensifying production and requiring more inputs as a result.

Together, these factors show that South America will be the major growth area over the next several years. As a result, seed and crop protection companies will likely shift their focus to better meet the needs of these farmers in the coming years, spending more R&D dollars on projects, increasing operational assets, and hiring more sales staff in South America.

Animal Protein

As production of all major animal-based proteins rises to record levels, the uncertainty of export demand has become the industry's central focus. Domestic production of red meat and poultry in 2018 is expected to exceed last year's output by more than 3-4 percent for red meat and 1.5 percent for poultry.

Such large supply increases require robust exports to prevent domestic markets from being overwhelmed. Pork exports account for about 25 percent of U.S. pork production compared to beef's 10-15 percent, and poultry's 15-20 percent.

Trade rhetoric has worsened, and for some commodities including pork, talk has turned to action. Retaliatory tariffs imposed by NAFTA partner countries are especially

concerning for red meats. The escalation of tariff threats between China and the U.S. also presents greater risk.

Beef

U.S. beef demand has been very strong through the first half of 2018. Grocery stores are aggressively featuring beef, in part as an attempt to prevent customers from spending more of their food dollars with online delivery services. Many restaurants also have stepped up their promotions of beef.

Foreign demand has been superb as well. Beef and veal exports climbed 12 percent YoY in the first quarter. Foreign buying interest was broad-based, adding to the possibility of diversification among buyers amidst growing trade worries. Asian markets saw some of the most significant increases, including increased purchases by Taiwan, South Korea, and Hong Kong.

The Choice beef cutout value strengthened well into May (before it declined seasonally), incentivizing packers to purchase fed cattle and preventing live prices from tumbling as beef production continued to climb. Packer margins set new all-time highs in late May.

Cattle inventories in feedlots are still plentiful but have begun adjusting lower, and further declines are anticipated. USDA's latest Cattle on Feed report signaled a 5 percent YoY increase, and monthly feedlot marketings have remained strong. Placement of cattle into feedlots has been ratcheting back from the high levels of late 2017 and early 2018, which were induced

EXHIBIT 4: Live to Cutout Pork Price Spread

Source: USDA, LMIC

by drought and positive cattle feeding economic prospects. If recent marketing and placement trends persist, the on-feed count could be only 1-3 percent above 2017's by late summer. Still, feedlots have a large number of cattle to market this summer, which will keep prices under pressure. Through the summer, cattle closed out will post significant red ink. However, by fall, cattle feeding returns are forecast to rebound.

For calendar year 2018, packer margins are estimated to be record high, exceeding the prior high set in 2017. Full-year cattle feeder profits, though above the multi-year average, will be lower than in 2017. Feeder cattle prices will be below year-ago levels in late 2018 and early 2019, and will support feeding returns.

Pork

The pork industry is attempting to maintain balance between pork supply and new processing capacity. With the imposition of tariffs in Mexico and China, that balance has become more challenging.

New construction in 2017 added 5.5 million head of slaughter capacity, and another hog plant is expected to open this fall which will add another 2.5 million head. However, this year's slaughter is likely to be 7-7.5 million head more than in 2016, so most packers should maintain good utilization.

Pork exports were solid in the first quarter, up 6 percent versus a year ago. And despite the imposed tariffs, U.S. pork exports are expected to sustain YoY increases through 2018.

Live hog prices and cutout values are well below year-ago levels, with wholesale pork values taking a bigger hit than slaughter hog prices. (*See Exhibit 4.*) As a result, pork packer margins are at the lowest levels since 2015.

In the years leading up to the slaughter capacity expansion, producers were expanding finishing and farrowing capacity. And with that increased capacity, producers are unlikely to pull back hog numbers as long as prices are covering variable costs. According to Iowa State University's Farrow to Finish model, profits have been negative in the second quarter. Seasonally, producers should fare better in the third quarter, but negative margins are likely to return in the fall.

In recent years, pork bellies have been a driver behind hog price rallies. This year, however, belly prices have remained below year-ago levels and therefore have not supported the market as in the past. The benefits of aggressive retail and restaurant featuring have been far more limited for pork than beef.

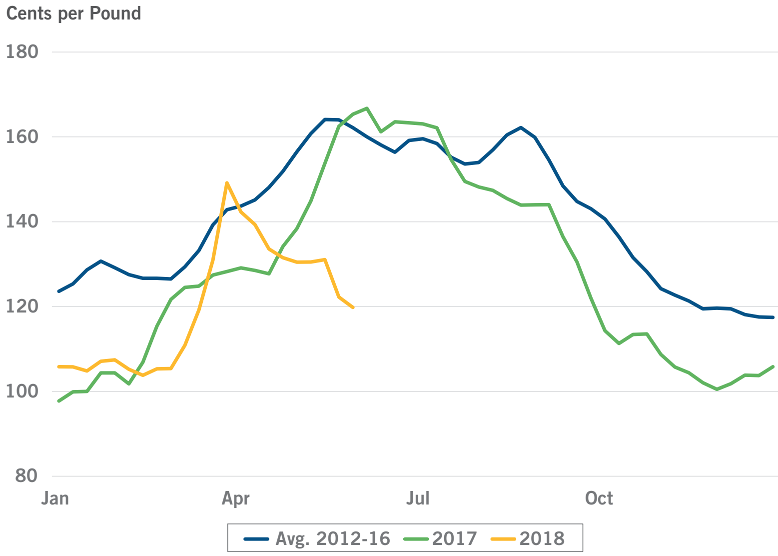
Cold storage inventories have continued to build, gaining 9 percent in April. Bellies added another 9 percent to frozen stocks, along with trimmings. Hams and loins are the only cuts keeping even with last year's inventory, but other market indicators point to impending increases.

