August 09, 2019

Economics Group

WELLS FARGO SECURITIES

Special Commentary

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The State of Agriculture

Tariffs and Extreme Weather Make for a Challenging Environment

The nation's agricultural sector has been put through the wringer. Since topping out earlier this decade, crop prices have fallen almost continuously and the intensifying trade war with China has reduced sales to one of the sector's largest and fastest growing customers. Moreover, a string of natural disasters has inflicted significant losses across many key regions and disrupted planting and investment. America's farmers have a long history of dealing with adversity and the current string of challenges will certainly test their mettle. The agriculture sector, however, retains many comparative advantages, including an abundance of productive land, favorable growing climates, efficient transportation links, abundant financing options and access to leading-edge technology.

The festering trade dispute remains the darkest cloud hanging over farmers. Tariffs on an array of goods ranging from fruits and nuts to vegetables, dairy products and livestock have slashed Chinese demand for U.S. farm products and uncertainty about how and when the trade impasse will be resolved have led to increased caution across nearly the entire agriculture complex. Farmers are understandably uneasy, as each time trade talks appear to progress, negotiations somehow seem take a turn for the worse. Federal assistance payments will help tide some farmers over but will not make up for losses downstream to industries that supply and service the industry.

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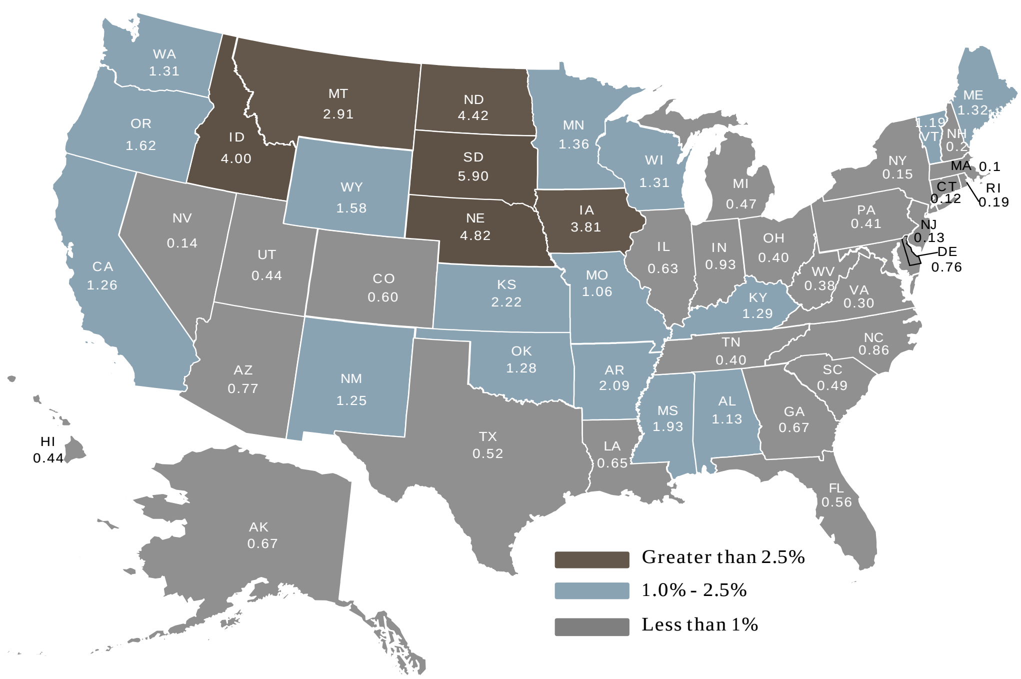
Figure 1: Agriculture as a Share of Total State GDP



Source: U.S. Department of Commerce and Wells Fargo Securities

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America's Farmers Are Dealing with A Lot of Adversity

Low crop prices continue to put pressure on farm income.

Low crop prices continue to put pressure on farm income. Prices peaked earlier in the decade amid a rush to grow corn to produce ethanol and optimism about the potential growth of foreign markets. With good growing conditions and rising yields, however, stockpiles began to build and prices have fallen almost continuously since 2013. More recently, price declines have been fueled by slower global economic growth, a stronger dollar and intensifying trade frictions with China that have resulted in retaliatory tariffs against many U.S. farm products.

