CoBANK
KNOWLEDGE EXCHANGE

THE QUARTERLY

Dedicated to the industries financed by CoBank

April 2023

Adapting to a Slowing Economy

Effects from higher interest rates are permeating rural industries

Executive Summary

The U.S. and rural economies remain strong but a slowdown is beginning to unfold. Inflation is falling, U.S. consumers continue to spend, and the labor market is still strong. And despite a commercial banking scare, the Federal Reserve is holding to its monetary tightening course. However, signs of a wavering economy are spreading, albeit slowly.

This transition from a red hot economy to one that is more tepid can be felt across rural sectors. Natural gas prices have plummeted, impacting the fertilizer, biofuel, and power sectors. Recent surges in protein and dairy prices are now meeting a more price-sensitive consumer. And the race to build out fiber broadband is slowing to a crawl.

The effects of higher-for-longer interest rates will become more pervasive, and the economic deceleration more pronounced as the year progresses.

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:

- *The persistent intra-rural population divide*
- *Input inflation weighs on producers' expansion plans*
- *Slump in U.S. natural gas prices might be short-lived*

Inside this issue

SPOTLIGHT

The persistent intra-rural population divide

By Dan Kowalski

The U.S. Census 2022 county population numbers are in, and the pandemic exodus from large population centers is slowing but not reversing. The largest and least affordable cities such as New York, Los Angeles, Chicago, and San Francisco have continued to see outmigration, but at a slower pace than in 2021. What areas are attracting the most new inhabitants? Low-density suburbs. With access to decent services, more affordable housing, and relative proximity to urban centers, they continue to entice urban dwellers away from city centers.

Most relevant for CoBank and many of our customers is the movement of inhabitants in rural areas. Rural areas saw a second consecutive year of population growth, continuing the shift away from several years of outmigration. This is a welcome change for many rural counties, as non-metro area death rates far outweigh birth rates. The benefit of population inflow is not spread equally in rural America, however.

The smallest rural counties continue to suffer the most outmigration. More than 60% of counties with populations under 10,000 lost residents in 2022. More than half of counties with populations of 10,000-25,000 also experienced net outmigration. It's only in the largest non-metro counties where we see a significant influx of residents. Roughly 55% of counties with populations of 25,000-50,000 are growing in population. These counties are typically close to metro areas and have a higher average educational attainment.

This data confirms what we have seen before, during, and now after the pandemic: There is not only a rural/urban divide, but also an intra-rural divide. Nearly 70% of rural Americans live in counties that are adjacent to metro areas. That number has been rising as people, jobs, and amenities move from urban areas, forming new thriving rural communities.

Still, nearly half of all U.S. counties have populations under 25,000. These counties tend to be more geographically isolated and less adequately resourced. Lack of amenities (including broadband) and long commute times prevent many of these areas from sharing in the prosperity experienced by other rural counties.

There is no easy policy fix to narrow this rural divide. But it is important to recognize that it exists, and find ways to support development of all rural communities, whether they are small and isolated or growing and connected.

1. **Low-density suburbs** with proximity to urban centers, access to services, and affordable housing **continue to entice urban dwellers.**

2. **Nearly 70% of rural Americans live in counties that are adjacent to metro areas.** That number has been rising over time.

3. There is not only a rural/urban divide, but also an intra-rural divide. **The smallest rural counties continue to suffer the most outmigration.**

MACRO ECONOMIC OUTLOOK

The intentional slowdown is unfolding

By Dan Kowalski

The turmoil in the commercial banking sector over the past month has created a new and unpredictable variable in the economic outlook. No one can say whether the stress in the sector is fully past or what the full impact will be. But for now, the situation seems to be contained and the economic impacts relatively modest from the biggest financial scare since 2008-09. Many commercial banks have rushed to utilize the liquidity programs offered by the Fed and have better safeguards in place today than they did a month ago.

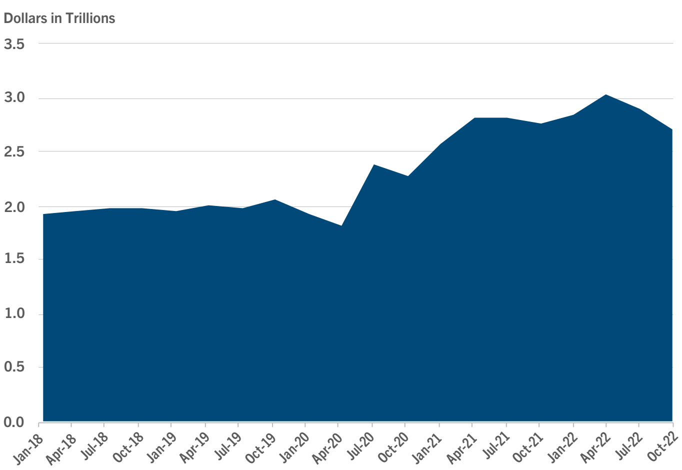
However, the flight of deposits from small and mid-size banks to large banks and money market funds creates an environment where lending standards and credit availability are likely to tighten for these smaller banks. This will create a downdraft in the economy in coming months as small businesses and consumers will have fewer funding sources for investment and spending. That will compound the slowing of the economy caused by Fed interest rate hikes. And Chair Powell has stated that the banking turmoil will have similar effects as an interest rate increase.

Inflation-adjusted wages have been falling for months, but hours worked have been increasing, so real disposable income has actually been rising steadily. These income gains are powering consumers, keeping them spending, though that pace of growth is slowing. The job market remains strong, and that demand for labor is preventing the economy from cooling too quickly. Even as layoffs have hit interest rate-sensitive

1 **As lending standards and credit availability tighten for smaller banks,** small businesses and consumers will have fewer funding sources.

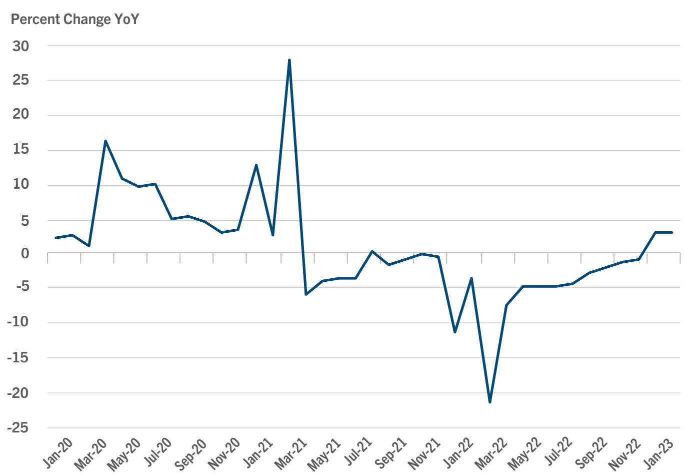
2 **Core services excluding housing is the inflation indicator the Fed is most closely watching,** and it has been trending up the past several months.

EXHIBIT 1: U.S. Corporate Profits After Tax



Source: Bureau of Economic Analysis

EXHIBIT 2: Real Disposable Personal Income



Source: Bureau of Economic Analysis

sectors such as real estate and tech, most of these workers have quickly found new roles in different industries. Corporate profits are falling from their lofty levels during the pandemic, though, which portends hiring weakness in coming quarters.

The biggest economic challenge ahead remains inflation. Yes, headline and core inflation have been moving down in 2023. But the indicator most closely watched by the Fed right now is core services excluding housing, and that inflation segment has been trending up the past several months. And even as general inflation moves in the right direction, headline PCE (Personal Consumption Expenditures) inflation is still at 5% YoY, well above the Fed's 2% target. That points to the likelihood that the Fed will raise rates again in May. After that, the FOMC may pause and wait for the impacts of its prior rate increases to take effect.

As we've noted before, there are no reliable rules that indicate when the Fed should halt its rate hikes to avoid overdoing it. All we know is that Chair Powell is determined to get inflation down to a desirable level, even if it means contracting the economy.

Several indicators point to an oncoming recession, with inverted bond yields being the most closely watched. The yield curve has been inverted for more than a year, and the inversion has grown progressively steeper – a credible sign that the economy is in trouble. But predicting the timing of a steep slowdown has been particularly tricky in the face of a resilient labor market. And a recession is still far from certain. But we do expect a shallow, relatively short recession in 2023, likely late in the third quarter or in the fourth.