Poultry

The broiler industry is growing output at a much slower pace than the hog and beef cattle sectors. Broiler chicks placed during the first quarter were up only 1 percent YoY, and broiler production is slated to rise 2 percent in 2018. A combination of higher feed costs and sluggish export trends are shaping the market.

So far in 2018, export shipments to Canada, Mexico, and Hong Kong have all been disappointing. However, in the wake of the Brazilian meat scandal, the U.S. broiler

EXHIBIT 5: Wholesale Chicken Breast Prices (Skinless/Boneless, Northeast)



Source: USDA, LMIC

industry has benefitted from additional purchases by the Middle East and Africa. Total first quarter broiler exports were flat versus a year ago. Overall, 2018 U.S. broiler export tonnage is expected to climb 4 percent from the lackluster levels of 2017.

Even with the increase in exports, the market will struggle to clear the larger supplies without lower prices. U.S. per capita consumption will rise only slightly, leaving the rest of the additional supplies to accumulate in cold storage.

Chicken wing prices have been the most disappointing of the broiler parts complex. Wing prices are nearly 60 cents per pound lower than this time last year, and could be signaling a structural change from the decade-long era of strong wing prices.

Chicken processor margins were unseasonably weak during the second quarter, as wholesale breast meat and wing prices struggled. (*See Exhibit 5.*) Deboned product prices have also suffered. However, margins for lighter weight whole birds such as those for rotisserie, improved and are at the highest level in at least two years. The dichotomy in returns between the two markets should encourage more production of smaller birds in the coming 1-2 years, and will help to moderate the pace of total tonnage increases.

Overall, chicken industry profitability YTD has been slightly better than 2016, which was a poor year, and far below the returns of 2017. Hatchery output is expected to reflect this situation. Hatchings were up 2 percent in Q2, but are expected to slow to unchanged YoY during Q3, and may even decline slightly in Q4. Much depends on the path of corn and soybean meal prices in coming months, and higher costs for these production inputs would skew chicken production decisions to the downside. Inventories of chicken in cold storage early in the second quarter were up 15 percent from a year earlier and will also be a limiting factor in production growth.

U.S. turkey production is set to decline YoY by 1-2 percent. Supported by low prices, turkey exports were active in the first quarter. The gain compared to 2017 was 15 percent, and was the largest for the quarter since 2014. Export strength is expected to continue, yielding a 7 percent increase for the calendar year. Mexico is the largest export market, which could be problematic if trade talks worsen.

Turkey (whole bird) prices were well below a year ago through the first half of this year. Prices should improve as downward production adjustments tighten inventory.

Declining domestic consumption is the biggest challenge for the turkey industry. Domestic use was down 5 percent from a year earlier during the first quarter of 2018. Wholesale whole bird prices have been down 20 percent YoY, and 2017 prices were down by similar levels. Breast meat prices in 2017 were down 40 percent from the prior year and then finally stabilized from that low base. Prices have strengthened during the last few months. Still, there is little incentive to increase or even maintain production at recent levels, until there is some clear sign of a turnaround in domestic demand.

Dairy

After a years-long torrent of bearish news in the dairy market, a few rays of hope are beginning to appear. Exports are setting new records, inventories are manageable and production growth is cooling off both here and abroad. (*See Exhibit 6.*) Domestic demand is good. Commodity prices have broadly been climbing since early this year. The dairy industry is well overdue for a respite from bad news, but with limits to the upside and ever-present trade risks, this is no time for irrational exuberance.

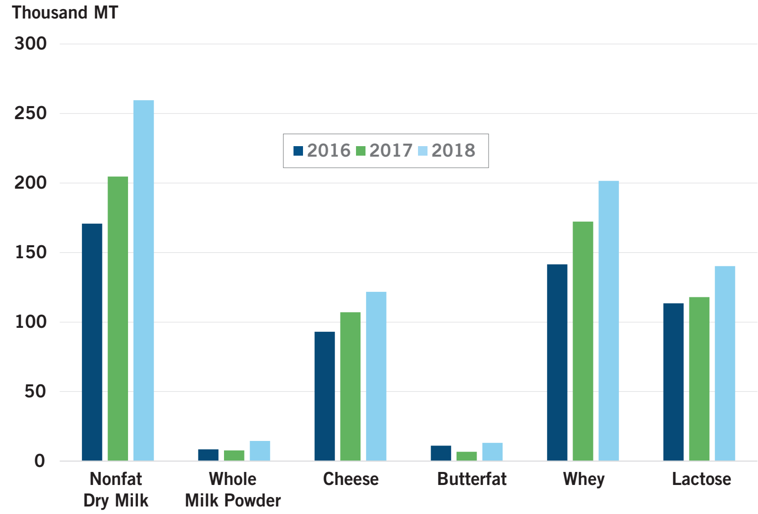
Margin pressures may finally be having an impact on milk production, which was up only 0.7 percent YoY in April. Growth in milk production in the EU is also slowing, and New Zealand is gearing up for a large scale culling of about 150,000 cattle, including about 75,000 milk cows in an attempt to eradicate Mycoplasma bovis, a bacteria which can lead to a variety of diseases in cattle but poses no threat to humans. That could translate to about a 1.5 percent decrease in the New Zealand milk herd.

