CoBANK KNOWLEDGE EXCHANGE

THE QUARTERLY

Dedicated to the industries financed by CoBank

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"Higher for Longer" a Drag on Rural Economy

The Fed's battle against inflation amid a resilient U.S. economy has led to the highest interest rate environment since 2007 along with a surging U.S. dollar. That is hurting key segments of the rural economy.

Executive Summary

The Fed's relentless 20-month attack on inflation has pushed long-term interest rates to their highest levels in years. The combination of high interest rates and a healthier than expected U.S. economy has kept the dollar much stronger than anyone would have expected. The one-two punch of high borrowing costs and the strong dollar, which hurts our export competitiveness, have combined to take a disproportionate toll on rural industries like agriculture, forest products, mining, and manufacturing.

Congress surprisingly averted a federal shutdown on Sept. 30 by passing a 45-day continuing resolution, but the battle in the House is just getting started. That means farm bill negotiations will take a back seat while Congress struggles to pass its annual appropriations bills. The most likely outcome is an agreement by year-end to extend the current bill by a few months or up to a year or more.

Prices across the grain complex have been trending downward all year as the market has adjusted to lost Ukrainian exports. Though the broader basket of commodities has generally struggled this year, oil is the major exception: OPEC+ producers, notably Saudi Arabia, along with Russia are tightening supplies at the same time global consumption is finally returning to its pre-pandemic highs.

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

Topics In This Issue:

- *"Higher for longer" boosts dollar, hits U.S. export prospects*
- *Farm bill negotiations take a back seat in Congress*
- *Oil price surge to continue through 2024*

Inside this issue

SPOTLIGHT

Tense partisanship delays farm bill consideration

By Lauren Sturgeon Bailey

Approximately every five years, Congress passes legislation to address domestic agriculture, nutrition, conservation, rural economic development, research investment and forestry policy by reauthorizing the legislation collectively referred to as the farm bill. The farm bill includes authority for hundreds of programs under multiple agencies, making periodic improvements and updates to address the current economic realities of producers and consumers in the country.

As Congress works to pass the next farm bill, these questions must be addressed: Is the current farm bill working or not? Do we have enough money to change reference prices? Are we able to repurpose any funds to support other sectors of the farm bill? Lastly will the impending retirement of long-time Senate Agriculture Committee Chairwoman Debbie Stabenow (D-MI) be enough to help push this farm bill past the finish line?

All of this is occurring in a highly partisan climate with debate over the continuation of legislation that costs an enormous amount of money. Over the past several years, farmers and ranchers have seen more financial support from the federal government than any other generation before them. This can be attributed to natural disaster aid, trade assistance from the Trump administration and global pandemic response.

More specifically, the pandemic assistance packages offered an influx of cash many agencies had never seen before. Chairwoman Stabenow and House Agriculture Ranking Member Ranking Member David Scott (D-GA) led the charge to secure funds for the United States Department of Agriculture through the Inflation Reduction Act (IRA). This legislation passed on a party line vote and has created tension on the agriculture committees in both chambers – inserting a partisan debate in the historically bipartisan farm bill reauthorization process. IRA funds related to climate

1 **Stakeholders hope the impending retirement of long-time Senate Agriculture Committee Chairwoman Debbie Stabenow is enough to push the farm bill past the finish line.**

2 **IRA funds related to climate mitigation and food assistance remain the areas of greatest political contention in the ag committees.**

mitigation and food assistance dollars remain the areas of greatest political contention between Republican and Democratic agriculture committee leaders – specifically House Agriculture Committee Chairman G.T. Thompson (R-PA) and Senate Agriculture Committee Ranking Member John Boozman (R-AR) and Chairwoman Stabenow and Rep. Scott.

Currently the House and Senate Agriculture committee staff are writing the new farm bill text. As the current 2018 Farm Bill expired on Sept. 30, 2023, most observers expect a short-term extension to be necessary. A farm bill has not passed in an odd numbered year since 1985 and many believe that tradition will continue as the government continues to struggle to pass several other major pieces of legislation that also expired on Sept. 30. While Democrats control the Senate and Republicans control the House of Representatives, both parties have a very narrow margin, making any piece of legislation difficult to pass. Last week, the House delivered a major wrench in the works for reauthorizing the farm bill: When they stripped Rep. Kevin McCarthy (R-CA) of the speaker's gavel, they threw all upcoming legislative activity into disarray. Now, precious time to get the appropriations bills done is being spent on electing a new speaker.

This change in the environment now means that an extension of the 2018 Farm Bill by the end of the year may be the best we can hope for, perhaps until 2025.

3 A farm bill has not passed in an odd numbered year since 1985, a tradition many observers have resigned themselves to this year.

MACROECONOMIC OUTLOOK

“Higher for longer” boosts dollar, hits export prospects

By Rob Fox

“Higher for longer” is now the trending catchphrase among market watchers following the demise of “transitory inflation” and the quickly fading “economic soft landing.” Fed Chairman Powell commented at the Sept. 20 meeting that despite his 5.25% in combined hikes to date, consumer spending, employment, and inflation were all still running hotter than he liked. When Powell followed up by saying “the process of getting inflation sustainably down to 2% has a long way to go,” home builders, auto manufacturers and borrowers were hit with another spell of queasiness as the 10-year Treasury yield jumped to 4.5%, the highest level since 2007. The average new 30-year fixed-rate mortgage is currently sitting at 7.4%, the highest since President Bill Clinton was in office.

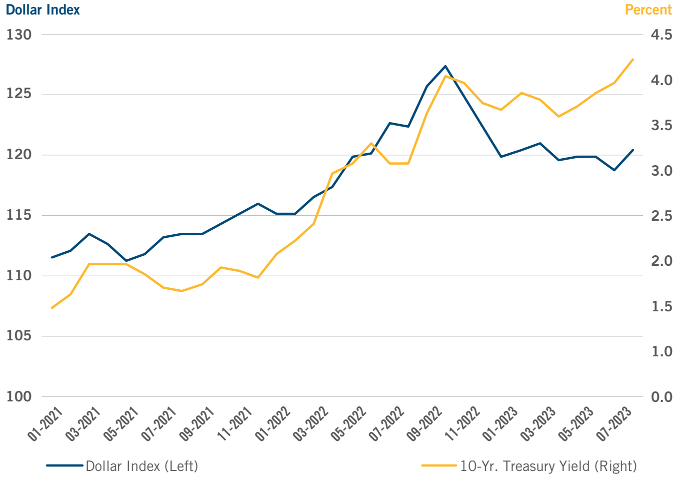
A close reading of the September Federal Open Market Committee transcripts points to the general conclusion that while Fed committee members now view rates as being at or very near their cyclical peak, they also believe the overnight rate will remain plateaued above 4% well into 2025. Boston Fed President Collins said, “I expect rates may have to stay higher, and for longer, than previous projections had suggested, and further tightening is certainly not off the table.”

While the U.S. economy is outperforming expectations, the rest of the world – Europe and China in particular – has fallen far short of them. As a consequence of the U.S. now being the world’s economic “strongman” and our interest rates trending “higher for longer,” the dollar has gotten stronger than anyone had previously expected *(Exhibit 1).*

1 **Fed officials now expect interest rates to stay higher for longer.**

2 **The outperforming U.S. economy, along with higher rates, have driven the dollar higher.**

EXHIBIT 1: U.S. Dollar Index and 10-Year Treasury Yield



Source: St. Louis Fed FRED Database

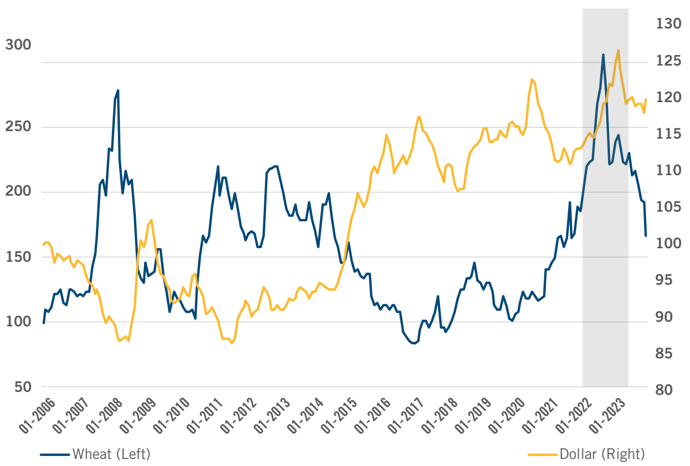
The highly unusual geopolitical/economic events during the 2020-2022 timeframe (pandemic shutdowns, supply chain chaos, rampant inflation, the Ukraine invasion, and simultaneous central bank tightening) resulted in the anomalous historic situation where commodity prices and the dollar were both moving upward in tandem. But those events are now fading as market drivers, and in our view, the historic fundamental inverse relationship between the broad array of commodities and the dollar has returned in large part.

The global wheat market illustrates this situation clearly *(Exhibit 2).* Starting on July 24, Chicago wheat futures fell for nine straight weeks while ICE dollar index futures rose for nine straight weeks. That is not a coincidence but a return to normality: For the 20-year period prior to COVID, the simple correlation between the monthly dollar index and monthly wheat prices is -0.77, where -1.0 represents a perfect 1:1 inverse relationship. The petroleum market currently remains an outlier however, with prices still rising amid OPEC+ and Saudi production cutbacks, sanctions on Russian oil, and declining investments by the major oil companies.

The majority of international transactions are still conducted in dollars, and a strong dollar makes U.S. exports more expensive and imports cheaper – both of which disproportionally hurt the backbone of the rural economy: agriculture, durable goods manufacturing, mining, and forest products. Combined with slower global economic growth, it's a double whammy – our export customers can't afford to buy U.S. products.