3 We still expect a shallow, short recession in 2023, but likely not until late Q3 or Q4.

GRAINS

Grain prices take another roller coaster ride

By Kenneth Scott Zuckerberg

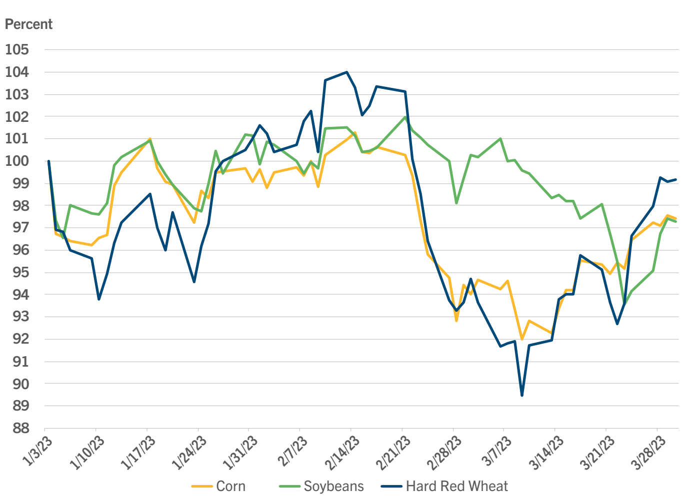
Cash corn, soybean, and wheat prices finished the quarter down modestly after a roller coaster ride spurred by Black Seas conflict headlines, lower corn and soybean/meal production in drought-plagued Argentina, and a deteriorating global economic outlook. In the soybean complex, soybean meal initially gained about 10% due to the Argentine drought situation, only to finish the quarter flat. Soybean oil was the standout losing ag commodity since the new year, dropping 21%, continuing a precipitous fall that began in December 2022.

Here's the story on soybean oil: In 2022, prices had surged on growing government incentives (including the Inflation Reduction Act) to boost production of renewable diesel, a drop-in commercial fuel that uses soybean oil as a primary feedstock. But in a move that caught industry participants by surprise in December 2022, EPA proposed a lower mandate for the use of biomass-based diesel through 2025, thereby reducing the overall value of tax credits that the agency grants to biofuel producers. The hangover continued into the first quarter. Soy oil prices dropped further in sympathy with falling energy prices and reemerging recession fears, which were seen as a negative to global food demand (and thus lower usage of vegetable oils like soy, palm, and canola).

1 **Grain prices responded in kind to zig-zagging production estimates in the U.S. and Argentina, as well as Black Sea conflict headlines.**

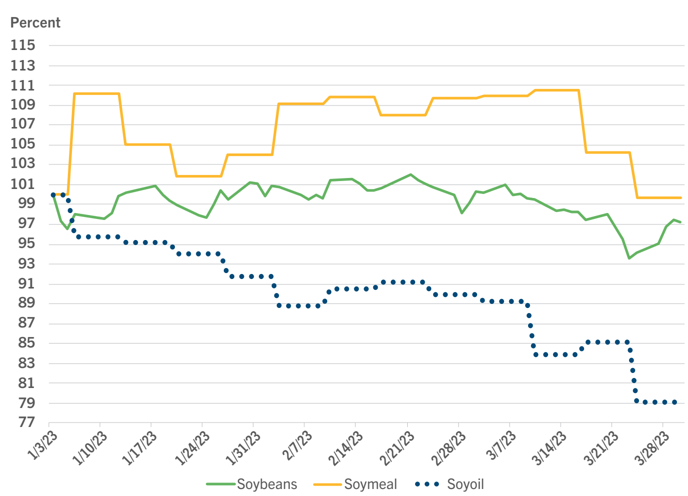
2 **Corn, soybeans and hard red wheat spot prices finished Q1 1% to 3% lower after a roller coaster performance. Soybean oil prices fell sharply, by 21%.**

EXHIBIT 1: Grain Spot Performance Index



Source: Barchart

EXHIBIT 2: Q1 Soy Complex Spot Performance Index



Source: Barchart

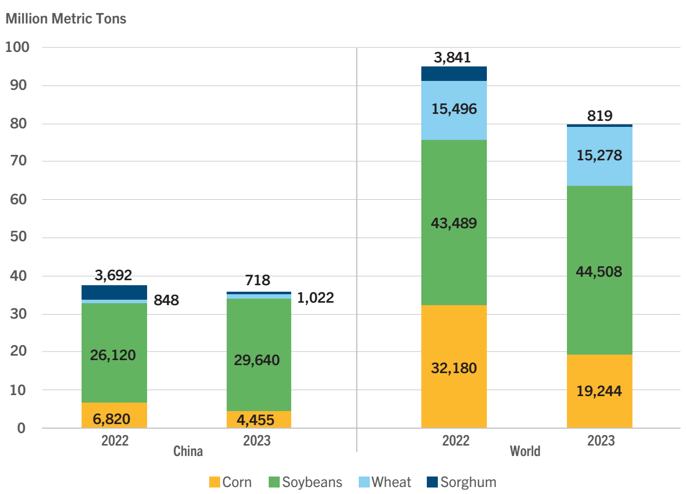
Two trade-related bright spots emerged during the quarter. First, China became an active buyer of U.S. corn from the middle of March, taking advantage of stable domestic supplies and attractive U.S. prices. (The decline in price coupled with lower Ukraine corn exports and improved barge conditions on the Mississippi River made the U.S. a market of choice for Chinese buyers.) Second, a deal to export Ukrainian grain from the Black Sea was extended during March. However, considerable uncertainty exists as to whether the export grain initiative will continue indefinitely given expected escalation of fighting between Russia and Ukraine during the spring along with upcoming elections in Turkey, the country that has brokered the deals thus far.

The quarter concluded with USDA's Prospective Plantings and Grain Stocks reports. On planted acreages, main areas of variance vs. USDA's February 2023 estimates included 1.0 million more corn acres and 350,000 more wheat acres. On the former, we found it noteworthy to mention that 50% of the increase in corn acres came from three states – North Dakota, South Dakota and Minnesota – all of which are currently experiencing heavy snowpack, cold temperatures, and a below average temperature outlook for the planting season, according to the seasonal outlook from the NOAA Climate Prediction Center. Although there's still time for the soil to warm up and become workable, we would temper expectations regarding USDA's estimate of 92 million corn acres being planted in the U.S. for the 2023/24 crop year. (Watch for updates on June 30 when USDA releases updated crop acreage and grain stocks information.)

3 The drop in U.S. corn prices spurred a Chinese buying spree, helping to close the gap between actual accumulated exports and USDA's projections.

4 The USDA Prospective Plantings report signaled more corn and wheat acres than initially expected.

EXHIBIT 3: U.S. Accumulated Exports to China and Total World



Source: USDA-FAS, data as of March 23, 2023

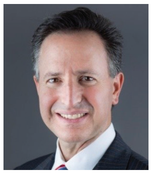
EXHIBIT 4: Prospective Plantings Report Variance Analysis

Planted Acres (millions)	2021/22 Final Figures	2022/23 Final Figures	USDA February Forecast 2023/24	USDA March Report 2023/24	February/ March Variance
Corn	93.25	88.58	91.00	92.00	1.00
Soybeans	87.20	87.45	87.50	87.51	0.00
Wheat	46.70	45.74	49.50	49.86	0.35
Subtotal	**227.15**	**221.77**	**228.00**	**229.36**	**1.36**

Source: USDA and Reuters

FARM SUPPLY

Fertilizer prices continue to weaken, but may be near bottom



By Kenneth Scott Zuckerberg

In contrast to the first quarter of 2022 when fertilizer prices hit decade highs, fertilizer prices continued to fall during the first quarter of 2023. This occurred amidst downward pressure on grain, energy, other commodity prices, and general inflation. Although economic growth has been reasonably stable in both the U.S. and abroad, most market participants are now expecting an economic slowdown in the second half of the year.

The current situation contrasts sharply with a year ago, when fertilizer and natural gas prices spiked following Russia's invasion into Ukraine. Several factors are at play. One, fertilizer production came back online in Europe following the planned idling of capacity during fall 2022 as Europe built up natural gas reserves through imported liquid natural gas. Two, overall consumption was down in both Europe and the U.S. as unseasonably warm weather reduced residential and commercial heating demand. With the futures curve forecasting higher natural gas prices by summer, we may be now nearing a low point for nitrogen prices in 2023.

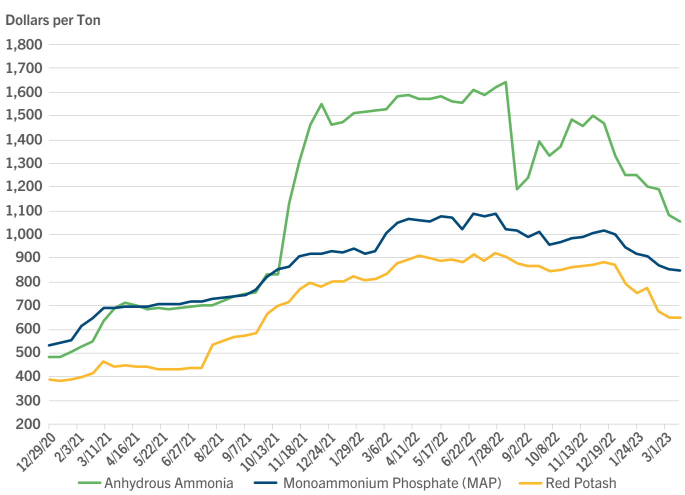
Farm supply cooperatives saw muted agronomic activity in the first quarter of 2023 due to substantial rain and snowfall in March, which has limited field work and other pre-planting activities. The outlook for the sector should be generally favorable this year following record profits in 2022. However ag retailers face several risks that could depress profit margins and challenge traditional business models in the years ahead. The risks include lower levels of industry working capital, higher property insurance costs, and changing grower needs (see the recent Knowledge Exchange report, *Ag Retailers Prepare to Navigate 3 Emerging Risks*).