After peaking at $7.63 in 2012, corn prices have tumbled to just $4 a bushel. Soybean prices have fallen by more than 50% since their height in 2012 and hit a 10-year low this past May. Fortunately land prices and lease rates have held up well, which has given farmers the flexibility to tap equity or lease out some of their acreage. Taking on more debt, however, is not a sustainable solution.

Weather conditions have also been challenging. Flooding in parts of Iowa and Nebraska pushed planting out into late spring and damaged stockpiles and storage bins. In many cases, the floods pushed planting beyond the deadline for crop insurance and many farmers have opted to take advantage of the USDA Prevented Planning Program, plant cover crops or simply plant fewer acres.

Not only did the Midwest experience a crippling blow from flooding, but the region also experienced two "bomb cyclones" earlier this year, which damaged crops and livestock. This spring's extreme weather added to a string of recent natural disasters that have unexpectedly impeded U.S. agriculture output. Hurricane Harvey inflicted an estimated $200 million in agricultural losses to Texas cotton crops and cattle herds in 2017. A year later, Hurricane Florence wreaked havoc in Eastern North Carolina and caused billions in damages to hog farms and field crops.

Storm-related livestock losses did not reverse the slide in beef and pork prices. After peaking at $167 and $93 per Cwt in 2014, beef and hog prices have fallen to $120 and $60 today, respectively. Cattle prices have been falling for the past few years. A drought in parts of the west had caused ranchers to cull their herds earlier in the decade, which sent prices higher a few years later. Those higher prices encouraged more production, which has recently weighed on prices. Cattle producing states have been further challenged by tariffs, which have cut shipments to China. Hog farmers had hoped to fare better, as the African swine fever severely cut into Chinese production. While China did make some large purchases, the tariffs are still clearly having an impact on major hog-raising states, including Iowa, Illinois, Minnesota and North Carolina.

China fell to the fifth largest agricultural export market the past year, as tariffs diverted purchases to other nations.

Exports have been largely impacted by tariffs nationwide to the point that the USDA pledged billions of dollars of aid towards tariff-induced losses. Before the trade war, China was the largest or second largest export market for U.S. agricultural exports every year back to 2008. China fell to the fifth largest export market this past year, as tariffs diverted purchases to other nations. California, the largest agricultural producer in the nation, has clearly felt the sting from trade frictions, as China imposed tariffs on wine and nuts. In 2017, California sold around $663 million worth of pistachios, $500 million of almonds and $185 million of wine to China, representing nearly 10% of the state's total agriculture exports.

Although the farm sector faces uncertainty due to natural disasters and the trade war, farm land values have held up relatively well. This stability has helped farmers survive the sustained drop in commodity prices over the past few years. However, with income off, debt increasing and continued uncertainty over tariffs, farmers are understandably hesitant about expanding their operations or buying new equipment. The Purdue University Large Farm Investment Index is currently at its lowest level since 2015—a sign that farmers are holding off from large investments. We expect farmers to remain cautious until we see a credible resolution to the trade dispute with China. Assistance payments should help limit the damage to farmer's finances but will not spark a resurgence in investment. Further, a global recession would complicate things greatly by making it harder to win back markets lost in the trade war, likely resulting in a longer period of low prices.

Figure 2

U.S. States with Highest Agriculture Output

(As of 2018, In Billions of Dollars)

Rank	State	Value ($)
1	California	$37.5
2	Texas	$9.2
3	Washington	$7.4
4	Iowa	$7.3
5	Nebraska	$5.9
6	Florida	$5.8
7	Illinois	$5.5
8	Minnesota	$5.0
9	North Carolina	$4.9
10	Wisconsin	$4.4

Figure 3

U.S. States with Highest Agriculture Employment

(As of 2017, In Thousands)

Rank	State	Amount Employed
1	Texas	265.1
2	California	237.1
3	Missouri	96.1
4	Iowa	88.2
5	Washington	84.9
6	Wisconsin	84.7
7	Ohio	84.6
8	Kentucky	84.4
9	Pennsylvania	80.3
10	Florida	79.2