3 The stronger dollar disproportionally hurts U.S. agriculture and manufacturing **by making U.S. exports more expensive and imports cheaper.**

EXHIBIT 2: U.S. Dollar and Wheat Indices
(2006=100)



Source: St. Louis Fed FRED Database

GOVERNMENT AFFAIRS

House chaos jeopardizes appropriations process

By Brian Cavey

With the specter of a federal government shutdown averted – not eliminated – until mid-November, members of Congress have again done "the absolute minimum" to legislate. They kept the government open for business for the time being.

Every year, Congress is required to pass 12 bills providing for federal discretionary spending. While statute requires this work to be completed by Sept. 30, it has been nearly a quarter century since Congress actually met the deadline. Those lapses are usually smoothed over with one or more Continuing Resolutions or "CRs" that keep the government running until the appropriations process is complete.

This year we are witnessing the trials of conducting the process with razor-thin margins in both chambers, with the White House and Senate together aligned and the House Republican leadership challenged by 5 to 20 members who would rather see the speaker fail than compromise with the Democrats. The CR that bought Congress another month and a half to complete this job was overwhelmingly supported with bipartisan majorities in the House (335-91) and Senate (88-9). But this only was possible at the eleventh hour when the speaker stared down his detractors and sought Democratic support for his CR.

That short-term victory immediately led to a threat by one of the speaker's most vocal detractors to push a motion to vacate, a process to vote the speaker out of office. The effort succeeded, and Rep. Kevin McCarthy (R-CA) became the first House speaker ever to be ousted in the middle of his term.

So rather than moving to complete the appropriations work that led us to the edge of the shutdown cliff, the House will instead step back into chaos and have an even harder time functioning going forward.

Both the House and Senate have much work to do on the appropriations. The House has passed four and defeated another – the annual Agriculture Appropriations bill. Each of them included spending cuts that won't survive the Senate. Meanwhile, the Senate has passed none of its bills. Both chambers need to get to work quickly or there will be a similar paralyzing crisis in November.

The CR put some resources into border security, but did not address more Ukraine aid or fully address disaster spending. Further, until spending issues for fiscal year 2024 are addressed, other important legislation like the reauthorization of the farm bill, the Federal Aviation Administration, and the National Defense Authorization Act remain incomplete.

1 **Congress is required to pass 12 bills every year providing for federal discretionary spending.**

2 **Until Congress addresses FY24 spending issues, other important legislation like reauthorizing the farm bill, remain incomplete.**

3 **Appropriations work will be a secondary concern while the focus is on the House speaker situation.**

GRAINS

Strong U.S. dollar, low Mississippi River impede grain, oilseed exports

By Tanner Ehmke

Historically low water levels on the Mississippi River, which moves nearly half the U.S. grain and oilseed exports, are limiting grain movement heading into peak fall harvest season *(Exhibit 1).* Correspondingly high barge freight rates on the Mississippi River are also pressuring interior basis values for corn and soybeans *(Exhibit 2).* (For example, downbound barge rates from Southern Illinois had risen from $12 per ton in July to $46 per ton in late September.) Combined with the strength in the dollar and robust export competition from Brazil and Russia, the U.S. grain and oilseed export program faces major headwinds in the weeks and months ahead.

The market's attention next quarter turns to the planting of South America's corn and soybean crops. Farmers in Brazil are struggling with dry soil conditions and a stressed margin outlook on corn, which is expected to pull planted corn acreage lower. Soybean acreage, though, is expected to continue expanding.

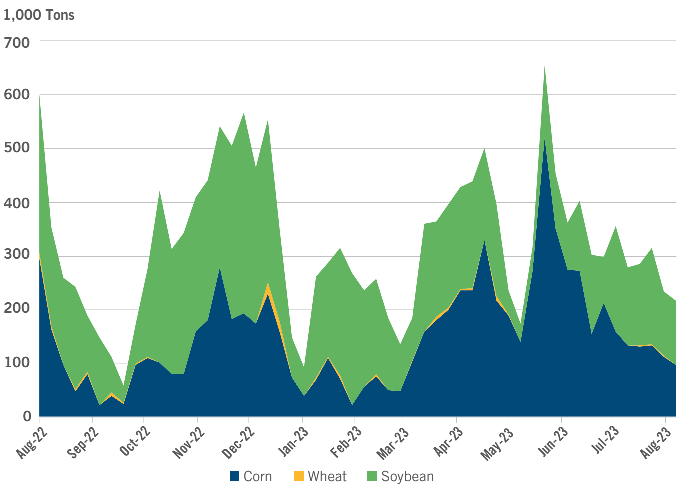
Corn

Outstanding corn export sales start the new crop year leading last year's sales pace by 6.7% with a much bigger crop and as exports flow through routes outside of the Mississippi River. USDA currently estimates the 2023/24 U.S. corn crop at 15.134 billion bushels, up 10.2% YoY. Conspicuously absent from the export sales ledger for U.S. corn is China, with outstanding sales down 64.8% YoY. The combination of higher shipping rates on the Mississippi River, strength in the U.S. dollar, competitive offerings for corn in South America, and political saber rattling between the U.S. and China has severely limited China's buying interest in U.S. corn.

1 **Rising barge rates on the Mississippi River are weakening interior corn and soybean basis.**

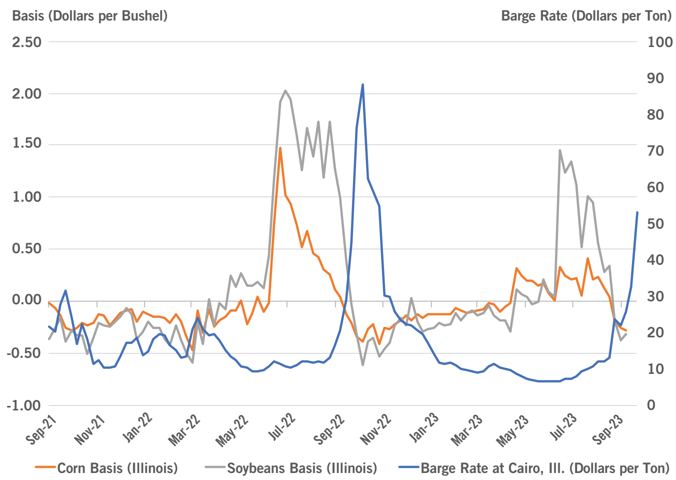
2 **Grain and oilseed processing margins remain strong and are expected to end 2023 above average, putting a stronger floor under local basis.**

EXHIBIT 1: Grain Barge Movements through Mississippi River Lock 27



Source: U.S. Army Corp of Engineers

EXHIBIT 2: Mississippi River Barge Rates vs. Illinois Corn and Soybean Basis



Source: USDA-AMS

USDA reported U.S. corn inventories on Sept. 1 at 1.361 billion bushels, which was notably lower than market expectations. The smaller ending stocks number for the 2022/23 crop year indicated higher feed usage, but ethanol bears the burden of holding up corn demand. Corn consumption for fuel alcohol in July was up 2% YoY as ethanol processors benefit from historically strong margins.

3 **Winter wheat planting is underway and acreage is expected to shrink as wheat prices fall below production costs.**

Soybeans

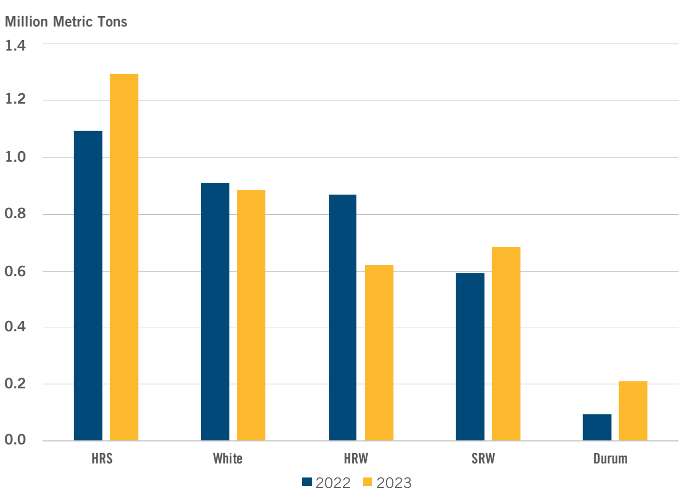
Soybean export sales are also sluggish in the absence of Chinese demand, with total outstanding sales at the start of the new crop year down 36% YoY. Chinese sales are down 48% YoY. The smaller export pace is balanced by the expectation of a smaller harvest this fall with the U.S. soybean crop pegged at 4.146 million bushels, down 3% YoY following a season of prolonged heat and drought in the Midwest. Soybean stocks at the end of the 2022-23 marketing year on Sept. 1 totaled 268 million bushels, down 2.2% YoY.

Although the soybean export pace remains lethargic, domestic usage is strengthening. Soybeans crushed for crude oil in July totaled 185 million bushels, up 2.2% YoY, as the market fills growing demand for renewable diesel.

Wheat

Winter wheat planting is underway in the U.S. and acreage is expected to be down slightly as prices languish below expected breakeven costs of production. Winter wheat demand faces strong headwinds from record Russian exports and an ample supply of corn competing for feed usage *(Exhibit 3).* A short Canadian spring crop has lifted sales of U.S. hard red spring (HRS), Chinese demand has appeared for soft red winter (SRW), while uncertainty over dry conditions in Australia and Argentina is raising concerns of short global wheat supplies heading into 2024. U.S. all wheat stocks on Sept. 1 totaled 1.780 billion bushels, up 0.1% YoY.

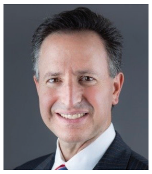
EXHIBIT 3: U.S. Wheat Outstanding Export Sales



Source: USDA-FAS Export Sales. Data for Week Ending September 21, 2023

FARM SUPPLY

Will weak fertilizer demand in Q2 reverse in Q3?