1 **Fertilizer prices continued to fall in step with natural gas prices** despite stable economic growth in the U.S., China, and Europe.

2 The current situation contrasts sharply with a year ago, when **fertilizer and natural gas prices spiked following Russia's invasion into Ukraine.**

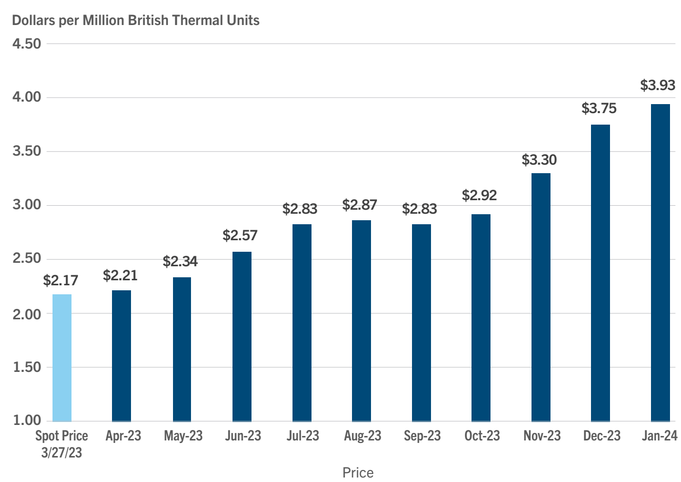
3 **Substantial March snowfall limited field work and other pre-planting activities,** which muted agronomic activity in Q1.

EXHIBIT 1: Iowa Fertilizer Production Cost Summary



Source: USDA-AMS

EXHIBIT 2: U.S. Natural Gas Spot and Futures Prices



Source: Barchart

BIOFUELS

Ethanol saw a slow start to Q1 but stronger finish

By Kenneth Scott Zuckerberg

After a slow January start, U.S. ethanol processors increased weekly production during the quarter to approximately 15.4 billion gallons annualized, just below 2022's average weekly production of 15.5 billion gallons. Pretax margins started the quarter quite weak at $0.07/gallon but increased nicely to long-term average levels of $0.28/gallon, benefitting from lower corn feedstock and natural gas energy costs.

On the policy front, Sen. Chuck Grassley reintroduced the bi-partisan Next Generation Fuels Act in late March. If enacted into law, the act will mandate auto manufacturers to design vehicles that use cleaner fuels and fuel retailers to offer higher-octane options. For next-generation vehicles that can use high-octane fuels, higher blends of ethanol are expected to improve engine efficiency and performance, with lower emissions.

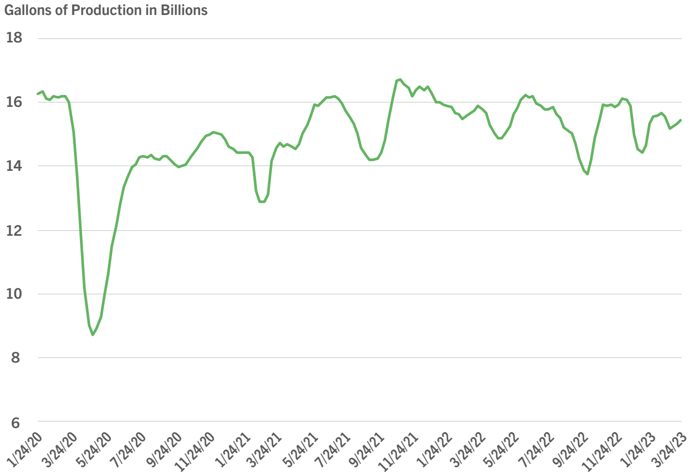
The renewable diesel segment of biofuels remained dynamic with two notable developments to call out. As first reported in January, renewable diesel production surpassed biodiesel production in November 2022 for the first time. Second, Omaha, Nebraska-based Scoular announced in March it plans to recommission a former sunflower crush plant it purchased in northwest Kansas and retrofit the facility to crush both soybeans and canola to produce feedstock oil for use in renewable diesel production.

1 **Despite seasonally lower demand, ethanol production and profitability were in line with long-term averages during Q1 as lower corn and natural gas costs helped margins.**

2 **On the ethanol policy front, legislation reintroduced in the U.S. Senate in late March could support higher blends of ethanol.**

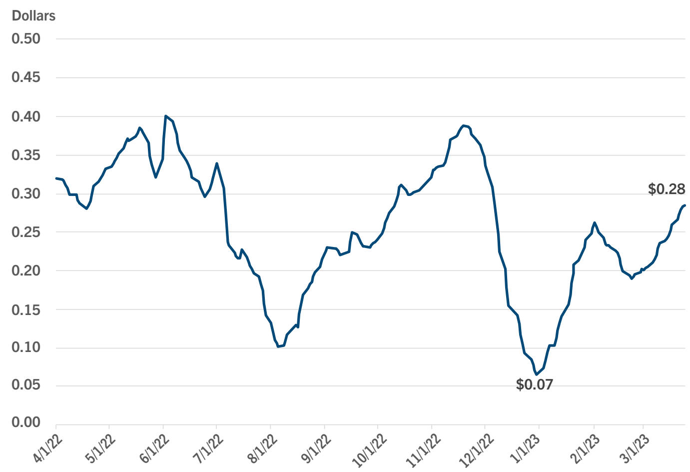
3 **Among renewable diesel announcements in Q1, Scoular plans to retrofit a former sunflower-only crush plant to handle soybeans and canola.**

EXHIBIT 1: U.S. Fuel Ethanol Plant Production
4-week average production (annualized)



Source: U.S. Energy Information Administration

EXHIBIT 2: 30-Day Moving Average Ethanol Operating Margin
16-year average is $0.28/gallon



Source: ISU-CARD

ANIMAL PROTEIN

Input inflation weighs on producers' expansion plans

By Brian Earnest

While inflation has been cooling, higher prices across the board are becoming a major part of consumers' decision-making process. Meat prices are up roughly 30% from 2019 levels and up 6% YoY, but retail prices for certain segments such as beef have actually declined in recent months. Consumers may have seen moderate relief on beef prices at the store, but overall grocery prices are still rising and smaller meat portions are a good way to keep the overall grocery bill in check.

In addition, expected supply constraints may prevent consumers from purchasing the same amount of meat as last year. Red meat production has been running about 3% lower YoY since the beginning of February and is expected to drop further during the second half of 2023, concurrent with declining fed cattle availability and lower slaughter weights.

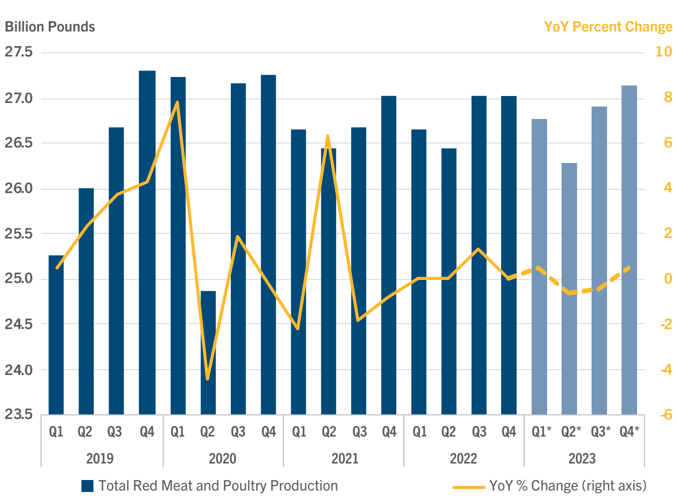
Although importers have been feeling the impact of global economic pressure, the export market remains relatively robust for U.S. animal protein. One notable exception may be U.S. beef exports to China: They've been stellar in previous periods, but were down 25% YoY for January. Pork and poultry exports are seeing moderate improvements overall, so at this point we remain optimistic for what export markets have in store for producers.

Bottom line, much like the fourth quarter of 2022, red meat and poultry output exceeded expectations during the first quarter of 2023, which kept downward pressure on prices. This was not necessarily true for cattle prices, which fared quite well as cattle shipments to feedlots outpaced replacement calves on farm. As grilling season heats up, we expect performance in the animal protein segment will strengthen from here in the months ahead.