Source: U.S. Department of Commerce, U.S Department of Labor, U.S. Department of Agriculture and Wells Fargo Securities

States Discussion

California: In 2018, California was once again the top agriculture producing state, with output from agriculture totaling $37.5B on a GDP basis. While agricultural output is about four times larger than the next largest state, agriculture only accounts for just 1.3% of the California's GDP. In terms of employment, California actually slightly trails Texas. The apparent contradiction has to do with California's focus on less labor-intensive crops, as well as the inability to find workers. The California Farm Bureau reports that around 70% of employers expressed they had trouble hiring in the past two years. The inability to find the workers they need has caused some farmers to scale back their operations. California's farmland values have continued to increase, however, rising 3% in 2018 to $9,000 an acre, which has also encouraged farmers to minimize land use.

The Golden State was responsible for nearly 13% of the nation's total agricultural value in 2017.

The Golden State was responsible for nearly 13% of the nation's total agricultural value in 2017 according to its Department of Agriculture. Top products include dairy, table grapes, wine grapes, berries and nuts. Internationally, almonds are California's largest export, followed by dairy and pistachios, which grew 12.9% and 32.7% year-over-year, respectively. California's GDP from agriculture dropped by almost $1.5 billion in 2018, partly due to abnormal weather patterns, but fortunately California's seven-year drought finally came to an end. A drop in exports due to the trade war has also put some pressure on California this past year. The state's top export markets are the European Union, Canada and China. China put tariffs on California's main exports, wine and nuts. Some of the tariffed goods have been more resilient than others. China is one of the largest consumers of pistachios and even increased its consumption over the past year. However across the nation, wine exports to China fell 25% due to trade tensions. Pistachios are heading into an off-year for the 2019-2020 harvest, so prices should hold up. Almond prices should also hold up fairly well, due to lower inventories.

Texas: Texas agriculture suffered a major blow with Hurricane Harvey in mid-2017. Damages to expensive irrigation systems, storage facilities and other capital equipment were felt by farmers well into last year. By the end of 2018, hurricane damages appeared in a 53-pound drop in estimated cotton yields per acre from 2017. Despite these challenges, Texas still placed second in the nation for highest agricultural output at $9.2 billion, trailing California. The state leads the nation in cotton, livestock and poultry products. Livestock and poultry products represent around 70% of the state's agricultural sales. Texas' total agricultural and livestock exports to China fell $229 million last year, dropping below $1 billion for the first time since 2013. This decline was partially offset by increased exports to Canada and Mexico. Texas farmers remain wary that it may be difficult to win back markets lost during the trade war.

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Farm real estate values continue to rise, as average land value increased 9.1% to $2,280 per acre in 2018, the second largest increase for agricultural land in the nation. Between 2012 and 2017, the number of agricultural operations held steady while the average acreage per farm decreased 2%.

Strength in Texas farmland values has given producers the flexibility to sell or rent acreage to improve their cash flow amid recent periods of financial stress.

Washington: Washington ranked third in the nation for agricultural output and fifth for agriculture employment in 2018. Apples and milk remained the state's leading agricultural commodities in 2017, accounting for 25% and 12% of total agricultural value, respectively. Although volatile, average apple prices in the United States have trended higher this decade, offsetting a steeper decline in dairy and milk prices.

Rising fruit prices have counteracted the blow of lower sales volume in Washington.

Between 2012 and 2017, the number of farms in Washington fell by 1,460 to nearly 35,800, the lowest number of operations since 1997. Declining profitability and difficulty finding farm workers have squeezed out several operations. The market value of farm real estate increased 5% from 2017 to $3,150 per acre in 2018, proving to be a bright spot for farmers impacted by trade tensions between the United States, China and Mexico. Although tariffs on various apples have disrupted thousands of trading partnerships, the agriculture outlook for the Yakima Valley is optimistic this year. According to the Washington Farm Bureau, rising fruit prices have counteracted the blow of lower sales volume. Poor weather conditions in competing states have decreased national yields and are keeping prices afloat leading into autumn.