Slower milk production in the U.S. has led to a corresponding slowdown in the production of dairy products like cheese and butter. Total cheese production was down 40 million pounds between March and April and up only 1 percent compared to April of last year. Cheddar production was down 3 percent YoY. Nonfat dry milk manufacturers' stocks are back closer to 2016 and 2017 levels for this time of year. Butter production is up five percent YTD compared to last year, and April inventories are up 5 percent YoY as well. That represents a larger YoY gap than is typical.

Dairy product prices have generally responded by moving upward or holding steady. Cheese has been on an upward trajectory since the beginning of the year, butter has held mostly stable in the 2.30s to low 2.40s. Prices in the U.S. are generally below or in line with the rest of the world. The competitive pricing is providing some strength to exports which hit an all-time high of 18.8 percent of U.S. production in April. These higher export levels have provided a slight, but welcome boost to the nonfat dry milk and whey markets.

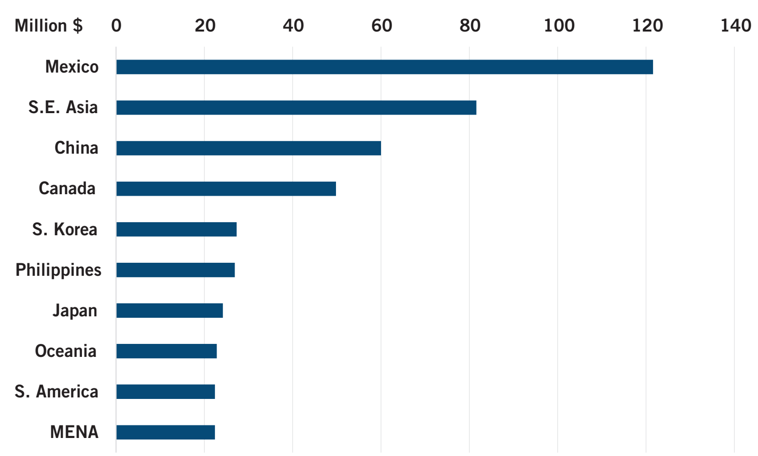
Trade negotiations continue to linger and tariff threats continue to be hurled between the U.S. and some of its most important dairy export destinations. (*See Exhibit 7.*) The latest is a new batch of tariffs from Mexico on essentially all types of cheese coming from the U.S. in retaliation for the newly imposed U.S. steel tariffs. These tariffs are effective immediately between 10 and 15 percent and are scheduled to ramp up to 20 to 25 percent on July 5.

EXHIBIT 6: Dairy Product Exports, January-April



Source: USDEC

EXHIBIT 7: Top Ten U.S. Dairy Export Destinations in April 2018



Source: USDEC

Mexico imported 212 million pounds of cheese from the U.S. in 2017, which represents just under 30 percent of U.S. exports. Further complicating the situation is a new trade deal between the EU and Mexico which, among other things means that Mexican imports of cheese – 75 percent of which come from the U.S. – must comply with EU rules about geographical indicators. This means that the U.S. could no longer export products labeled with protected names like Asiago, Parmesan, Feta and others.

Although dairy trade continues to do well and continues to push forward ignoring most of the trade rhetoric until any actual barriers get in the way, the trade uncertainties continue to hang over the market which owes much of its recent upside to strong exports. In the meantime, the markets should continue to improve modestly through the rest of the year. Class III milk prices should approach the $17 per hundredweight range by late fall, and class IV prices should approach $16. Markets should still finish 2018 with year-average milk prices slightly below those of last year.

Other Crops

Cotton

Cotton futures have been on a wild ride of late. Early in Q1, a number of factors mostly related to anticipations about increased Chinese demand, U.S. cotton prices began to climb. By early June, the Cotlook A-Index price breached the one dollar mark for the first time in six years. However, as Chinese tariffs looked increasingly likely in mid-June, prices fell back to six-week lows.

Much of western Texas remains under severe to extreme drought conditions and some crops have already been deemed a loss by insurance. Irrigated fields started off well, but extreme heat is now beginning to take a toll and causing stress. Dryland planting to beat crop insurance planting deadlines will likely lead to higher abandonment rates than normal, but high abandonment rates relative to the rest of the country are not abnormal for Texas.

Good export shipments have strengthened the demand situation. As of June 16, 16.2 million bales of cotton had either already been exported or were committed to

export sales which had not yet shipped. This is 4 percent above the USDA target of 15.5 million bales of exports for 2017/18.

The combination of weather challenges in the U.S. and an increasingly optimistic export outlook should continue to support prices overall.

Rice

Global rice stocks are expected to rise to near record levels, driven primarily by China who holds more than two thirds of the global stocks. China also leads the way in consumption, and strong growth in Africa should lift demand there to record levels this year.

Planting in the U.S. is nearly complete. Harvest is approaching in Texas and Louisiana. Total intended plantings are up 9 percent this year, with harvested area up by even more at 12.5 percent. The higher harvest expectation is driven by rapid adoption of new varieties this year as well as a comparison against a weak prior year with high abandonment and lower yields. Overall production should be up about 14 percent.