1 **While the CPI for all meat, poultry, and egg prices is up 6% YoY, wholesale prices are flat and retail inflation is cooling.**

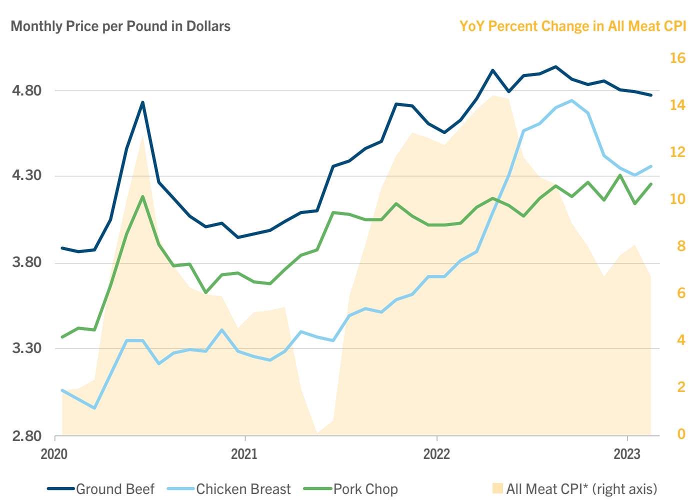
2 **Red meat production started 2023 strong, but has since declined roughly 3% YoY since the beginning of February.**

EXHIBIT 1: Red Meat and Poultry Production



Source: USDA-ERS
**Denotes forecast*

EXHIBIT 2: Retail Meat Prices vs. CPI Change for All Meats



Source: Bureau of Labor and Statistics (FRED)
**Consumer price index for all urban consumers: meats, poultry, fish, and eggs in U.S. City average, index 1982-1984=100, monthly, seasonally adjusted*

CHICKEN

A combination of elevated feed costs and weak chicken prices have weighed heavily on integrated broiler producers' bottom lines. But, with some recent relief on feed costs and the shortest time to market, poultry will be the first to benefit. That is only half of the equation, however. Chicken markets grew sluggish during December and January while broiler production remained at record levels. As a result, breast meat in cold storage hit a record 245 million pounds, up 40% YoY to end February.

While these inventories appear excessive, boneless/skinless breast meat prices have been appreciating from those below $1.00/lb rock-bottom levels and now sit slightly above the five-year average, around $1.40/lb. This suggests that those low price points were plenty attractive to food service, warehouse stores, and food manufacturers that were seeking a "value" protein offering for consumers.

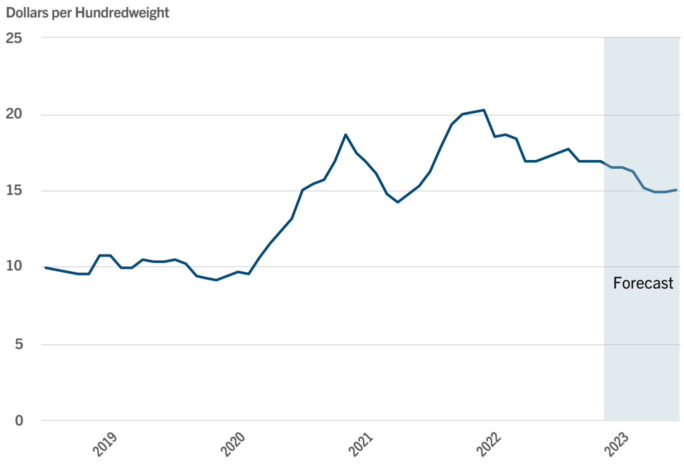
But not all was bad for the first quarter. U.S. broiler meat exports reached 630 million pounds during January, which was a record high for the month, up 13% YoY. Export strength is helping leg quarters maintain market strength, at seasonal levels not achieved since 2014. At the same time, domestic dark meat support remains robust as well, helping to carry the burden of less-than-stellar conditions for white meat.

The bottom line is that while chicken producers had a difficult start to 2023, things are looking up for this sector from here as beef production comes under pressure, especially if food service concepts can position this segment well in the form of a new "chicken sandwich war."

1 **Wholesale breast meat prices hit rock-bottom levels late in 2022, but have improved since then,** despite inventories up 40% YoY to end February.

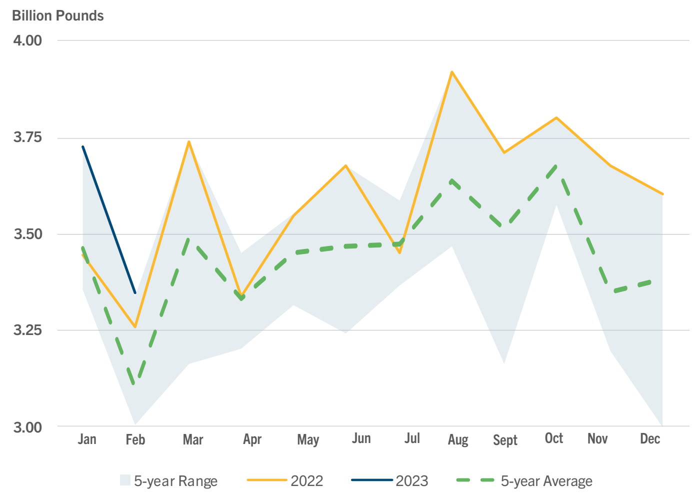
2 **Domestic dark meat support remains robust** as well, helping to carry the burden of less-than-stellar conditions for white meat.

EXHIBIT 3: Broiler Ration Cost
58% Corn 42% Soybeans



Sources: USDA & CME

EXHIBIT 4: Monthly Young Chicken Production
Ready-to-cook weight



Source: USDA

BEEF

With market participants anticipating tighter cattle supplies, and beef demand remaining robust, cattle markets ended the first quarter of 2023 in a strong position. Fed cattle have traded above $165/cwt and feeder cattle above $190/cwt. Consumer demand over the past three years has been nothing short of incredible, but resistance to higher prices has recently surfaced.

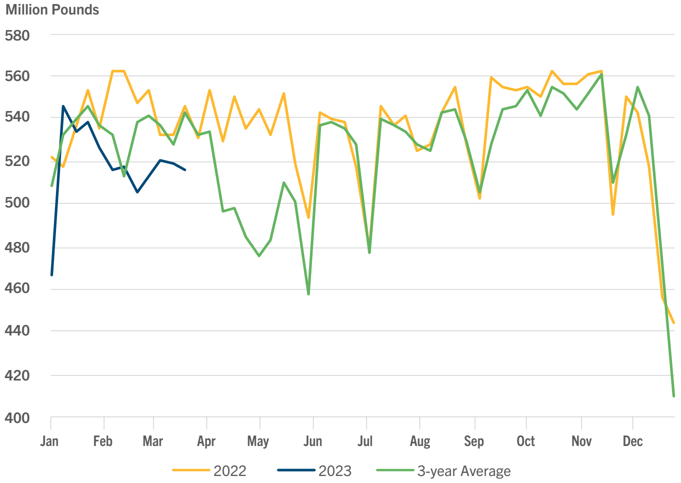
During January, processors were scrambling to keep up with orders, and slaughter rates remained elevated. But then demand cooled, and the choice boxed beef cutout tumbled more than $20/cwt during January. With packer margins pressured by stronger cattle prices and weaker cutout values, production has eased lower. Cumulative cattle slaughter is down 2.6% YoY, and beef production is down 4.3% YoY. This was partially achieved through reducing Saturday kill levels.

With production reeling, another strong demand period may be just around the corner as home chefs pull their grills out of winter storage. Consumers, burdened by shrinking real wages, will surely struggle to maintain spending habits in this category. However, the retail price spread from chicken to beef was 6% narrower for February than a year earlier, spurring optimism for beef in general. Drought conditions improved throughout the quarter, but forage and hay supplies remain tight throughout many grazing areas of the country, which is seen as a limiting factor to rebuilding the cattle herd.

1 Cattle prices have surged $10/cwt higher, with fed values drawing as much as $165/cwt on concerns over tighter supplies.

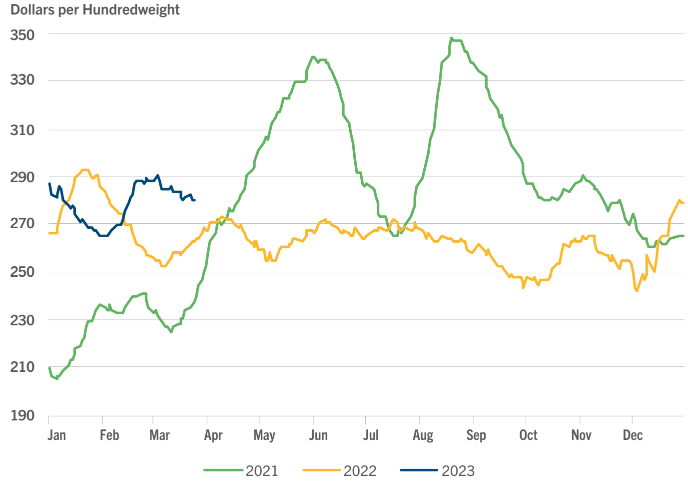
2 Beef production is down about 4% YoY, which has corrected the beef cutout erosion that emerged in January.