By Kenneth Scott Zuckerberg

Fertilizer prices continued to weaken in the third quarter. Among the major nutrients tracked by USDA and used in Midwest crop production, anhydrous ammonia and potash's prices declined the most, falling by 30% and 15%, respectively. They were followed by MAP (monoammonium phosphate), down 9%, and urea, down 6%. Prices for natural gas – used as both a feedstock and production input – dropped by about 7% *(Exhibit 1)*.

Industry sources suggest that fall fertilizer application season should be reasonably normal for regions that are seeing an orderly harvest. We see a mixed bag for fertilizer in the 2024/25 planting season, based on our analysis of two variables: corn acreage estimates, which is a proxy for fertilizer usage, and natural gas prices.

The University of Missouri Food & Agricultural Policy Research Institute (FAPRI) estimates corn acreage will contract 3% (presumably farmers will plant more soybeans to meet renewable diesel demand), yields will increase 4%, and farm gate prices will decrease 9% *(Exhibit 2)*. The increased fertilizer applications needed to boost corn yields should offset the lower fertilizer application soybeans need.

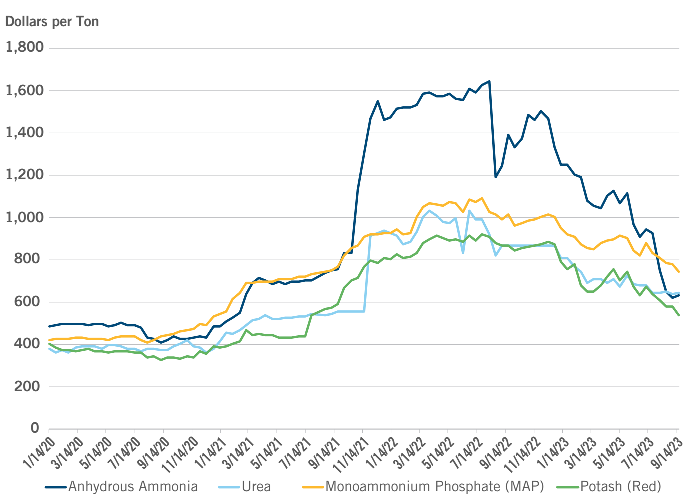
Natural gas is the primary feedstock for ammonia and other nitrogen fertilizers, accounting for an estimated 80% of production costs. Since future markets are telegraphing a 22% increase in natural gas prices in 2024 vs. the current spot market price, expect nutrient manufacturers to pass along the higher anticipated costs to farmers.

1 Fertilizer prices fell again in Q3, led by a 30% drop in ammonia. Potash, MAP and urea dropped 5% to 15%.

2 Fall application season should be reasonably normal, especially for the eastern Corn Belt.

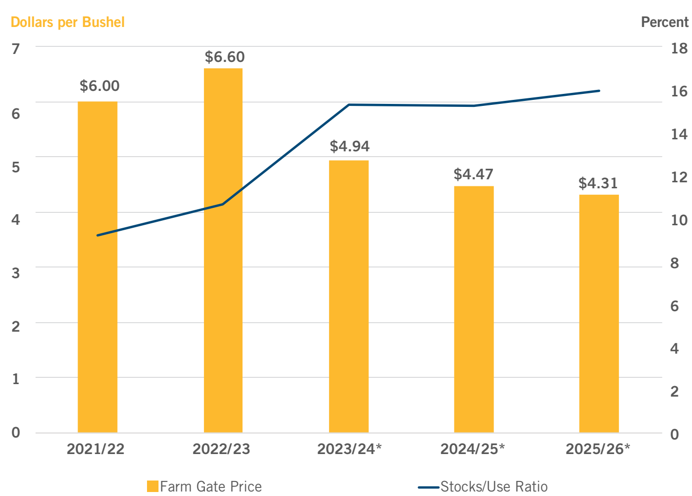
3 While the outlook for the 2024/25 planting season is cloudy, expect less fertilizer usage as acres shift from corn to soybeans.

EXHIBIT 1: Iowa Fertilizer Production Cost Summary



Source: USDA-AMS

EXHIBIT 2: U.S. Corn Actual and Baseline Projections



Source: FAPRI University of Missouri
**Projected*

BIOFUELS

Upside surprise on ethanol while renewable diesel capacity continues to rise

By Kenneth Scott Zuckerberg

Fuel ethanol production was very strong during the third quarter, averaging 16.1 billion gallons compared to 15.4 billion during the second quarter of 2023 *(Exhibit 1).* A healthy summer travel season and attractive fuel ethanol prices were the key demand drivers. Third quarter profitability exceeded $0.50/gallon vs. $0.20/gallon in the year ago period. The jump in operating margins reflected a significant drop in corn feedstock costs (-23%) and natural gas operating costs (-59%), as the market impacts of the Ukraine invasion fade.

Strong domestic usage has helped reduce ending stocks, which are now 17% below the March 2023 peak *(Exhibit 2).* Continued steady demand and tight ethanol stocks should support fuel ethanol prices in the fourth quarter. And with corn exports still running behind average levels (exacerbated by low Mississippi River water levels), feedstock availability should also be favorable for ethanol producers in the near-term.

Total ethanol exports (i.e., fuel ethanol and co-products) totaled 818 million gallons for the first seven months of 2023, down 12.4% relative to the same period in 2022. The reduction reflects lower ethanol exports to Brazil, which is expected to produce 5% more fuel ethanol domestically because of record high production of corn and sugarcane.

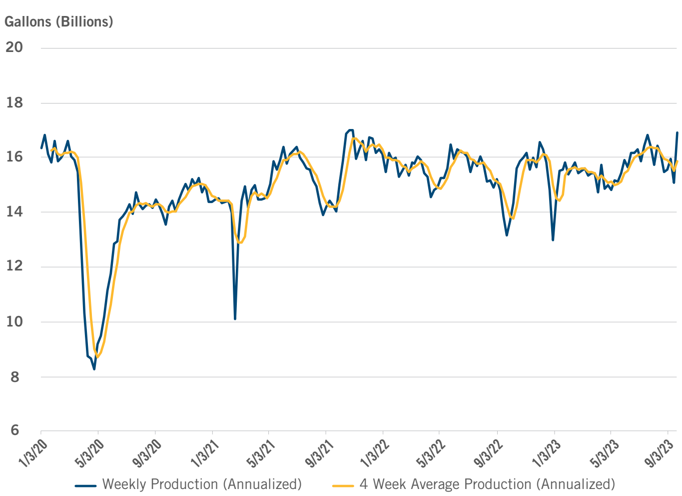
The growth of the renewable diesel market continues. Near quarter end, we learned that after two plus years of planning, High Plains Processing and joint-venture partner BP Products North America broke ground on a new oilseed crush facility near Mitchell, South Dakota. Once it becomes operational in 2025, the plant will crush soybeans, and eventually process sunflowers and camelina, for use in renewable diesel and jet fuel.

1 **Healthy summer travel demand and a favorable fuel ethanol price-to-cost ratio** **led to strong production and profitability in Q3.**

2 **Ending stocks have tightened** **and are now 17% below the March 2023 peak.**

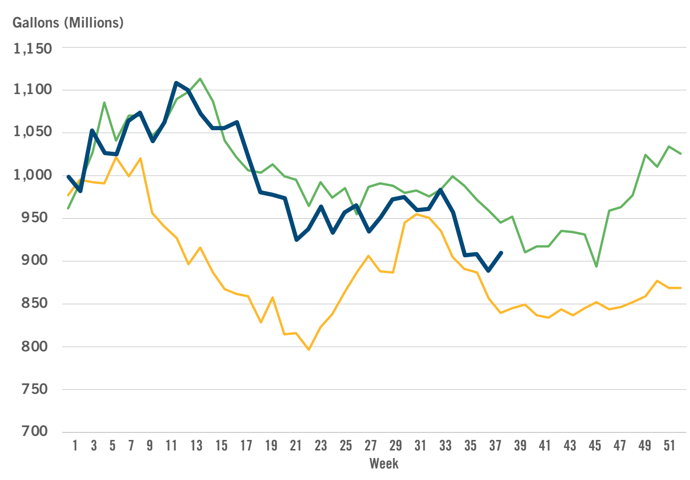
3 **Renewable diesel and other biofuel capacity** **is up 26% since January 2023.**

EXHIBIT 1: U.S. Fuel Ethanol Plant Production



Source: U.S. Energy Information Administration (EIA)

EXHIBIT 2: Weekly Ethanol Ending Stocks by Year



Source: U.S. Energy Information Administration (EIA)

ANIMAL PROTEIN

Beef demand still strong, while pork struggles

By Brian Earnest

At the beginning of the summer, the development of an El Nino pattern suggested feed/forage conditions would improve for animal livestock producers. However, temperatures reached new records this summer and drought has deepened in some areas, limiting feed supply and feed conversion. Higher overall input costs sent the producer price index for meat to record levels in August, up 11% YoY, according to the U.S. Bureau of Labor Statistics *(Exhibit 1).*

While costs rose by 11%, the consumer price index for meat at retail was up just 4% in August. For the most part demand remained favorable. Beef prices set new all-time records this summer, and yet disappearance for steak-type items failed to exhibit much fatigue, if any. But there were some exceptions. Pork struggled at times during the third quarter and prices for key chicken breast meat required heavy discounting to stave off inventory accumulation.

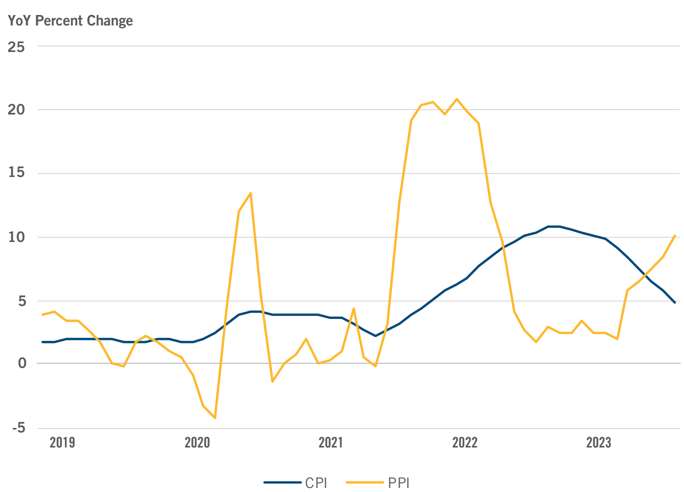
A strong U.S. dollar and moderation of animal protein production are challenging export growth opportunities *(Exhibit 2).* However, sales to Mexico, a chief destination for U.S. animal protein exports, remains buffered by a strong peso. Total U.S. meat and poultry export volume to Mexico is up nearly 10% YTD.