Destinations in Latin America account for over 60 percent of rice exports from the U.S., but the U.S. is beginning to lose share in these markets due to significantly better prices out of South America. In addition, sales to Iraq were critical in 2017/18 and will be closely watched for 2018/19. Iraq has funds set aside specifically for U.S. sourced rice but continues to opt for significant volumes out of South America, given the steep discount.

Sugar

Following a record output year in 2017, the U.S. sugar industry is poised for a significant decline in total sugar supplies in the upcoming 2018/19 marketing year. Production of both cane and beet sugar is expected to be lower this summer while imports are also expected to fall. The domestic stocks-to-use ratio is projected to fall from 14.86 in 2017/18 to a 44-year low of 11.48 in 2018/19.

In the meantime, sugarcane refiners are holding very large inventories of raw sugar – stocks have been measured at 20-year highs. The market anticipates that refiners are simply holding back raw supplies to avoid last year's shortfall, and in turn fully utilize capacity through the year. If deliveries do not pick up pace, prices will fall to account for higher ending stocks.

On the policy front, the U.S. sugar program has been center stage amidst the 2018 farm bill debate. In the final weeks of June, both the House and the Senate passed versions of the farm bill that would maintain support for the federal sugar program.

Specialty Crops

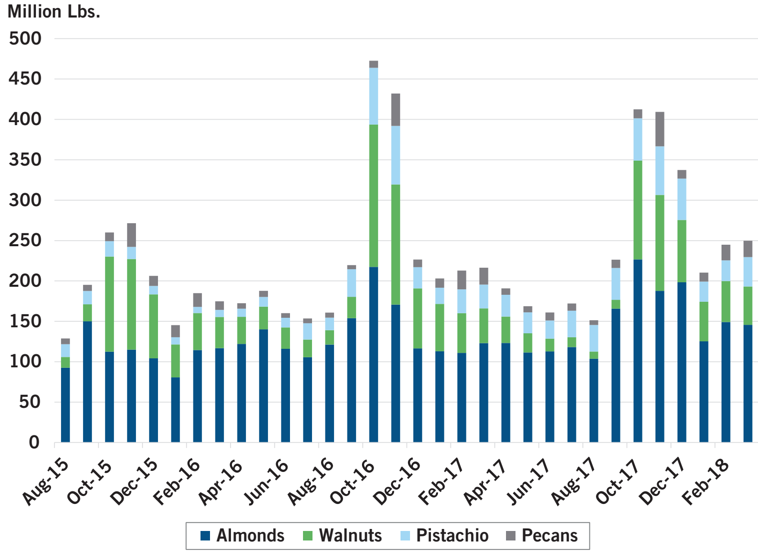
The E. coli outbreak in May tied to romaine lettuce from the Yuma, Arizona growing region raised new concerns over food traceability in the specialty crops sector this quarter. According to the Centers for Disease Control, 197 people across 35 states were infected in the outbreak, with five deaths reported. The incident left consumers wary of any romaine lettuce regardless of origin, leaving growers throughout the U.S. to leave fields of romaine unharvested. Growers who were diversified in their crop mix, though, fared better through the ordeal. With the outbreak now declared over, consumer demand for romaine lettuce appears to have recovered.

Drought conditions have expanded across the Southwest, with over half of California now in moderate to severe drought. Carryover supplies of water from last year, though, have buffered the shortfall and allowed

producers to continue irrigating. With the epic drought of 2011-2017 still in recent memory, new California legislation signed into law in June will mandate that agricultural water users expand water management plans and include annual water budgets and water efficiency objectives. Agricultural irrigators must also specify how they will manage water through multi-year droughts while meeting water allocation needs.

Ongoing trade concerns, meanwhile, continue to hang over the specialty crops sector with the U.S.'s long-term competitive advantage in key export markets in question. In early April, China responded to U.S. tariffs on aluminum and steel with tariffs on imports of 128 U.S. products, with fresh and dried fruit, tree nuts and wine being subject to an additional 15 percent tariff. Tree nut growers and processors are particularly concerned about the long-term effects of a potential trade war with 70 percent of their produce depending on the export market. Vintners, meanwhile, are concerned of missing out on long-term growth in China as Chinese consumers increasingly turn to imported wines. With tariffs making U.S. wine less competitive to wines imported from countries with free trade agreements, the U.S. stands to lose opportunities to reach consumers during a key market growth phase.

EXHIBIT 8: U.S. Tree Nut Exports



Source: USDA-ERS

Tree Nuts

The stout export pace for U.S. tree nuts has continued unabated as global demand continues to swell, with the latest trade data showing an 11 percent increase YoY. (*See Exhibit 8.*) Export volumes for nearly all regional destinations have persisted on an upward trend.

However, the escalating trade dispute with China is raising concerns about the U.S. potentially losing competitiveness in a valuable growth market. Last marketing year, China purchased 12 percent of all almonds grown in the U.S., and accounted for more than half of all pistachio exports.

Actual supply of U.S. almonds and other tree nuts, meanwhile, remains uncertain following the freeze in February during pollination. More will be known of the size of this year's crop by early July. Early estimates on this year's almond crop point to a record 2.3 to 2.4 billion shelled pounds, up from last year's harvest of 2.26 billion. Large carryover stocks from last year's record crop will help buffer any potential shortfall in production this fall.