EXHIBIT 5: Federally Inspected Beef Production (Weekly)



Source: USDA

EXHIBIT 6: Choice Boxed Beef Cutout



Source: USDA

PORK

To begin 2023, USDA's *Hogs and Pigs* report set expectations for smaller hog supplies, as total market hogs were estimated down 2% YoY. But as a result of earlier weather complications and stimulated market interest, harvest rates have been stronger than anticipated. Through the end of March, cumulative weekly federally inspected slaughter is about 3% bigger YoY.

With harvest rate up, lean hog prices have not gained their normal seasonal momentum. To start out the year, national hog prices were at the top of the historical range for the period, at over $80/cwt, but have remained flat since then. We attribute this weakness to excess supply, but not to the point of stressing slaughter capacity. Overall, given USDA's estimates, the industry appears to be drawing down future hog availability, which should help support prices later this year.

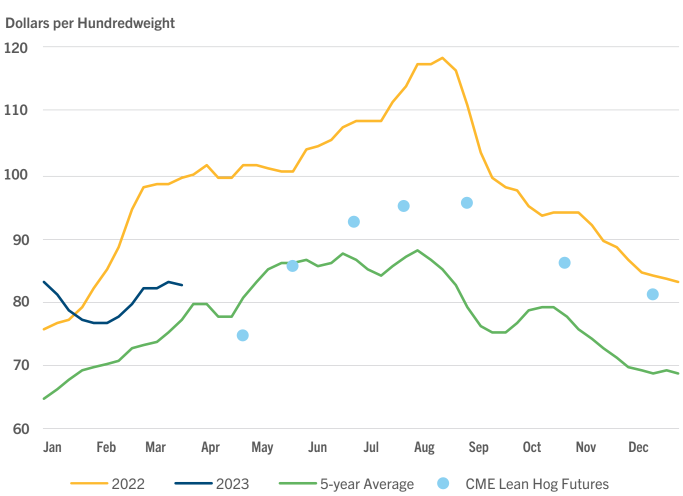
Domestic demand has fallen notably from the very strong levels reported over the last two years. The pork cutout value was down about $20 YoY to end March, which puts it about even with the five-year average. In any normal year producers would see this as acceptable, but not with the higher feed, labor, carrying costs, and other inflation that they are facing. The cutout sees about an average of $15-$20 appreciation from now through its seasonal peak during the third quarter.

U.S. pork exports came under pressure during 2022 as demand from China eroded due to COVID restrictions and its domestic herds were rebounding from African Swine Fever losses of 2019-2020. However, during January overall U.S. pork exports were up 9% YoY. Volume was up 5% YoY to Mexico and 37% YoY to China, so trade demand appears to be improving.

1 Hog prices were relatively flat through much of the quarter, bucking the seasonal uptrend, **as slaughter rates were up about 3% YoY.**

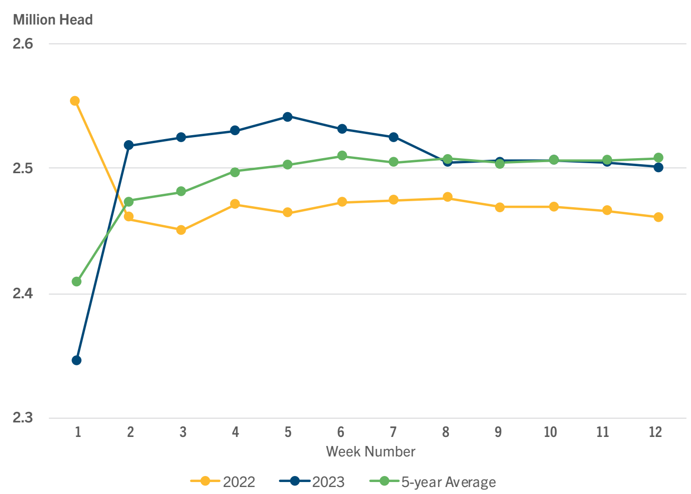
2 Mexico is playing a big role in U.S. pork export recovery after China's demand fell.

EXHIBIT 7: National Hog Prices
Lean hog futures forward



Source: LMIC, USDA, CME

EXHIBIT 8: Federally Inspected Hog Slaughter
Cumulative weekly average, first 12 weeks of year



Source: USDA

DAIRY

U.S. spring flush creating excess milk supply

By Tanner Ehmke

Production

Spring flush in the U.S. has commenced as temperatures warm and days lengthen. U.S. milk production in February totaled 17.7 billion pounds, up 0.8% YoY with further growth expected through spring.

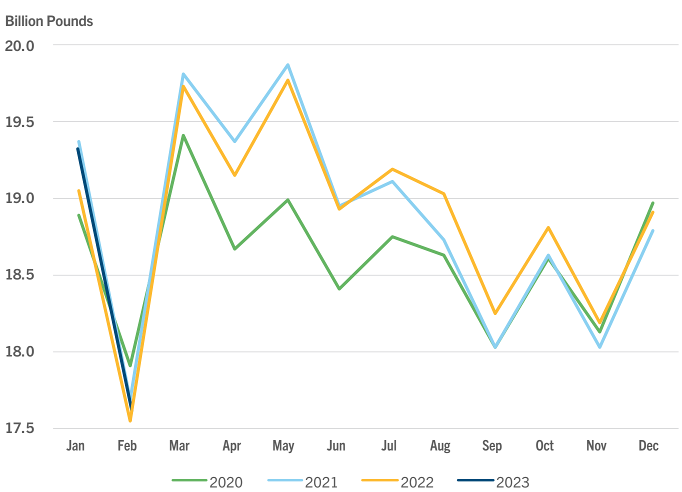
The U.S. milking herd has continued to expand as growth in production tips toward Midwest and Plains states which enjoy overall lower costs of production. As of February, the U.S. dairy cow herd totaled 9.417 million head, up a modest 37,000 over the previous 12 months. But the herd grew 12,000 head in February with Texas and Idaho continuing to lead the country in growth. Dairy producers in California's San Joaquin Valley, though, are struggling with excessive rain and snowmelt, adding to the pressures of higher relative feed costs.

The increased milk supply, combined with ongoing weak domestic demand, pushed down All Milk prices earlier in the quarter with spot milk selling at a significant discount to Class pricing, particularly across the Plains and Midwest. USDA-FSA's Dairy Margin Coverage Program reported milk margin above feed costs for January at $7.94/cwt, down from $9.76/cwt in December and well below January 2022's margin of $11.54/cwt as feed and other production costs remain elevated. However, over the past few weeks, surging cheese prices have lifted Class III futures to a $2.00/cwt premium over Class IV.

1 Milk prices are succumbing to seasonal pressures of the spring flush **and a growing U.S. dairy cow herd.**

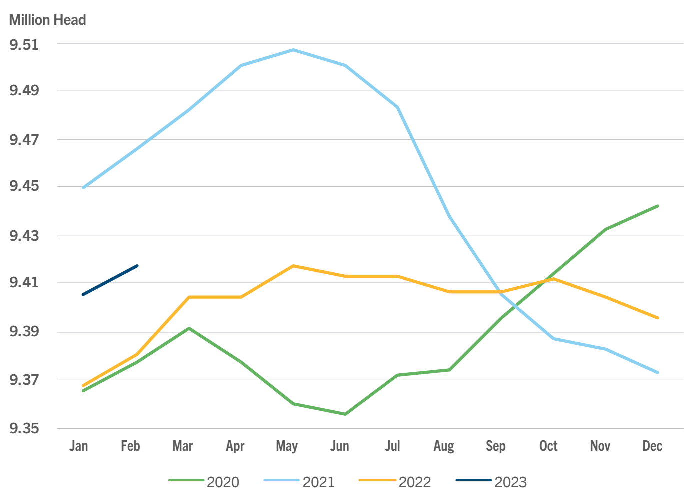
2 The U.S. milk cow herd continues to grow in Midwestern and Plains states **where production costs are lower.**

EXHIBIT 1: U.S. Milk Production



Source: USDA-NASS

EXHIBIT 2: U.S. Milk Cows



Source: USDA-NASS

The global fundamentals for milk remain bearish. While milk supply is slowly rising in the U.S., overseas production has also rebounded – since last September, EU milk production has averaged about 1% annual growth and New Zealand is now holding steady after a year-plus of declines. Weakness in milk prices is expected to curtail global production growth in the second half of the year.