During the second quarter, meat and poultry output trended about steady YoY, but USDA-ERS estimates third quarter production was down 2% YoY. There were varying reasons, but much revolved around lower carcass and bird weights and tighter availability, all stemming from lackluster producer opportunity.

1 **Production in Q3 dropped an estimated 2% YoY** **as summer heat, tighter animal supplies and higher feed costs dampened output.**

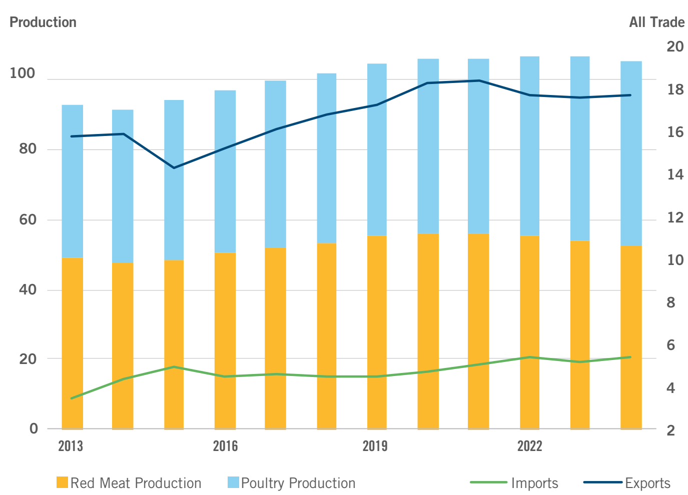
2 **As prices remain elevated and consumers take on more debt,** **expectations of future demand remain muted.**

EXHIBIT 1: Meat Price Indices
(3-month moving average)



Source: St. Louis Fed FRED Database

EXHIBIT 2: U.S. Poultry and Red Meat Production and Trade
(Billion pounds)



Source: USDA-ERS

CHICKEN

The average broiler-feed cost ration was about 12% lower YoY for producers during the third quarter. However, corn and soybean markets still have a ways to go for mean reversion to be accomplished. At the same time, breast meat values were unseasonably low and wings hovered around $1.00/lb. Broiler meat production was up 7% YoY in May, resulting in a burden of surplus.

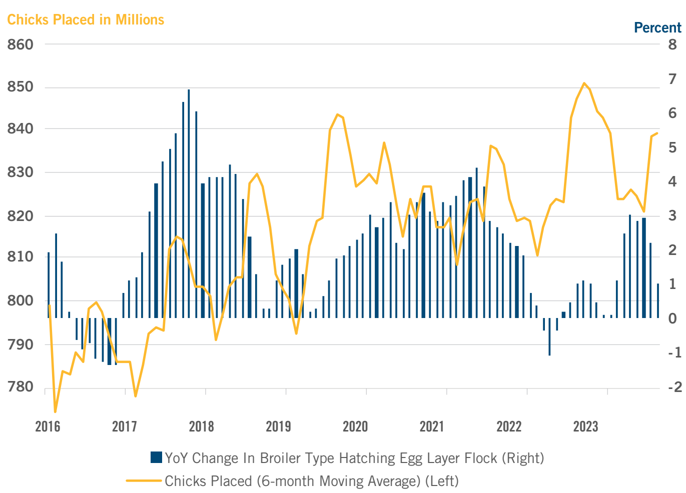
As a result of production out-pacing demand, at least six primary processing plant are closing this year, which will undoubtedly encumber growth. USDA-ERS estimates broiler production down less than 1% YoY during the third quarter and a similar reduction for the fourth quarter. But the combination of a 1% cutback in breeder stock for August and a 2.5% reduction in productivity YoY suggest a larger decline could be in store *(Exhibit 3).*

A strong dollar is pressuring exports in some areas of the globe, but Mexico's peso has tracked fairly closely with the U.S. dollar through the first six months of the year. During July, U.S. broiler meat export volume to Mexico was up 20% YoY, pushing cumulative volume up 13% YoY. Over the summer, both domestic and export customers teamed to buoy dark meat prices and support the overall composite carcass value while wings and breast sagged. However, rising breast meat and wing values over the last few weeks suggest the back-half of the bird will not have to do all of the heavy lifting through the end of 2023 *(Exhibit 4).*

1 **Broiler meat output is expected to slow** **after rising rapidly in Q2.**

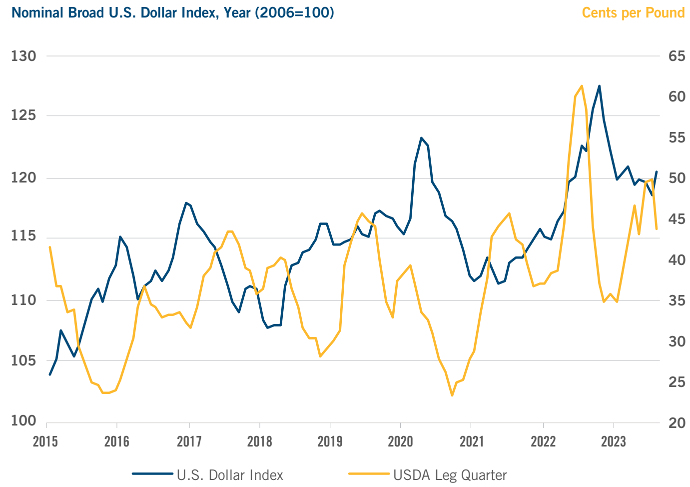
2 **In an unusual turn of events, dark meat is supporting composite prices**

EXHIBIT 3: Broiler Type Hatching Egg Layer Flock vs. Broiler Chick Placement



Source: USDA-NASS, CoBank

EXHIBIT 4: Leg Quarters vs. U.S. Dollar Index



Source: St. Louis Fed FRED Database, USDA-AMS

BEEF

In some areas of the country, forage conditions have improved this year and operators are considering expanding. However, USDA's mid-year cattle inventory report suggested we should expect tighter beef supplies through at least 2025 *(Exhibit 5).* It revealed (among other things) all cattle and calves were down 2.7% YoY, which was the biggest annual decline reported in more than 30 years. Additionally, the report showed beef cow inventory was down 2.6% YoY and heifers down nearly 4%, making a swift rebound impossible.

In 2022, elevated beef cow slaughter resulted in higher beef output, but that also meant fewer replacements entering the feedlots. So, naturally, feed lot inventories were down about 2% YoY and supply of cattle on feed for over 120 days was down nearly 6% YoY at mid-year. These declines have been supportive to fed and live cattle prices in recent months.

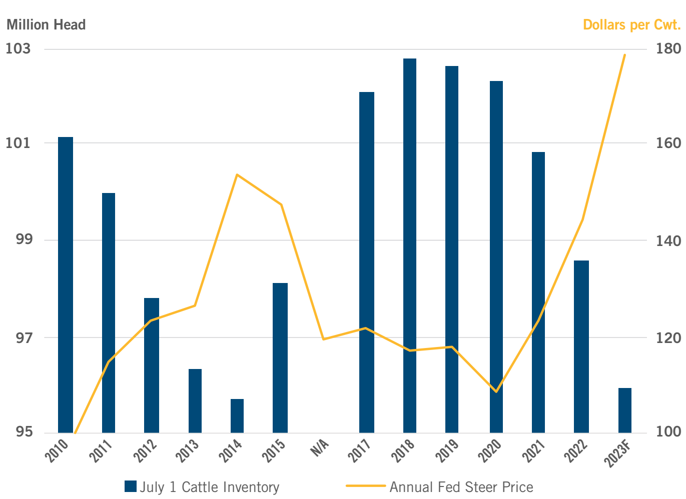
A short supply of market-ready cattle suppressed beef availability throughout the third quarter, and is muting the outlook for supplies moving forward. USDA-ERS estimates that total 2023 U.S. beef output will be down 5% and expects an additional 7% decline in 2024. This staggering decline comes amid ongoing – and incredibly robust – consumer demand for beef.

The tighter beef supplies continued to churn the wholesale beef market throughout the third quarter. The composite boxed beef cutout climbed to record high levels for June and July, and averaged a 16% premium YoY for the third quarter. But with fed cattle prices up 30% YoY, packer margins came under pressure *(Exhibit 6).* The bottom line for beef is that despite a rising price environment, consumer demand has remained steadfast, suggesting that beef prices will continue to rise and support production.

1 **Beef production is expected to be down 5% in 2023 and another 7% in 2024.**

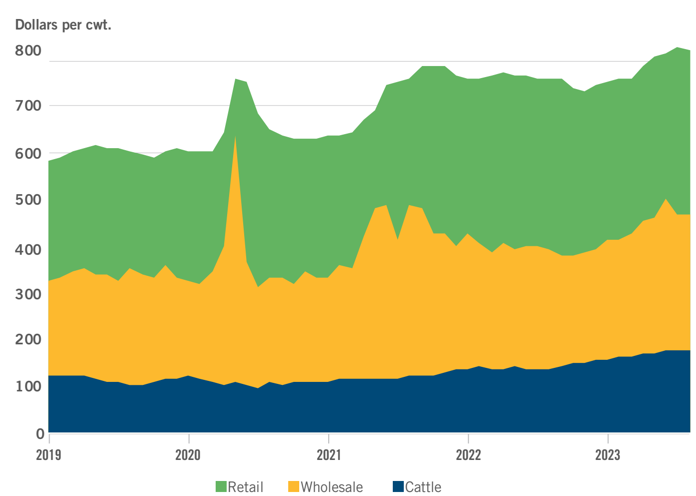
2 **Consumer demand remains steadfast in the face of record high beef prices.**

EXHIBIT 5: July 1 Cattle Inventory vs. Annual Steer Price



Source: USDA-ERS

EXHIBIT 6: Choice Beef Spread



Source: LMIC, USDA

PORK

Early in 2023, retailers failed to draw enough consumer interest to pork to elicit a seasonal market rally. But later in the summer as temperatures climbed, retail pork prices drifted lower (down 5% YoY by July), which encouraged consumers to choose pork.