Grapes

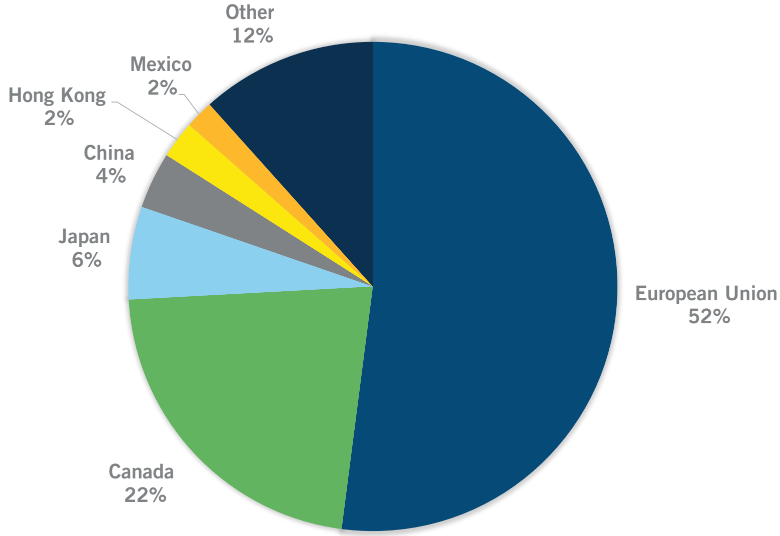
Harvest for the 2018 table grape crop has commenced in southern California. This year's production is expected to exceed last year's crop, thanks mostly to improved yields in the San Joaquin Valley. The California Table Grape Commission in April estimated this year's crop at 115 million boxes, up from last year's harvest of 109 million and potentially the second-largest crop on record. The cooler-than-normal spring, however, slowed the ripening of the crop and has delayed harvest progress.

This spring's mercurial weather has also raised concerns over quality for this year's table grape crop. Cool weather has resulted in a lower sugar content for much of the crop, while a week-long wave of triple-digit heat in May disrupted the coloring process. Table grape prices have remained mostly flat this season despite the dual forces of a slower U.S. harvest and a more lethargic import pace from Mexico. Mexican shipments YTD are down 30 percent YoY, according to USDA. This year's substantial U.S. harvest has held prices in check, while increased bearing acreage in Chile has helped soften prices on the global market.

Heightening trade tensions have darkened the outlook for both wine and table grape growers. Following the U.S.'s announcement of steel and aluminum tariffs, Mexican trade authorities announced they would respond with tariffs on numerous food products including grapes, but did not specify rates or date of implementation.

Chinese retaliatory trade tariffs on wine could cause negative long-term effects of lost market share in an important emerging market that is increasingly reaching for foreign wines. With China being one of the fastest growing wine markets in the world, U.S. vintners are concerned about losing competitiveness to other major exporters like New Zealand, Australia and Chile just as the market is expected to grow into the second largest wine market in the world behind the U.S. China's free trade agreements with other exporters have helped to erode U.S. market share in China from 12 percent in years prior down to 4 percent in 2017, with tariffs expected to only further weaken the U.S.'s standing. (*See Exhibit 9.*)

EXHIBIT 9: U.S. Wine Export Destinations, 2017



Source: U.S. Dept. of Commerce

Citrus

Harvest of the Valencia orange crop has concluded in Florida, with growers widely reporting that this year's harvest is likely lower than USDA's predictions. In May, USDA estimated Florida's Valencia harvest at 26 million boxes, down sharply from last year's crop of 35.9 million boxes with growers tallying huge losses to Hurricane Irma and ongoing struggles with citrus greening.

USDA projects an even steeper loss for mid and navel production at 19.0 million boxes, down from 33.0 million last year. If growers' estimates are true, 2018 would likely mark the first year that California's orange crop exceeded Florida's total orange production.

Not all is bad news for Florida's orange growers. The tight supplies resulting from the sharp reduction in this year's crop are pushing orange prices higher in the domestic market despite the increased pace of imports from Brazil and Mexico. Florida growers also benefited from crop insurance payments from losses to Hurricane Irma. Barring another hurricane in the upcoming growing season, Florida orange production is expected to recover in 2018-19.

Infrastructure Industries

Power and Energy

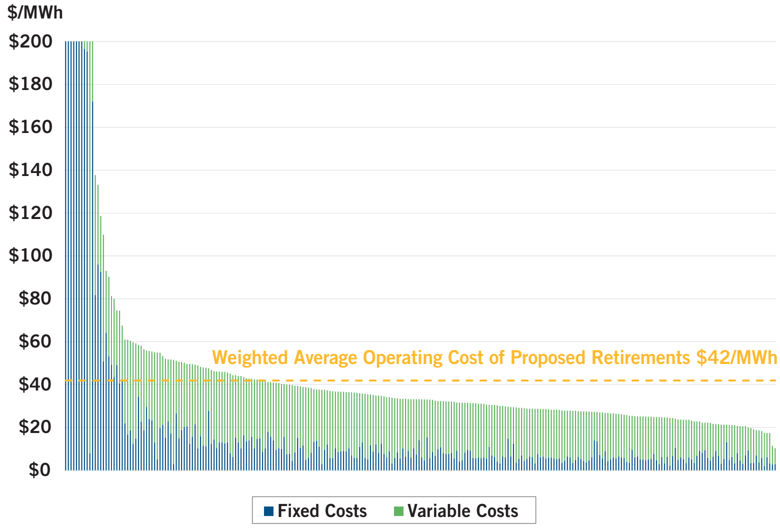
The Department of Energy (DOE) plans to exercise emergency authority under the Defense Production Act of 1950 and Section 202(c) of the Federal Power Act to direct system operators to purchase or arrange the purchase of electric energy or electric generation capacity from a designated list of Subject Generation Facilities (SGFs). The level of the proposed subsidy remains unclear but the order states it should be sufficient to eliminate any further actions toward retirement, decommissioning or deactivation over the 24-month period the DOE order would remain in place.