Figure 4

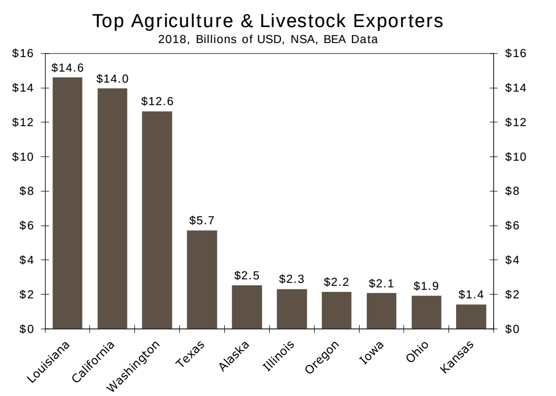
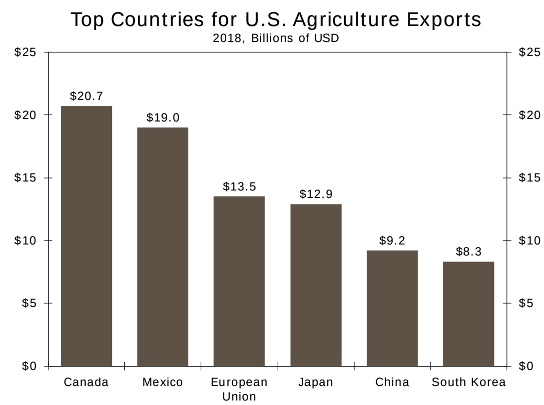


Figure 5



Source: U.S. Department of Commerce, U.S. Department of Agriculture, U.S. Department of Labor and Wells Fargo Securities

Iowa: With output topping $7.3 billion in 2018, Iowa ranks as the fourth largest producer of agricultural production. Agriculture accounts for 3.81% of Iowa's GDP, ranking fifth in the nation. The Hawkeye State is the top producer of corn and pork and the second largest producer of soybeans. Lower corn and soybean prices have clearly hurt Iowa farmers, as years of prolific harvests have led to burgeoning stockpiles. Prices for corn in Iowa dropped over 50% between 2012 and 2017 and soybean prices declined almost 35% over the same period. Tariffs on these commodities have made the situation much more difficult. Hog sales in the state had more than doubled over the past two decades, running up to 60.2 million hogs in 2017 from 27.5 million hogs in 1997, which had encouraged the industry to expand significantly. More recently, the pork industry has stalled, as demand from China has diminished. China is the world's largest consumer of pork, as it makes up 60% of their meat consumption. In the second half of 2018, pork duties were raised to 62% from 12%. There was hope that losses from the African swine fever might boost sales but any lift from that disaster was short-lived, as producers in other nations have largely filled that need.

Lower corn prices have clearly hurt Iowa farmers, as the Hawkeye State is the top producer of corn in the nation.

Catastrophic flooding in the Midwest left Iowa farmers with few viable options this spring, as the agriculture sector lost billions in infrastructure, crops and livestock. As a result, the USDA pledged to offer aid to help the effected communities recover. Iowa was one of the many states included in the $19 billion aid package promised to agriculture communities impacted by the natural disasters.

For all the troubles Iowa's farmers have had to deal with, farmland values have held up relatively well at $8,080 an acre in 2018, up 1% from 2017.

Nebraska: In 2018, Nebraska ranked fifth in the nation in terms of agriculture output at $5.9 billion, with cattle & calves, corn, soybeans and hogs among the leading product. Agriculture accounts for 4.8% of the state's GDP, ranking second in the nation. Nebraska exported nearly $29 million in agriculture and livestock products to China in 2017—a majority of which were soybean and beef products. Exports generated less than a third of their prior year's revenue in 2018, worsening the already shaky financial health of farms. Severe and widespread flooding in March caused more than $1 billion in damages, of which $440 million were from crop losses and another $400 million from cattle losses. Storms struck again in May and prompted the state's second disaster declaration of the year, leading the USDA to expand its prevented planting payment program. The severe weather also caused credit quality to weaken. According to the Kansas City Fed, farm loan repayment rates fell sharply in Nebraska and Missouri this spring.

Severe and widespread flooding caused more than $1 billion in damages in Nebraska.