While falling prices drew attention, something more significant caught the market's eye. The U.S. Supreme Court surprised some in the trade in late May by upholding California's new animal confinement standards (Prop 12). As a result, all whole muscle (non-processed items) sold into California after July 1 would need to be Prop 12 compliant, but anything delivered prior to July 1 could be sold in California markets, regardless of compliance.

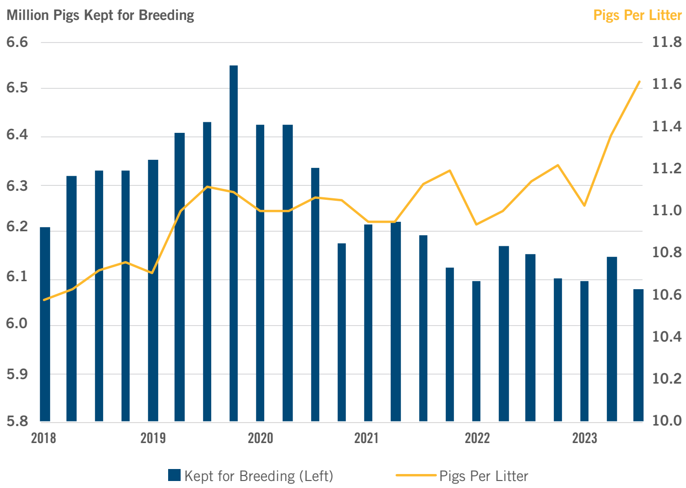
This sent the market into a frenzy, just as hog supplies were at their lowest seasonal point. All the low-priced bellies in freezers were immediately turned from a liability to an asset. On average, the pork cutout usually gains about 4% in value from early May through mid-July, but this year it rose an astounding 41%. This translated into a rally in hogs as well – nearby hog futures climbed 36% from late May through early August. With production rising and seasonal interest fading, markets have since cooled, but have not retreated to pre-Prop 12 levels.

USDA's newly released quarterly hogs and pigs report revealed a couple of telling data points. Pigs saved per litter hit an all-time record at 11.61, an increase of 4.3% YoY. Additionally, the breeding herd was estimated to be 1.2% lower YoY *(Exhibit 7),* and farrowing intentions for September-November were down 5.2% YoY. This suggests that while the industry is doing more with less, production levels will continue to teeter on meager profit expectations.

1 **With the Supreme Court's decision to uphold California's Prop 12, a summer rally in the pork market countered weak pork prices earlier in the year.**

2 **Though pigs saved per litter has grown 4% YoY, future production hinges on a declining sow herd and weak profitability for hog producers.**

EXHIBIT 7: Breeding Herd Size vs. Sow Fertility



Source: USDA-ERS

DAIRY

Dairy could rebound from summer setbacks

By Corey Geiger

Dairy's fortunes started the new year with a somewhat prosperous $21.60 all-milk price projection. Stymied by $13.77 and $14.91 Class III milk prices in June and July, USDA economists revised and lowered their 2023 all-milk price projections by a whopping $2.05 per cwt. by mid-year.

On the Class III front, multiple factors converged to force Cheddar blocks down from January's $2.00 to the $1.40 per pound range by mid-June. Chief among them was strong Cheddar production as the Midwest region brought new cheese processing capacity online. As a result, output rose a collective 4.2% YoY by May.

With cheese output booming and ample supplies of milk, Midwest Class III spot prices dropped to $6.50-$8.50 under federal order values. While these low spot prices traditionally take place in late winter and spring, this year's swoon was well below the five-year average. Midwest Class III spot milk prices eventually turned positive in early August largely lifted by slowing milk production in both July and August.

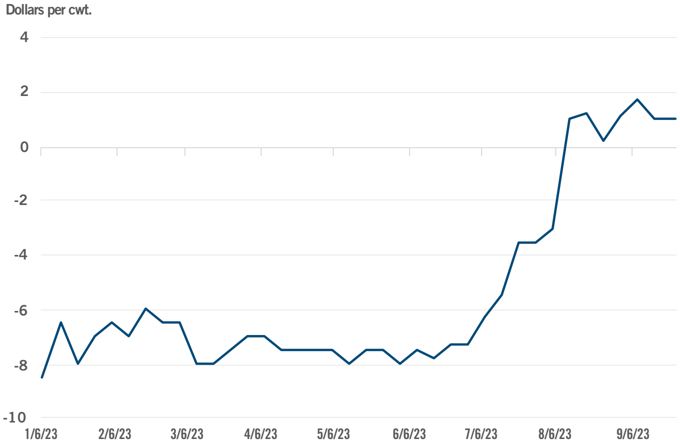
Domestic cheese consumption has been holding its own as year-to-date usage climbed 1.3% versus last year. With retail cheese prices, July consumption jumped by 3%, the largest monthly gain of the year. The butter boom also continues as domestic consumption climbed over 8% again this year.

Unfortunately, fluid milk sales continue their downward spiral, off another 2.1%. That alone didn't send farm mailbox prices downward, however. After back-to-back record dairy product export years, total milk solid exports were off 6% YoY. Overall, there was

1 **Strong cheese production and slowing dairy exports** dragged Class III milk prices down to $13.77 per cwt. by midsummer.

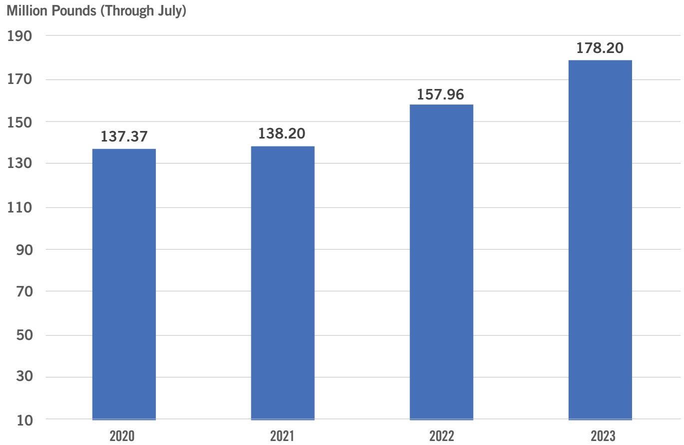
2 **With ample cheese and strong milk production,** Midwest spot loads of Class III milk fell below the five-year average.

EXHIBIT 1: Low Class III Spot Milk Prices Suppressed Milk Checks



Source: USDA-AMS Dairy Market News

EXHIBIT 2: Mexico Steps Up its Cheese Purchases from the U.S.



Source: Trade Monitor Data, and U.S. Dairy Export Council slowed import growth from China and stronger competition from both Europe and New Zealand. Additionally, U.S. cheese remains the highest price option among major exporters. As a result, U.S. dry whey exports fell 17% and cheese dropped 6%. The situation could have been far worse had it not been for Mexico's stepped-up cheese purchases. Bolstered by a stronger peso, Mexico purchased 13% more cheese in the first seven months *(Exhibit 2).*

The combination of low milk prices and record beef prices caused dairy farmers to send more cows to packing plants *(Exhibit 3).* Through mid-September, 2.1 million head have been sent to slaughter. That's up 108,000 head over last year. Moving forward, the pace of culling should back off with an improved milk price outlook.

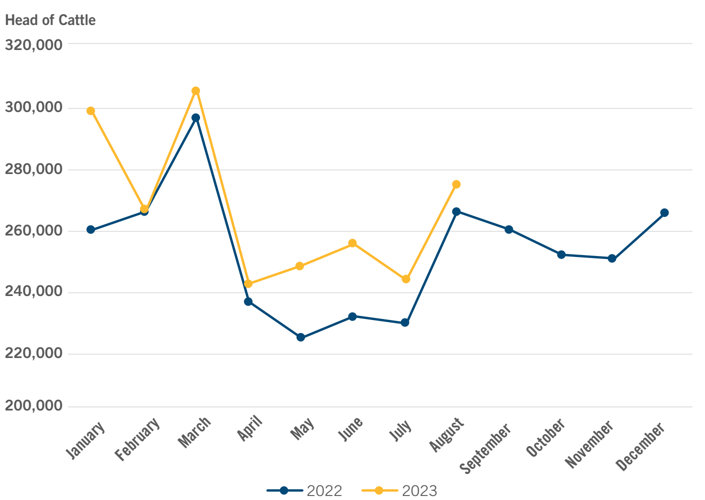
The low milk checks could have levied a far worse toll had it not been for improved milk price mitigation strategies. These days between 55% and 65% of U.S. milk production has some form of price protection. For milk insured under the Dairy Margin Coverage program, an additional $3.89 per cwt. has been paid out to dairy farmers with over $1.13 billion paid out as of July *(Exhibit 4).* That payout is approaching 2021's total record $1.19 billion payout.

Futures markets indicate that the final quarter of the year could be much better than the summer with a projected $17.30 Class III and a stronger $19.70 Class IV price. The biggest wild card for milk prices is China, the world's leading dairy-product importer, which is mired in an economic downturn.