Processing

Processors continue to struggle with constraints in the supply chain, specifically with trucking and labor, but have managed to operate overtime to take milk during the spring flush. A short-term squeeze in the availability of cheddar supplies lifted prices sharply late in the quarter, but long-term trends continue to point to cheese prices succumbing to production pressure amid a slowing global economy in the months ahead.

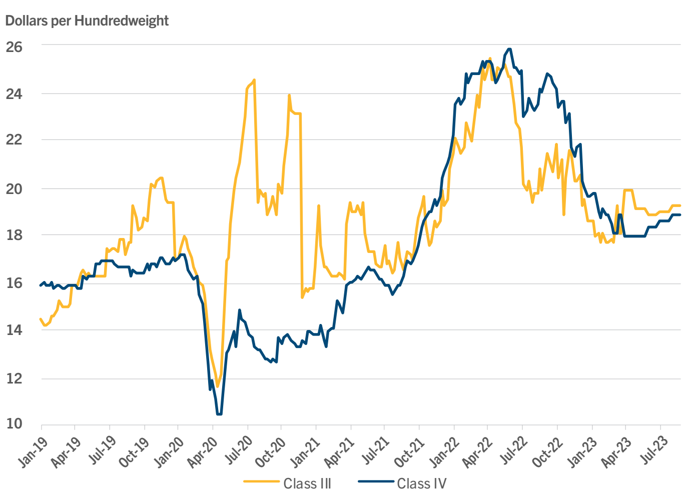
Cheese manufacturers produced a record amount of cheese at the start of the quarter, with January production up 3.2% YoY and February up 0.4% YoY. Butter production climbed 3.8% YoY in January while February rose 1.6% YoY. Nonfat dry milk production for January and February climbed 2.8% and 4.5%, respectively, while dry whey production was down 3.1% and 5.4% YoY for the two months.

Stocks of butter are recovering from last year's sharp drawdown as production accelerates into the spring flush. Cheese stocks, though, are falling despite the faster production pace as exports remain robust. The robust export pace for all dairy products has carried over into 2023 with January shipments of dairy products tallying 466.1 million pounds – a record for the month. Mexico remains the key destination for U.S. dairy products with a strong economy and one of the few currencies that has appreciated against the U.S. dollar. A slowing global economy is raising concerns of weakening international demand for dairy products while high retail prices in the U.S. have dampened demand growth.

3 **Cheese manufacturers are producing a record amount of cheese** **as milk supply builds.**

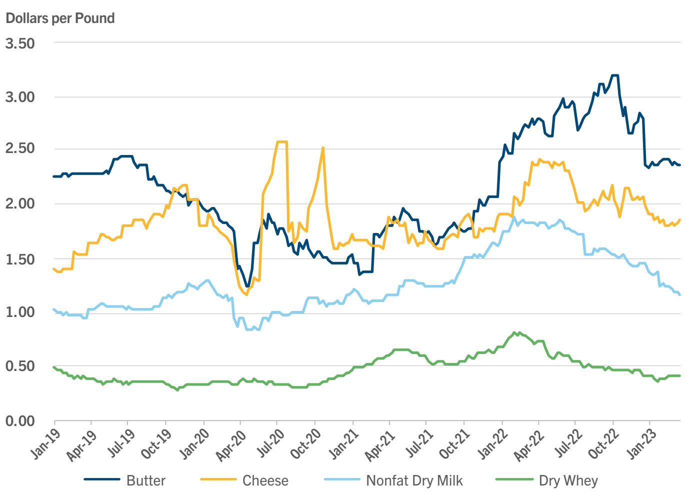
4 **Mexico remains the key export destination for dairy products,** **lifting dairy exports to a new record in January.**

EXHIBIT 3: Class III vs. IV Milk Futures



Source: CME Group

EXHIBIT 4: Dairy Product Futures



Source: CME Group

COTTON, RICE AND SUGAR

Cotton woes return, rice acres to expand

By Rob Fox

By Tanner Ehmke

Cotton

Eleven years ago cotton prices spiked over 400% in one of the most astronomical (and still not completely understood) farm commodity price run-ups in history. As a result, textile and apparel makers shifted to cheaper and less volatile synthetic fibers, and world cotton consumption plummeted. It took nearly a decade for global cotton demand to recover to 2010 levels but then the 2020 COVID pandemic cratered the world economy and took cotton demand along with it. But in an incredibly positive sign, apparel purchases quickly rebounded and, moreover, the cotton share of fiber in clothing increased for the first time in 13 years in 2021.

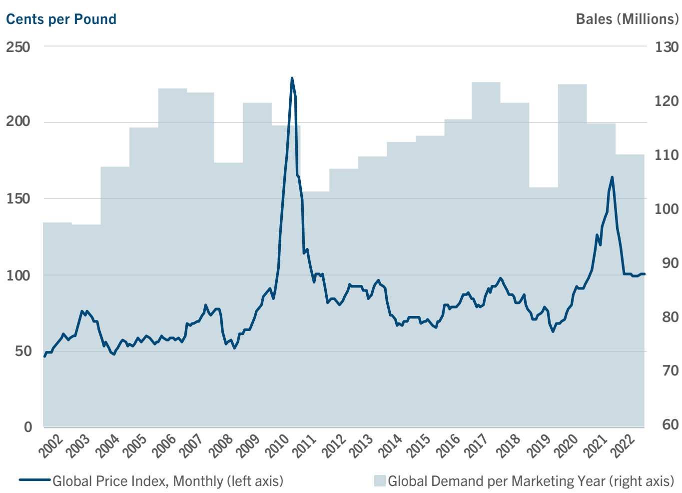
Alas it was too good to be true for a commodity that has broken more hearts than Casanova. Spurred by a combination of strong demand, tightening global supplies, and the invasion of Ukraine, cotton prices soared to over $1.50/lb in mid-2022 after spending the previous decade almost entirely within a trading range of 60 cents/lb – 80 cents/lb. And not surprisingly, global cotton consumption is forecast to drop 11% between marketing years 2020/2021 and 2022/2023. That would be the worst performance since MY 2011/2012 (excluding the 2020/2021 COVID year).

Today, it seems the global economic outlook is deteriorating. Clothing inventories are still too high for retailer preferences while real disposable income growth rates in developed economies continue to be anemic. Continued lackluster cotton demand through 2023 seems inevitable.

1 **The 2022 price spike has been a major setback for cotton.**

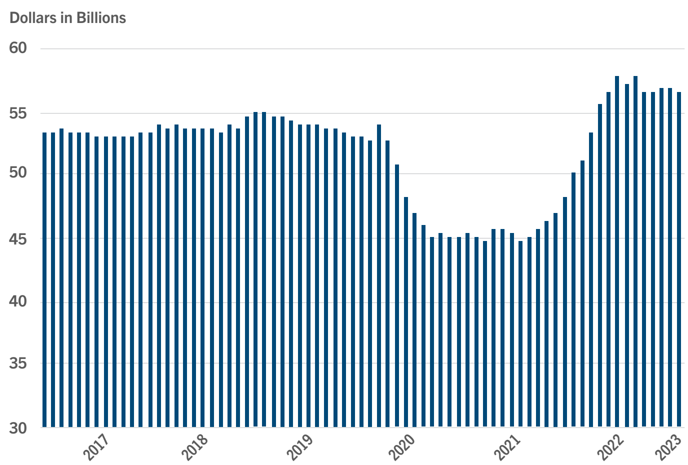
2 **After last year's record farm price and more moisture in California, U.S. rice producers are expected to plant 2.58 million acres this spring, up 16% YoY.**

EXHIBIT 1: Global Cotton Price Index and Demand



Source: Federal Reserve Economic Data

EXHIBIT 2: U.S. Retail Clothing Inventories



Source: U.S. Census Bureau

Rice

Rough rice prices fell last quarter under the pressure of speculative selling. The market expected commodity demand to fall in a world of rising interest rates and slowing economic growth. However, the March 31 USDA Prospective Plantings report still indicates total rice planted acreage to rise to 2.58 million acres, up from last year's 2.2 million. In February, USDA projected acreage for long-, medium- and short-grain rice to rise in response to last year's record-high farm price and California's substantially improved moisture conditions and snowpack. Medium-grain acreage alone is expected to jump 52% YoY, most of which is grown in California, while long-grain acreage is seen up 8.6% YoY at 1.96 million acres.