The Energy Department also plans to direct power plants on the SGF list outside of RTO/ISO territories to continue operating under their existing contractual arrangements with load-serving entities. According to Federal Energy Regulatory Commission (FERC) Chairman Kevin McIntyre, under 202(c) the DOE can order that certain generators be able to recover their costs from ratepayers. There's no existing law that allows the DOE to bail out specific plants for economic reasons. But because the legal justification has not been tested in court, it's hard to say how a legal challenge would hold up in federal court.

Without the SGF list, it is very difficult to develop a detailed analysis of how the subsidy will affect energy and capacity prices across the country. But evaluating the operating costs of existing coal and nuclear plants that are proposed to retire in the next 24 months could help establish a threshold to identify plants that could become eligible for a subsidy.

There are currently 16,950 megawatts (MW) of coal and nuclear capacity that are proposed to be retired by 2020, roughly three-quarters of this capacity is coal-fired generation. Of the proposed coal retirements, the

EXHIBIT 10: Operating Costs for Existing Coal Plants



Source: ABB Velocity Suite, CoBank

weighted average cost of operation in 2017 was $42 per megawatt-hour (MWh). (*See Exhibit 10.*) These costs account for fixed and variable costs, including fuel. The average operating cost for nuclear units that are proposed to retire was $22/MWh.

There are 283,000 MW of existing coal-fired plants operating in the U.S. Roughly 24 percent, or 66,500 MW report total operating costs in excess of $42/MWh. Of this capacity, 2,860 MW are already proposed to retire by 2020. It remains uncertain if owners will move forward with retirement plans if the DOE order is implemented. If owners continue with retirement plans, there could be 63,600 MW of operating coal plants that become eligible for a subsidy. A similar analysis yields an additional 60,100 MW of nuclear capacity that could benefit from a subsidy.

These values represent an upper bound of capacity that could receive a federal subsidy. If this level of high-cost capacity were to be subsidized, consumers would see higher electricity bills that reflect the cost of propping up uneconomic units. Capacity prices within RTO/ISOs that have a capacity market would decline.

A central premise of any capacity market is that sellers are expected to offer their capacity at a price sufficient to cover their costs. Federal or state subsidies upend this design because, subsidies that cover a seller's costs, incentivize an otherwise financially challenged existing resource to take any price the capacity market pays, so sellers offer capacity at zero price. In turn, reduced capacity price offers from resources that receive subsidies can significantly reduce capacity clearing prices.

Analysis conducted by the Independent Marketing Monitor for PJM suggests that the participation of just 1,000 MW of subsidized resources could depress overall market prices by $1 billion dollars. Furthermore, subsidies are typically considered "contagious," in that supporting uneconomic units will make additional units uneconomic, thereby expanding the need for subsidies.

Implementation of the DOE order proposed by the Trump administration will roil energy markets across the country. However, these subsidies pose very little risk to the owners of existing power plants that have fully contracted offtake agreements. The largest risk will be borne by investors that are building new plants or refinancing existing plants that rely heavily on strong capacity payments to be financially viable. More broadly, government intervention that props up struggling nuclear and coal plants injects a significant amount of uncertainty in the U.S. energy markets, bringing investments to a standstill.

Rural Water Systems

The rate at which the cost of water services have risen relative to other consumer goods and household income has generated greater awareness of water affordability for low-income households. The cost per unit of water has tripled since 1990. Based on data collected through biennial surveys, the typical cost for a residential customer to purchase 1,000 cubic feet of water increased from $11.16/month in 1990 to $34.61/month in 2016. In contrast, the consumer price index and median household incomes have approximately doubled over the same period.

Water affordability issues have bubbled up to lawmakers on Capitol Hill, who have begun to discuss the issue. In January 2018, the Senate Environmental and Public Works Committee held a hearing on water infrastructure needs and challenges, marking the beginning of Senate focus on water infrastructure in the current session of Congress. Following this hearing in March 2018, Congress authorized $1.06 billion for USDA rural drinking water and sewer infrastructure programs. This appropriation was the largest of its kind in history. The Appropriations Committee also provided Rural Development the maximum flexibility to use the $1.06 billion to support billions of dollars in direct loans and over $950 million for grants targeted to eligible rural utilities.