3 **Faced with low milk prices and high feed costs, dairy farmers sent more cows to slaughter to take advantage of record-high beef prices.**

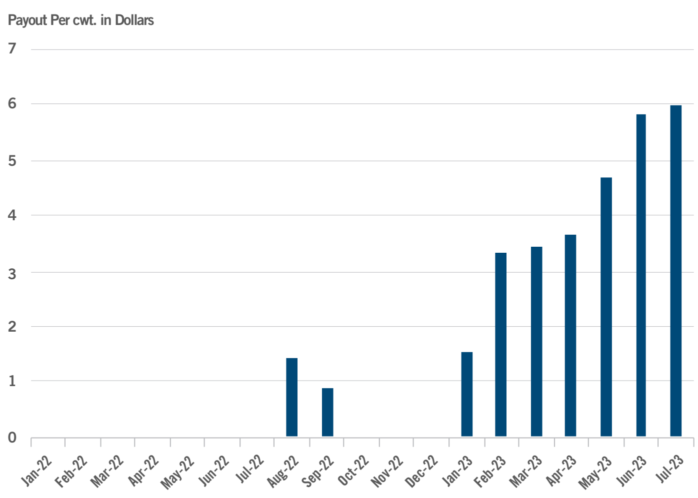
4 **Price protection programs have helped cushion the blow of low milk checks, with payouts approaching 2021's record levels.**

EXHIBIT 3: Dairy Cow Culling Running 6% Over Last Year's Pace



Source: USDA-NASS

EXHIBIT 4: DMC Payments Net $3.89 Per Hundredweight in 2023



Source: USDA-FSA

COTTON, RICE AND SUGAR

Drought trims cotton and sugar production outlook

By Tanner Ehmke

Cotton

Ongoing drought in Texas knifed cotton production in the most important cotton-producing state in the U.S. this summer, with USDA expecting production to drop 9.2% YoY to 13.13 million bales, the lowest level in 10 years. Crop conditions in Texas, which typically accounts for roughly one-third of U.S. production, have fallen with 65% of acres rated as poor or very-poor *(Exhibit 1).*

The significant loss of production, though, is countered with lethargic export demand as the strong U.S. dollar and slowing global economy slow sales. Heading into the fourth quarter, outstanding export sales of all U.S. upland cotton were down 23% YoY. Overseas, India's cotton crop has also suffered during the driest August on record which could add a modicum of support to the market. Hopes of a demand rebound next quarter are dimming: Not only is demand withering in China, the world's largest cotton importer, demand for apparel in the U.S. and EU is falling as consumers battle inflation and rising interest rates. The tug-of-war between shrinking supply and slowing demand has left cotton prices adrift in a narrow trading range.

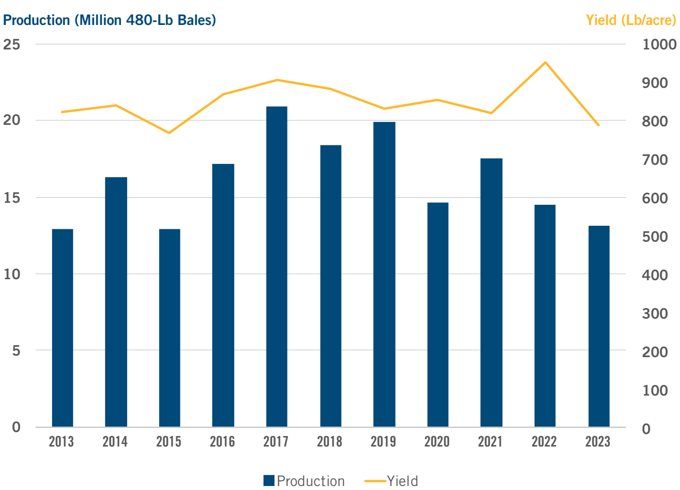
Rice

India's export ban on white rice shocked world rice markets in July with Asian rice prices in particular climbing quickly to a 12-year high as world buyers raced to secure supplies from other major exporters like Thailand, Vietnam and Pakistan. The price response in the U.S., though, has been more muted with U.S. rice production making a major recovery from last year's small harvest. Total 2023/24 U.S. rice production is forecast at 220.9 million hundredweight, up 37.7% YoY *(Exhibit 2).*

1 **Texas' drought is continuing to support cotton prices** in the face of falling global demand.

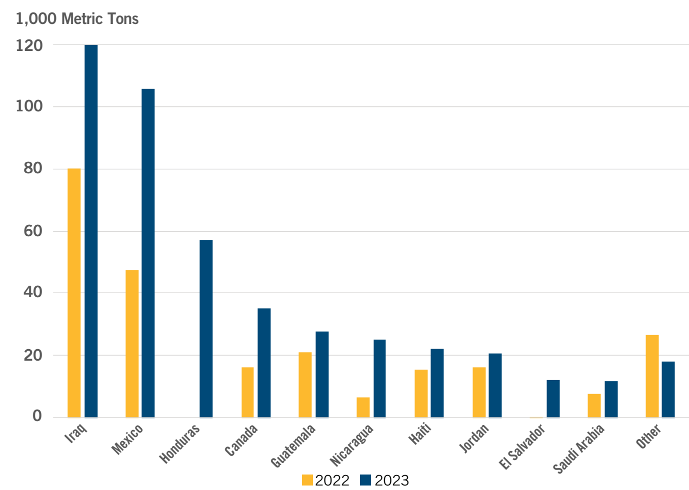
2 **The big U.S. rice harvest is muting market volatility** spurred by India's rice export ban.

EXHIBIT 1: U.S. Cotton Production and Yield



Source: USDA-NASS

EXHIBIT 2: U.S. Rice Outstanding Export Sales 2022 vs. 2023



Source: USDA-FAS U.S. Export Sales, Data for Week Ending September 21, 2023

With much of India's exportable rice inventory now offline, new export business has materialized for U.S. exporters. Outstanding export sales of all rice at the start of the new quarter were up 92.4% YoY. Political volatility in the world of rice remains elevated: The Philippine government imposed a price cap on rice, Malaysia has implemented a purchase limit, and Myanmar has also implemented a system to record stored rice to control prices and limit speculation. India's export ban is widely expected to remain in place until elections in May, leaving the door open for a faster export pace for the U.S. into the second quarter of 2024.

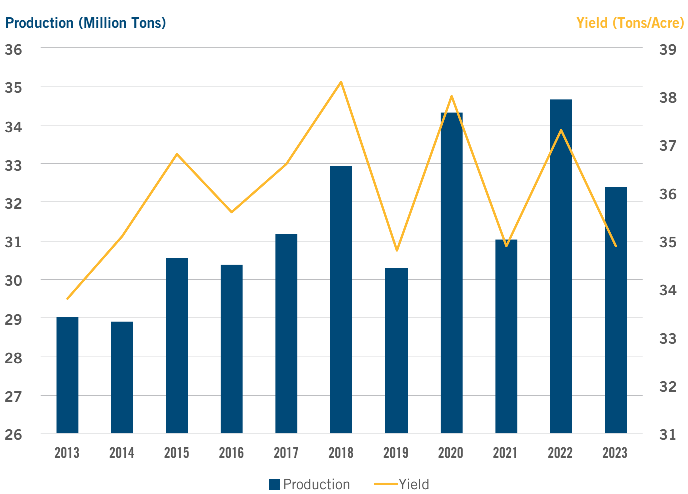
Sugar

Extreme drought conditions and heat in Louisiana and Texas have severely crimped harvest expectations for the nation's No. 2 and No. 3 sugarcane producers with yields there expected to fall to the lowest in 16 years. USDA dropped its national sugarcane production forecast to 3.758 million short tons raw value (STRV), down a whopping 8% YoY *(Exhibit 3).*

Sugarbeet harvest, though, is expected to climb. Production is expected to rise 1.1% to 5.223 million STVR with farmers across key producing states – Minnesota, North Dakota, Michigan and Idaho – all benefiting from ideal growing conditions and improved yields *(Exhibit 4).* A slowing economy has had limited impact on total sugar consumption in the U.S. with USDA calling for food deliveries to climb to 12.550 million STRV – a slight improvement over last year's 12.500 million STRV.

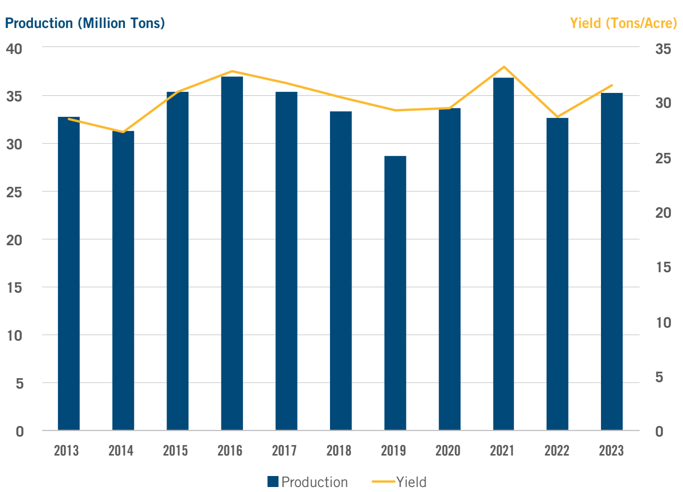
3 Drought damage to Louisiana's cane crop is holding raw sugar prices at multi-year highs.

EXHIBIT 3: U.S. Sugarcane Production and Yield



Source: USDA-NASS

EXHIBIT 4: U.S. Sugarbeet Production and Yield



Source: USDA-NASS

SPECIALTY CROPS

Produce imports continue to grow, fresh potato consumption slides

By Billy Roberts

Monthly fruit imports decline, but trend remains generally upward

The volume of fruit and berries imported into the U.S. shrank dramatically in July 2023, dropping 15.2% from June to 915,000 tons, reflecting a generally flat recent trend pattern. The last significant uptick was March, with a 15% month-over-month increase. Fruit imports, nevertheless, appear well on-track to continue their decades-long trend of steady annual increases *(Exhibit 1)*. Mexico, Guatemala and Costa Rica account for a combined 62% of total fruit/berry imports. USDA has revised down expectations of imports of fresh vegetables (including tomatoes, peppers, squash and green beans), the consequence of hurricanes impacting growers in Mexico's western and north-central production regions. In 2022, Mexico supplied the U.S. with 51% of fresh fruit imports and 69% of fresh vegetable imports (in value terms).