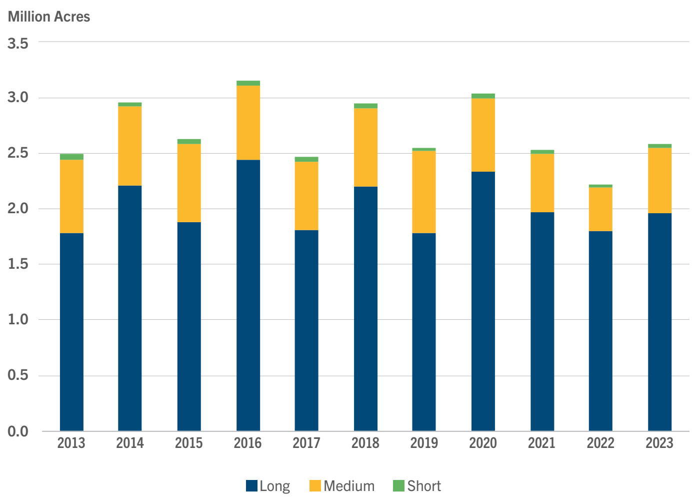
U.S. rice exports continue to lag far behind last year's pace, with accumulated shipments for the current marketing year down 40% YoY. The strong dollar and India's increased exports remain headwinds for the U.S. Indian exports are forecast to climb to a new high as India's government has dramatically increased subsidies to rice farmers. Per USDA's recent GAIN report, the price paid by the Indian government to rice farmers will increase to $259/ton, up from $120/ton paid in 2010/11. The Indian government also subsidizes about 85% of farmers' input costs.

Sugar

The 2022/2023 domestic sugar production estimate continues to edge higher, spurred by decade-high recovery rates for beet sugar and increasing sugarcane acreage. In fact, combined production is forecast to reach a record high 9,310 STRV on higher acreage, yields, and recovery rates. At the same time, prices remain historically high as food manufacturers hold inventories at the bare minimum needed to fill orders. The cane sugar manufacturing Producer Price Index is up about 37% from pre-pandemic levels. But, quoted wholesale spot cane sugar prices have risen by 82% over the same time, which suggests fairly strong margins for sugar refiners. While wholesale beet sugar prices are infrequently quoted, we suspect a similar story is unfolding in that category as well.

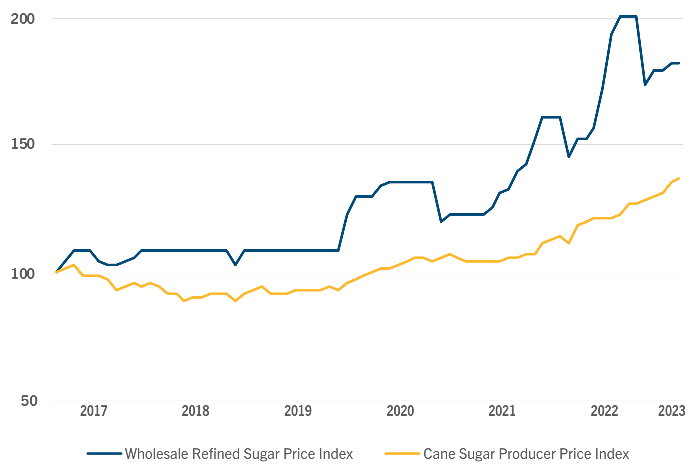
3 **Spurred by decade-high recovery rates for beet sugar and increasing sugarcane acreage, the sugar industry predicts strong prices and record production.**

EXHIBIT 3: U.S. Rice Planted Acreage



Source: USDA-NASS

EXHIBIT 4: Cane Sugar – PPI and Wholesale Price Index (2017=100)



Source: BLS and USDA-ERS

SPECIALTY CROPS

Almond market burdened by excess supplies; rain batters berry crop

By Rob Fox

Almonds

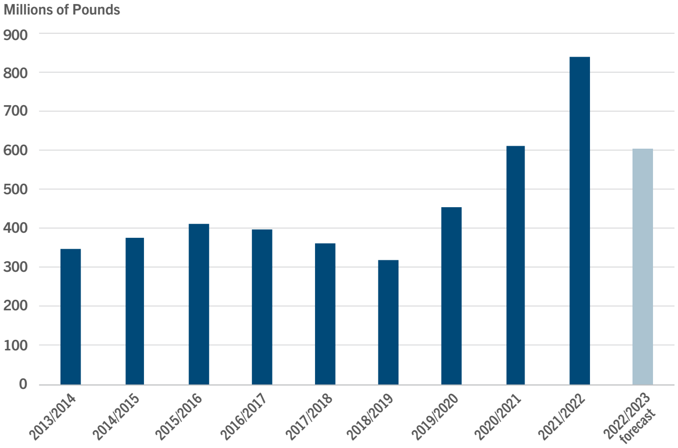
Wave after wave of rainstorms have buffeted most of California during the first three months of 2023 with some regions of Central and Southern California receiving 200% of the annual July-June average. This rain, combined with Central Valley temperatures far below normal during much of March's almond bloom and pollination period, have raised concerns over 2023 crop yields. As a result, almond prices have edged upward in recent weeks to the $1.80/lb. range.

However, a short crop may not be a bad thing overall for the almond industry as inventories have ballooned after the record large harvest of 2020/21 was followed by a crop almost as large in 2021/22. The Almond Board of California is currently forecasting the 2022/23 carryout to be down to 600 million pounds from a record 838 million pounds in 2021/22. The drawdown is not as large as had been hoped for last fall, but it still may be a bit optimistic given that both domestic and export demand fundamentals are currently weak. For January, the last available export data, export volumes were in line with past years but the average FOB price of $1.96/lb. (shelled) was the lowest monthly price since August 2010.

1 **Rain and cold temperatures during much of March's almond bloom and pollination period** has raised concerns over 2023 crop yields.

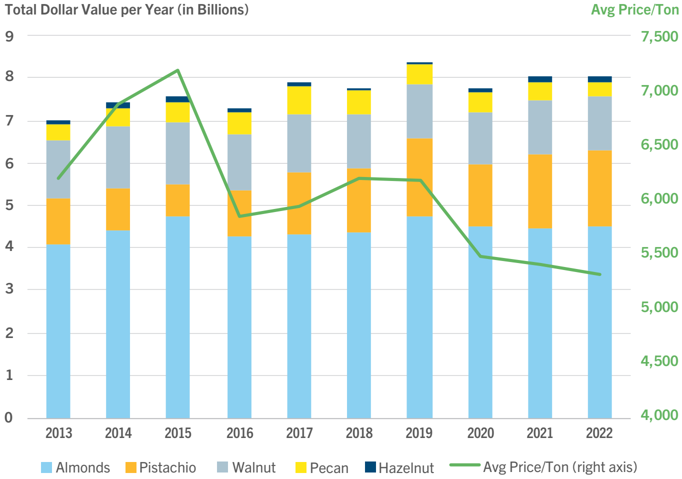
2 **A short crop may not be a bad thing overall for the almond industry** as inventories have ballooned after two years of record harvests.

EXHIBIT 1: U.S. Almond Carryout Volume



Source: Almond Board of California, February 2023 Almond Industry Position Report

EXHIBIT 2: Value of U.S. Nut Exports



Source: USDA-FAS Production, Supply and Distribution Data query

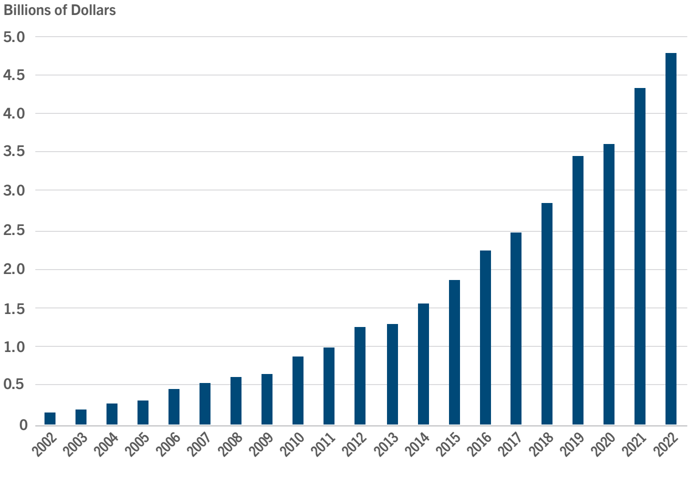
Meanwhile, per the Almond Board, domestic shipments are down 5% through the first seven months of the August/July marketing year. The weak domestic demand is corroborated by USDA's grocery expenditure series, which shows overall volume sales of nuts and seeds were lower in the 12 weeks ending Dec. 18 (last available data). Given the weakening macroeconomic environment, both domestically and abroad, we expect it will take another season at least to bring almond inventories back to more manageable levels.