This funding helps to keep rates affordable in rural communities, and provides additional funding beyond the EPA's State Revolving Fund (SRF) Program. The budget for the SRF Program remains intact but it is oversubscribed, making it challenging for small rural systems to access SRF dollars. According to research analysts, requests to fund water and wastewater infrastructure projects through the SRF Program have increased 25 percent since last year. For the 2017/18 fiscal year, $26.9 billion was requested for drinking water and another $55.3 billion for clean water (wastewater) projects. The widespread need to upgrade infrastructure has resulted in a $67 billion shortfall in SRF funded projects, and indicates a looming financial challenge for water and wastewater utilities.

There is no quick fix for water affordability, but growing awareness of the issue has resulted in action on Capitol Hill focused on helping rural water utilities meet a growing need for infrastructure investment, while keeping rates affordable. This is crucial in an environment that will continue to be defined by flat to declining water sales and rising costs. The oversubscription of SRF dollars highlights this fact, and places the onus on water utility management teams across the country to remain diligent in managing costs while maintaining a high level of service.

Telecommunications

Rural Broadband Expansion

Rural broadband carriers, large and small, are eyeing markets for expansion, often targeting unserved and underserved markets. Some of this expansion is driven by state and federal rural broadband policies and funding, including the current targeted rural broadband expansion funded by the FCC's Connect America Fund (CAF). But much of this expansion is also driven by opportunistic rural broadband carriers who see business opportunities by targeting underserved markets.

These opportunistic carriers are often smaller incumbent broadband carriers who are executing "edge-out" strategies of overbuilding neighboring communities where pent-up demand for better quality broadband exists. Others are doing a combination of acquisition and upgrades. Rural carrier TDS is active with this strategy, having made several small acquisitions of rural cable properties, followed by upgrade strategies to improve broadband service.

TDS is also pursuing a fiber broadband edge-out strategy, overbuilding markets where there is demand for faster broadband. "We're looking at markets where the incumbent hasn't been making the investment we've been making in our own markets," commented TDS CFO

Vicki Villacrez at a recent investor conference. TDS has announced expansion projects through upgrades and overbuilds in 13 markets this year alone.

Companies like Redzone Wireless of Maine, Pioneer Telephone Cooperative of Oklahoma, and Slic Network Solutions of New York are illustrative of this trend as well. Redzone is expanding rural broadband to 13 new markets in Maine that will eventually reach 40K new locations, while Pioneer is undertaking an expansion project that will reach an additional 19K underserved locations. Slic will use $47 million in funding from the New NY Broadband program to expand broadband to close to 7K new locations. Rural electric cooperatives are also quite active in this expansion. The National Rural Electric Cooperative Association reports that over 100 cooperatives are now offering and/or building broadband throughout rural America.

Rural broadband expansion is also being driven by non-carrier technology companies. Microsoft is underwriting expansion activity through their Airband project, which partners with rural broadband carriers to deliver broadband to underserved markets using wireless TV white spaces technology. Microsoft and their partners have already identified 23 markets in 15 states to target with their program, with an ultimate goal of bringing broadband to 2 million people in underserved areas by 2022. Recent Microsoft partnership announcements include Packerland Broadband, which is expanding in Michigan and Wisconsin, as well as Declaration Networks Group, which is targeting rural markets in Virginia.

There are two primary technology choices fueling this rural broadband expansion – fixed wireless and fiber broadband. Fiber broadband typically is the technology of choice where the business case exists, which can be supplemented through subsidies from federal or state funding mechanisms. Market research firm Point Topic reports that fiber broadband leads all other broadband technologies with subscriber growth of 28 percent as of 4Q 2017, with copper broadband subscribership actually declining by over 6 percent. NTCA reports that of their membership that currently offers FTTP, 78 percent expect to make the technology available to at least half of all their customers by the end of 2018.

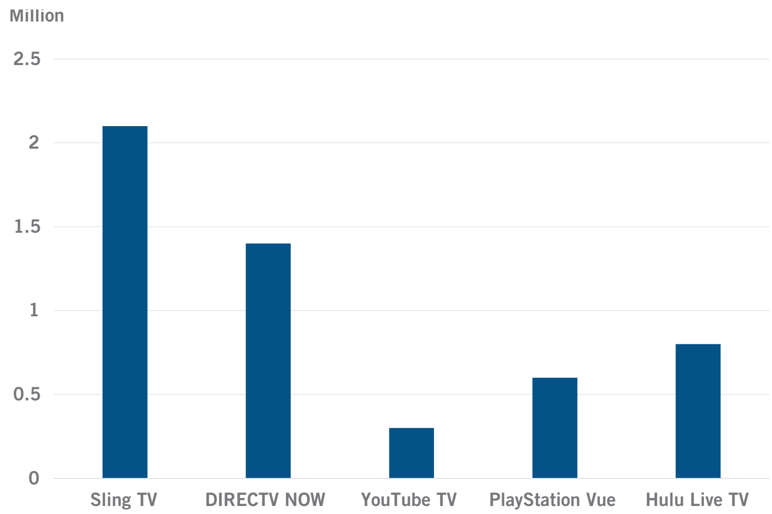
When fiber broadband doesn't make economic sense, carriers are turning to fixed wireless. There are significant rural fixed wireless deployments underway from large and small carriers. AT&T now reaches over 440K rural locations with fixed wireless, with plans to reach 1.1 million by 2021. Regional carrier C Spire plans to reach 200K locations with fixed wireless as a part of their C Spire Tech Movement program. Currently at around 5 million subscribers, the Wireless Internet Service Provider Association (WISPA) projects total fixed wireless subscribers to reach 6 million by 2019 and 8.1 million by 2021.