Fruit and vegetable exports from the U.S., on the other hand, are projected to reach $7.1 billion, per the USDA, slightly ahead of the $7.01 billion pace of 2022.

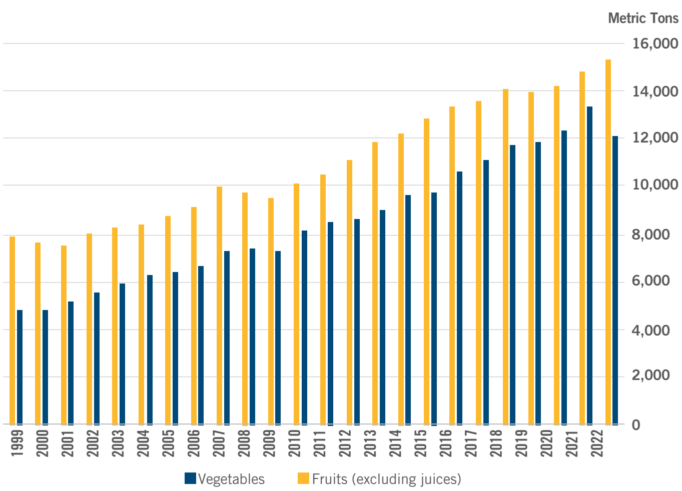
Potatoes shift to the freezer

Overall production levels of potatoes have largely leveled off over the past several decades, even uses have shifted generally away from fresh and into value-added processed solutions. Fresh potato usage has declined steadily over the decades, while the production of frozen potatoes has risen each decade since 1979 *(Exhibit 2)*. Now, almost half of all potatoes in the U.S. go into frozen, primarily fries. Per industry data

1 **Monthly fruit imports have recently declined** **but are positive in the longer-term.**

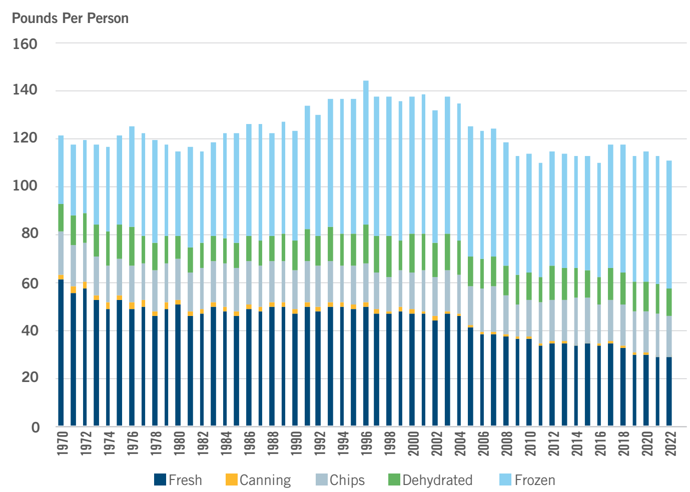
2 **U.S. fruit and vegetable exports are growing** **in dollar terms.**

EXHIBIT 1: Volume of Fruit and Vegetable Imports



Source: U.S. Department of Commerce, Bureau of the Census

EXHIBIT 2: U.S. Per Capita Availability of Potatoes



Source: U.S. Department of Commerce, Bureau of the Census and USDA-ERS research, almost 9 in 10 frozen french fries go to food service with two-thirds going to quick-service restaurants. The slip in overall potato usage in the late 2000s and into the 2010s was the fallout of the low-carb consumer trend. In the meantime, other vegetables (such as cauliflower and zucchini) are finding their way into the frozen case as fries and other fried side solutions.

Greening's impact on orange production grows

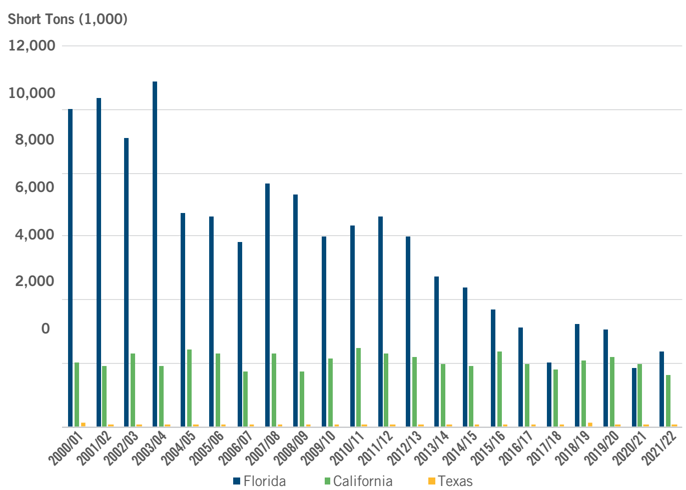
Florida's orange production peaked around the turn of the century, and the steady declines that started in 2003/04 continue *(Exhibit 3).* In the shorter term, Florida orange production has rebounded somewhat from the challenges of 2020/21, when California actually briefly accounted for the majority of the country's oranges. Yet, citrus greening disease continues to negatively impact Florida, though the state is far from alone. In fact, orange trees in Brazil have also reportedly shown signs of citrus greening, suggesting supply limitations at some point. Two new treatments are providing growers with more options to defend groves from the worst of citrus greening, and federal researchers from the USDA-ARS announced an agrobacteria development that could strengthen a tree's immunity against the disease.

Citrus growth is taking root a little to the north of Florida, however, with 500,000 trees across 4,000 acres in Georgia. The principal challenge for Georgia citrus appears to be its potentially harsher winters, with a Christmas 2022 freeze subjecting trees to six days of below-freezing temperatures. The Georgia Citrus Association indicates the majority of the state's citrus trees weathered both the freeze and a summer 2023 hurricane. Nevertheless, Georgia production remains well shy of its neighbor to the south. Florida is expected to yield 16 million boxes of oranges in 2023, identical to the amount a year ago but well shy of some projections and pointing to constrained supplies in the near term, particularly with greening now impacting Brazilian oranges.

3 Orange production may shift north as disease threatens Florida options.

4 Fresh potato usage has slipped, and shifting more into frozen.

EXHIBIT 3: Orange Production by State



Sources: USDA National Agricultural Statistics Service, Citrus Fruits Summary, various issues; and USDA Economic Research Service

FOOD AND BEVERAGE

Grocery shoppers buying lower-cost items, as needed

By Billy Roberts

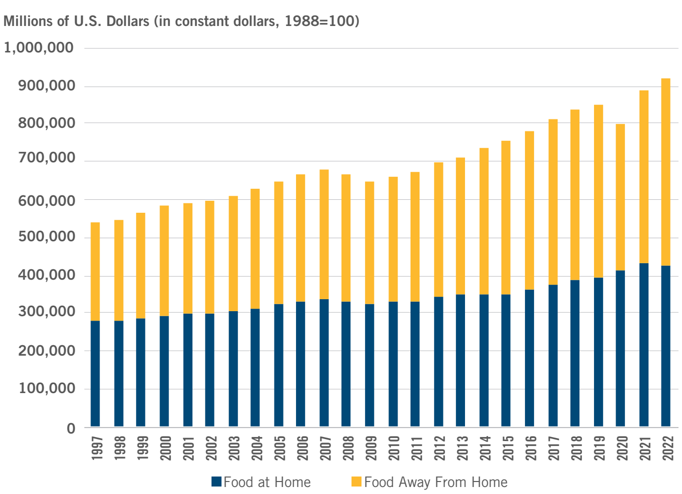
Real or inflation-adjusted annual food spending hit a record high in 2022, according to the USDA Economic Research Service (ERS). The challenge for consumers has been the magnitude of that increase; total food prices rose more than 10% in 2022, more than triple the 20-year average *(Exhibit 1).* Couple that with the 4.3% annual increase in core prices (excluding food and energy) as of August 2023, per the Bureau of Labor Statistics' Consumer Price Index, and consumers are responding. Their post-pandemic behavior has changed in two ways: They are now shopping at and with a wider variety of food retailers and buying lower-cost items as needed instead of stocking up or refilling pantries/freezers.

During 2021-22, grocery store spending increased an average of 6% from 2019 (pre-pandemic) levels, with a 4% jump at warehouse clubs and supercenters. However, other food-at-home retailers – including convenience stores, ecommerce, delivery and curbside pickup from all forms of retailers – saw spending levels increase 15%, suggesting a shift in consumer preference for where they shop for food and beverages since the pandemic. The shortages seen during the heights of the pandemic led consumers to the convenience and reliability of traditional grocery stores, but consumers have become acclimated to food/beverage availability at other types of establishments in the years since. These spending trends reflect a continued consumer interest in eating experiences that save time and money, behaviors expected to continue and intensify as heightened inflation and difficult economic conditions persist.