The average market value of agricultural land in Nebraska fell to $2,850 per acre in 2018, marking the fourth consecutive year of decline. Unlike the majority of the nation, farmland value in the Northern Plains region has steadily declined in recent years. Farmers cite increasing input costs, property taxes and declining crop prices as prominent negative forces on farmland market values. As a whopping 25% of Nebraska's employment is agriculture-related, recovering from the lows of this past year is paramount.

South Dakota: Agriculture makes up a larger part of South Dakota's economy in terms of GDP and employment than any other state, at 5.9% and 7.4%, respectively. These proportions have declined slightly as of late, as lower farm incomes might be steering some farmers into other endeavors while growth is picking up in other parts of the economy. The past couple of years have been trying times for farmers. The Minneapolis Fed's quarterly Agricultural Credit Conditions Survey noted that 62% of the lenders it surveyed reported farm incomes decreased across South Dakota during the first quarter of 2019 from a year earlier. The survey's lenders also noted a similar drop in capital spending, with roughly two-thirds of lenders reporting a decrease in capital spending. Conditions improved slightly in the fourth quarter of last year but incomes appear to have fallen further in 2019.

Growing conditions have been relatively favorable in South Dakota compared to its Corn Belt neighbors. But there has been no escaping the impact from tariffs and the lingering trade dispute with China. Exports grew 3% in 2018 but are down 12% so far this year. Ethanol took the biggest hit, with the bulk of the decline coming from shipments to Canada. Farmland in South Dakota is fairly affordable, at $2,170 an acre, which has helped larger farming operations get even larger. The average farm size was up 7% from 2012 to 2017 according to the latest Census of Agriculture.

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Florida: Florida ranked sixth in the nation for agricultural output in 2018. In terms of market value, oranges were the top agriculture product with sugarcane, strawberries and tomatoes closely following. Florida's citrus output has declined precipitously in recent years due to citrus greening—an insect born disease that devastates citrus trees. Initially the disease stunts the tree's growth and turns the fruit green, such that it is unsuitable for either fresh fruit or juice. The disease has devastated Florida's citrus industry, which saw its citrus harvest tumble from a peak of 304 million boxes in the 1997-98 season to just 50 million boxes in 2017-18. This past year's harvest bounced back sharply but remains less than half its peak level. The all-Florida orange estimate for this planting season came in at 71 million boxes. This is higher by 26 million boxes from the prior year's season total, which was largely wiped out by Hurricane Irma. The 2019-20 harvest should show further gains.

While the larger orange harvests are good news, sales are being hampered by the trade dispute with China. According to Florida's agriculture commissioner, Florida's fruit juice exports to China fell 65% this year. The trade dispute, citrus greening and recent bouts with extreme weather are causing

Florida's farmland is the most valuable in the Southeast.

more growers to exit the industry. Demand for land is high, as Florida's population and economy are booming. Although average farm real estate value saw no change in 2018 at $5,700 per acre, Florida's farmland is the most valuable in the Southeast and is highly sought after for development.

Hurricane Michael ripped through the Panhandle in October 2018, creating an estimated $1.5 billion in agricultural losses and damages. Timber, cotton, cattle and peanut operations were among the most affected. With destroyed fields and irrigation systems, several farms are turning to alternative crops such as hemp and hops that are hardier and better suited for new, rougher field conditions.

Wisconsin: Wisconsin ranks among the top ten states in both output and employment, with the dairy industry being one of its main economic drivers. In 2016, dairy farmers hit a record, producing over 30 billion pounds of milk. Besides dairy, Wisconsin farmers also produce snap peas, cherries and cranberries. The state is also a major producer of corn and soybeans, lower prices and recent tariffs have been impacting farmers. Tariffs on dairy products are clearly making waves in Wisconsin's agriculture sector. China is one of the top five markets for Wisconsin agricultural exports, buying $292.5 million a year. Since the tariffs were first imposed, U.S. dairy product exports have plummeted 43%. With exports down so sharply, many farms have run into trouble. Wisconsin suffered the most bankruptcies and dairy losses from the trade war. Despite the rise in foreclosures, farmland values rose 2.3% to $5,320 per acre in 2018, which is positive news after an otherwise difficult year.

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