Changing Video Landscape

Video is often part of broadband deployments, but the video landscape is in transition, with significant changes being driven by changing consumer behavior and rising costs. Consumers are voting with their wallets, opting for 'skinnier' channel line-ups or cutting the cord altogether and choosing OTT alternatives. Traditional pay-TV subscriptions now reach approximately 91 million residential homes, down more than 7 million from their peak in 2012, according to Kagan, a group within S&P Global Market Intelligence. Pay-TV operators lost close to 1 million subscribers in 2017 alone.

In addition to traditional OTT alternatives like Netflix and Hulu, new OTT entrants like Sling TV and DIRECTV NOW offer skinnier channel line-ups at lower cost, putting

EXHIBIT 11: Virtual Pay-TV Subscribers



Source: Industry sources, Q1 2018

additional pressure on traditional pay-TV. Sling TV now has over 2 million subscriptions, while AT&T reports that its DIRECTV NOW service has close to 1.5 million. (*See Exhibit 11.*) Sony reports that its OTT service PlayStation Vue has just over 600K subscribers. If you include these new OTT pay-TV entrants, total pay-TV residential homes climb to 94 million.

This changing landscape is causing video providers to adjust their strategy. Both Consolidated Communications and Windstream are opting to resell DIRECTV NOW OTT service in addition to their own internally developed IPTV (internet protocol television) services. CenturyLink recently ended a trial of its own internally developed OTT product, CenturyLink Stream, and announced it would pursue other OTT partnerships, while also winding down its own Prism IPTV service as well.

Commenting on the realities of this changing video landscape, Verizon CEO Lowell McAdam recently declared, “I think the linear [TV] model is dead, it’s just going to take a long time to die.” Verizon has announced they will partner with an existing OTT provider to offer a bundled video and 5G fixed wireless broadband service, to be announced later this year.

Recent AT&T moves also highlight the changes ahead for video. AT&T, the largest pay-TV provider in the U.S. with over 25 million subscribers, recently outlined its video future. It includes a heavy dose of OTT. Only days after its $85 billion merger with Time Warner was approved by a federal judge, AT&T introduced its newest OTT platform this month. The new service will be called WatchTV, and will offer a sports-free package priced at approximately $15 monthly. AT&T has also signaled they will offer an OTT version of their satellite-delivered DIRECTV service, suggesting they may eventually try to move all video services to an OTT model.

These shifts create revenue and margin pressure. While traditional pay-TV service is a challenging business, ARPU is higher when compared to emerging OTT services like DIRECTV NOW, which start at around $30 per month, or less in some cases. According to IHS Markit, the average revenue per user (ARPU) for U.S. pay-TV in 2017 was $95.40. With numbers like that, it’s imperative that OTT strategies include a broadband bundling strategy to help raise overall ARPU numbers. Margins are of course slim for both video approaches, and potentially non-existent.

One advantage an OTT strategy brings is lower operating costs. Emerging services like DIRECTV NOW and Sling TV are virtually ‘self-serve’ with self-installs and credit card billing. Expensive operating costs associated with truck rolls and B/OSS systems can be reduced as a result. Time will tell if those reductions can make up for the lower ARPU and slim operating margins.

CAF-II Auction Update

An important development in the rural broadband market is the FCC’s plan to auction off $1.98 billion, to be allocated over a ten-year period, to support the construction of rural broadband in unserved and underserved markets. The funding comes from CAF dollars that were rejected in 2015 by price cap carriers in 20 states. Auction 903 is scheduled to commence on July 24, 2018.

The FCC recently released a preliminary list of carriers who have applied to participate in the auction. Of the 277 companies who applied to participate, only 47 properly completed the application, the FCC announced in May. The 230 companies with incomplete applications had until June 5th to resubmit their applications.

Companies expressing interest in participating include large price cap carriers like Frontier and Windstream. Interestingly, Verizon also applied, even though it initially rejected all CAF-II monies. Unlike the original CAF-II program, where price cap carriers were required to accept funding to cover an entire state, Auction 903 proceeds can be used for individual markets within states, suggesting Verizon has interest in serving specific individual rural markets, and not the entire rural territory within a state.

Many small rural telcos, cable companies, and electric cooperatives applied for Auction 903, as did satellite broadband providers Hughes Network Systems and ViaSat. Several wireless providers are also among the applicants.

Auction proceeds will be awarded to the carrier that bids to provide service at the lowest cost, although that cost cannot exceed what the incumbent carrier was offered during the original CAF-II program.

The auction will use weighting factors designed to favor projects that offer to provide higher bandwidth throughput speeds and lower latency.

Winning bidders must become eligible telecommunications carriers (ETCs) as defined by the FCC and must also submit a letter of credit before receiving funds. Winning bidders also must offer both voice and broadband service and must agree to cover 40 percent of the required locations by the end of year three, with 100 percent covered by the end of year six. Funding recipients must provide service at minimum speeds of 10 Mbps in the downstream and 1 Mbps upstream (10/1 Mbps), with 25/3 Mbps identified as the baseline for broadband service.

A mock auction will take place during the week of July 16th, with the actual multi-round reverse auction set to begin on July 24, 2018.

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. Analysts at Plus One Strategic Communications LLC prepared the overview of the communications industry.

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