1 Inflation-adjusted food spending hit a record high in 2022, more a reflection of higher prices than volume growth.

2 Prices for food purchased at-home and away-from-home increased 11.4% in 2022.

EXHIBIT 1: U.S. Food and Alcohol Expenditures, with Taxes and Tips



Source: USDA Economic Research Service (ERS)

In the case of frozen foods, consumer spending appears to be shifting back to pre-pandemic levels. Frozen products should be well-positioned to capitalize on consumer interest in saving both time and money, yet inflated prices appear to be taking a considerable toll on each segment of the frozen case. All segments experienced considerable volume declines over the past year, in addition to pronounced decreases in dollar terms *(Exhibit 2).*

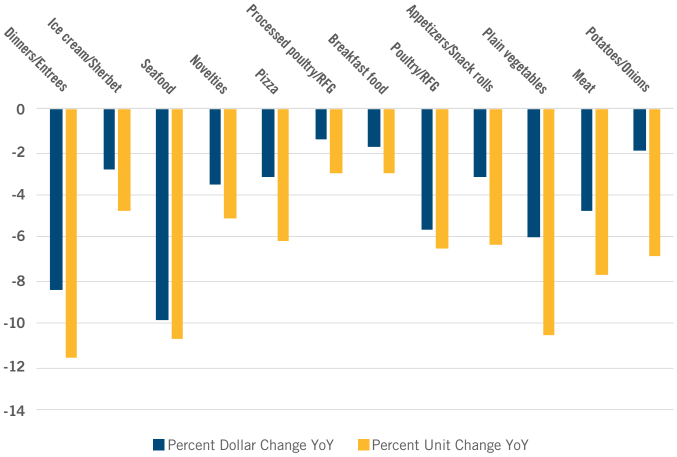
Such declines are far from unique to frozen foods. This has been a common refrain in company financials for the past couple of quarters, particularly those concentrated in the center of the store, namely shelf-stable products. Consumers do not necessarily appear to be eating less; however, their reduction of purchases from frozen and shelf-stable suggests they are not stocking up or refilling pantries/freezers, but rather are seeking lower-cost items on more of an as-needed basis. Typically, higher-priced categories have felt the impact; products bearing organic claims have shown notable declines, as have sales of plant-based meat alternatives. At September's Good Food Conference, which is focused on alternative proteins, attendees not only voiced concerns about declining sales but also the pending competition from cell-cultivated meats. For plant-based brands there, the consensus appeared to be that VC and PE investment has all but dried up. Distinct appeals were made to government entities, both at the state and federal level, for subsidies similar to those supporting electric vehicles and solar-wind power generation.

Regardless, the issue of lower sales volumes in food and beverage aisles does not appear to be going away soon. A CNBC survey found 92% of consumers already cut back on such spending in the past six months, but more than three quarters (76%) will cut their non-essential spending through the rest of the year. Which categories are facing cuts? More than 6 in 10 (62%) say restaurants and bars, with 53% planning reductions to their grocery spend.

3 Increasing prices have led to a shift in shopping patterns to include a greater diversity of retailers.

4 Frozen and shelf-stable segments have largely failed so far to reap the consumer-shift rewards.

EXHIBIT 2: Frozen Sales
(52 Weeks Through May 2023)



Source: Circana

POWER, ENERGY AND WATER

Oil prices to remain elevated through 2024

By Teri Viswanath

U.S. crude oil prices increased 30% in the third quarter, with WTI futures rising from $71 at the start of July to $95 by the end of September *(Exhibit 1).* And while the post-pandemic, post-Russian invasion market had already breached the $100-a-barrel threshold in early 2022, this 2023 rally is different. High prices this time around are marked by an important re-ordering in global supply, intransigent producers and a global economy that simply won't slow down – developments that will likely keep prices higher for longer. Indeed, despite the recent reversal, caused by U.S. political headwinds and increased economic jitters, we expect the underlying factors that drove the summer-time surge will keep prices elevated through 2024.

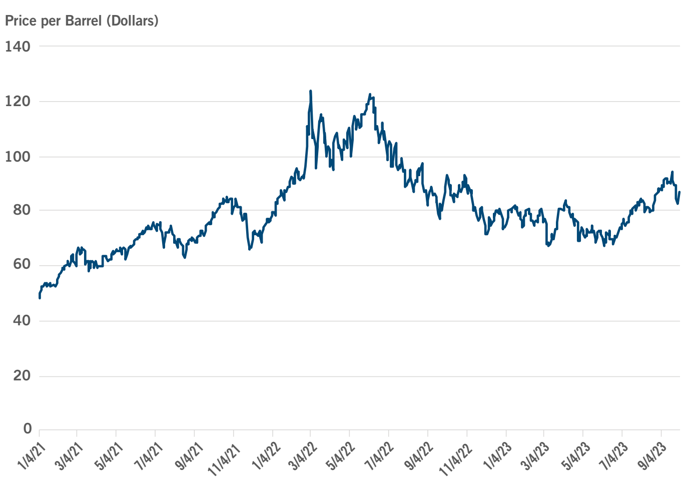
In recent years, the OPEC+ coalition with Russia has faced several challenges[1], including divisions within its membership, the emergence of the U.S. as a major oil exporter, and the global shift to cleaner energy sources. Still, what matters most for short-term global oil prices is spare production capacity, with Saudi Arabia the epicenter of that supply flexibility. Consequently, in order to meet the post-pandemic surge in global energy demand, the world has fallen back on fossil fuel and the more traditional sellers of that supply.

Following Russia's invasion of Ukraine, oil prices soared, hitting more than $120 a barrel in June last year. However, by March 2023, prices had fallen back to little above $70 a barrel – a 15-month low. In response, the Saudi-led oil producers' group announced initial production cuts in April, followed by additional curtailments in June,

1 **U.S. crude oil prices increased 30%** in Q3.

2 Without greater demand side destruction, **transportation costs will remain elevated through 2024.**

EXHIBIT 1: U.S. Crude Oil Futures



Source: CME Group

with about 5 million barrels a day or the equivalent of about 5% of global supplies now held off the market. The stated reasons for the production cuts were concerns that these producers need to stay ahead of a slowing global economy and that there is a real risk of oversupplying the market. But there are also indications that these recent OPEC decisions mark a watershed moment in producer-consumer relations, with the bloc determined to reassert market control by freeing up spare capacity.

In the recent past, such a shortfall in global supply might be made up by U.S. shale production, but not now. Despite the fact that U.S. oil production will set a new record this year, the weekly rig count has consistently fallen since the start of the year, with flat or falling Lower 48 production soon contributing to tightening global balances. According to Bloomberg[2], for the first time U.S. producers are spending more on share buybacks and dividends than on capital projects, underscoring the change in priorities. Indeed, prioritizing returns as opposed to untapped reserves has made the sector the S&P's best performer for the past two years – but at the expense of future growth.

Rising oil prices are, generally speaking, welcome news to producers, but only up to a point. In early October trading, the market appears to be giving back some of the summer-time gains on concerns that consumers are beginning to respond to the higher prices. Indeed, with the peak driving season now behind us, domestic consumers appear to be driving and flying less, which will ultimately help shore up inventories. But this is kind of like a game of figuring out who blinks first, the consumer or supplier, with the balance of the scales weighted toward the latter.

Consequently, without even greater demand side destruction, it appears that transportation costs are likely to remain elevated through 2024. Taking stock of the current market conditions, AAA observed that despite tepid demand with fewer drivers visiting the pump, the national average for a gallon of gas was falling like a feather[3] in response to stubbornly high crude oil prices. This pattern – of prices at the pump rising quickly in response to a crude prices jump, but descending more gradually in response to falling crude prices – is so common that economists have a pet name for it: rockets and feathers. But the translation is crystal clear: The crude oil price volatility on track for the balance of the year will afford little pocketbook relief on transportation spending for consumers.

3 **Despite the recent crude oil price pullback, consumers have been afforded little relief.**

[1] *Anshu Siripurapu and Andrew Chatzky. "OPEC in a Changing World," Council on Foreign Relations, March 9, 2022.*

[2] *Kevin Crowley, David Wethe, and Mitchell Ferman. "Oil Investors Get $128 Billion Handout as Doubts Grow About Fossil Fuels," Bloomberg. March 4, 2023.*

[3] *"Falling Like a Feather," AAA press release. Sept. 28, 2023.*

COMMUNICATIONS

The race to plant fiber's flag is driving new sources of capital

By Jeff Johnston

First mover advantages apply in many industries – get to market first, build a brand and products that customers love, and reap the benefits from their loyalty. This has never been truer that it is now for the fiber industry, and it is forcing operators to get creative with their financing strategies.

Studies show that the first to plant their fiber flag in rural and underserved markets garners the majority of the market share, and typically sees less competition. As a result of these attractive market conditions, the race is on for communications providers to seek out and deploy fiber networks where these opportunities exist. This is coming from telcos that are desperately trying to upgrade their digital subscriber line (DSL) networks with fiber to fend off competitive fiber builds, and/or to take back share lost to cable's hybrid fiber coaxial (HFC) technology. It's also coming from new market entrants looking to take advantage of unserved or underserved markets with a future-proof broadband connectivity solution.

These market dynamics have led operators to become creative with their efforts to raise capital. Gaining access to capital quickly can make the difference between being the first market entrant and not entering the market at all. As a result, a new market for securitizing fiber assets to raise capital has emerged. Instead of borrowing money the traditional way where banks use leverage ratios and a borrower's ability to repay the debt based on cash flows, some operators are using their existing fiber assets as collateral, packaging them up and selling asset-backed securities to investors. It is a more expensive way to finance a capital budget compared to traditional debt from a commercial bank, but it unlocks new sources of capital that wouldn't otherwise be available.

Several companies are going that route. Frontier Communications recently announced it closed on a securitization deal worth $2.1 billion. Frontier set up a special purpose vehicle that will hold the company's securitized assets and associated customer contracts and will receive all payments from existing and future residential and business customers. Other companies utilizing this funding strategy include MetroNet Holdings, which sold a deal in October 2022 that included contract payments from fiber lines. Additionally, Allo Communications issued fiber-backed bonds in June while Hotwire Communications issued bonds in May.

Given the aforementioned benefits of being first to market, and the high valuations fiber networks are fetching, selling asset-backed securities to investors is a strategy we expect to see more of.

1. **The race is on to be the first company offering fiber-to-the-home service in unserved and underserved markets.**

2. **Companies need to raise capital quicker than ever to be the first to plant their fiber flag, and are getting creative in doing so.**

3. **A new market has emerged where operators are issuing bonds backed by their existing fiber networks and customer contracts.**

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, as well as relevant legislative and regulatory developments.

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