Berries

The broad weather patterns that have pounded California left many of the state's strawberry fields under water. The breach of the Pajaro River levee near Watsonville left an estimated 20% of the Salinas/Watsonville-area strawberry farms underwater. That area comprises about one-third of all of California's strawberry acreage. While too early to tell for certain, it seems likely there will be heavy damage to the plants, which may need to be plowed under. One thing for sure is that the wet and cold spring means strawberry prices will be sky high in coming months. Berry imports, including strawberries, raspberries, and blueberries, will help fill the grocery demand and are virtually assured to hit another all-time record high in 2023. The value of fresh berry imports reached nearly $4.8 billion in 2022, rising from nearly zero 20 years ago.

3 Berry imports are virtually assured to hit another all-time record high in 2023.

EXHIBIT 3: Value of U.S. Berry Imports



Source: USDA-FAS Global Agricultural Trade System data query

POWER, ENERGY AND WATER

Slump in U.S. natural gas prices might be short-lived

By Teri Viswanath

U.S. natural gas futures prices have fallen precipitously since the start of the year, with 2023 setting up to be one of the most bearish years in recent history. End of winter inventories are well above average and the upward momentum in production suggests that the industry will be well stocked ahead of the next heating season. Indeed, current analyst projections are for the domestic market to remain oversupplied through at least 2024.

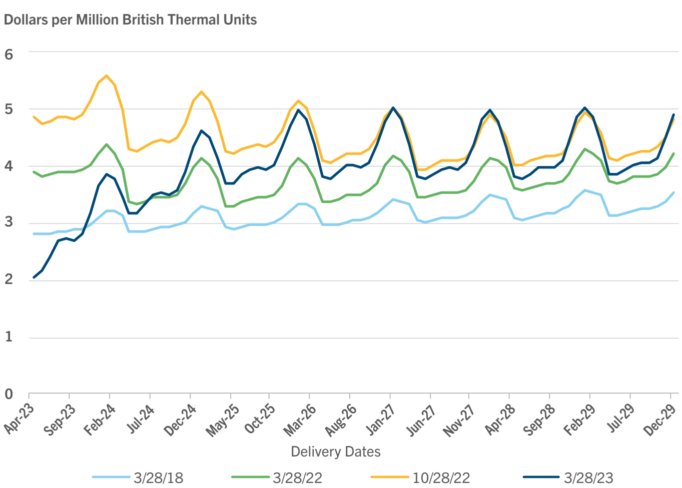
Even the U.S. Energy Information Administration recently acknowledged that the market looks vastly different today than when it published the Winter Fuels Outlook back in October. Its early guidance predicted that monthly average Henry Hub spot prices would peak near $7.70/MMBtu in January, before falling to around $6.50/MMBtu by March. Instead, the quarterly delivered prices in the Gulf have registered less than half the agency's initial estimates, with January spot deliveries averaging about $3.25/MMBtu and February and March closer to $2.35/MMBtu.

The abrupt turn around in market sentiment – from scarcity last fall to surplus this spring – has tamped down the natural gas futures curve through 2025. Interestingly enough, however, futures prices for the period of 2026 and beyond are largely unchanged, with the deferred contract tenors actually trading much higher than a year ago or even five years ago.

1 **Futures prices for 2026 and beyond are largely unchanged, with the deferred contract tenors actually trading much higher than a year ago.**

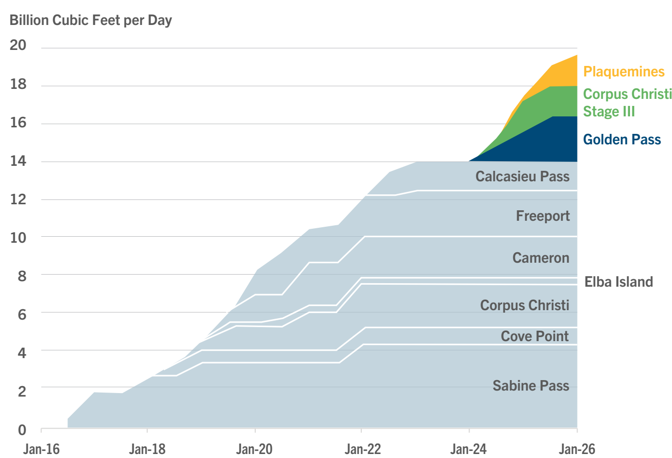
2 **The U.S. has not been this important on the world stage as an energy exporter since the aftermath of World War II.**

EXHIBIT 1: U.S. Natural Gas Futures Curve (Select Dates)



Source: CME Group

EXHIBIT 2: U.S. Liquefied Natural Gas Export Projects
Existing and Under Construction (2016-2025)



Source: U.S. Energy Information Administration, Liquefaction Capacity File, Sept. 6, 2022

Back in 2018, it would be difficult to imagine a world with an increasingly constrained natural gas supply or the level of geopolitical tensions that would effectively remap the world's energy supplies, putting U.S. hydrocarbon resources front and center. Arguably, the U.S. has not been this important on the world stage as an energy exporter since the aftermath of World War II. Last year's record-high natural prices in Europe and the need for energy security appear to have cemented that role, creating enough long-term contracting momentum to get the next wave of U.S. LNG projects over the final investment hurdle. While the U.S. can already boast of having more LNG export capacity than any other producing nation, the country's liquefied natural gas shipping armada is about to get bigger, potentially doubling in size.

After a slowdown in export growth this year and next, LNG export capacity additions will once again accelerate, nearly doubling in size before the end of the decade. Total exports now account for about one-fifth of domestic production. In the next five years, upwards of 90% of gas demand growth could come from LNG exports, with perhaps as much as one-third of U.S. production reserved for international trade.

Taking stock of the changed dynamics, EIA notes that "the U.S. natural gas market in early 2023 is much larger than it has been historically, with more production and consumption as well as rapidly growing exports. Together, these components make prices much more volatile, which we witnessed from when prices initially collapsed due to the pandemic in 2020." Beyond 2024, there are many factors still in flux – macroeconomic growth, new energy policies, changes in the electricity resource mix, and capital investment – with a new premium firmly locked in for future gas deliveries.

3 **The U.S. has more LNG export capacity than any other producing nation, and it is about to get bigger, potentially doubling in size.**

COMMUNICATIONS

Several snags slow down fiber build activity

By Jeff Johnston

A number of publicly traded broadband operators have cut their 2023 fiber network expansion plans during the first quarter. In addition, Corning – a major supplier of optical material and equipment for fiber networks – hedged some of their comments about fiber demand in 2023, which suggests they might be seeing some softness in orders.

The reasons for the pullbacks are numerous. Rising interest rates have reduced the ROI for new fiber builds as future cash flows are now discounted at higher rates, which reduces the current value of those cash flows. Obtaining the rights to use poles and trench the ground continues to be a challenge in a number of markets, which pushes out fiber builds. Access to labor and materials, and the increased costs to acquire those assets, is also impacting operators' ability to meet their plans. And with $42.5 billion of federal grants set to be released later this year, some operators may be intentionally slowing down projects in order to use less of their own capital.

But the other reason for the pullback – which may not be so apparent – is that some aggressive, highly leveraged overbuilders may be running into increased competition as a number of markets start to look frothy. For example, in Mesa, Arizona, six different fiber operators plan to offer service.

In rural markets, we believe a similar situation is playing out, as many of these headwinds are not unique to urban and suburban markets. In fact, rural operators' lesser purchasing power only increases their risk of build cutbacks.

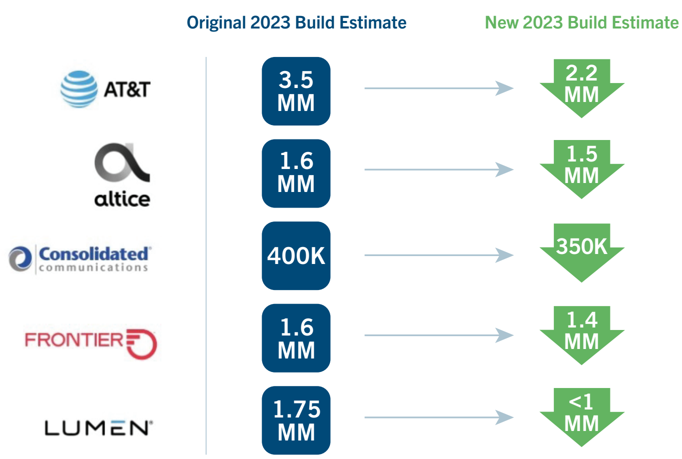
Despite the near-term slowdown in network builds, investor interest in the market has not waned and the long-term investment thesis for fiber networks is still intact. The reality is consumers are increasingly reliant on fiber networks, which means the U.S. economy is too. And with the deluge of data that is expected to be running over fiber networks from new bandwidth-intensive applications, demand for fiber networks will likely accelerate.

1 Several publicly traded **broadband operators have reduced their 2023 fiber expansion plans.**

2 **Higher interest rates, increased costs for labor and materials, and increased competition** are some of the main reasons for the cutbacks.

3 We believe **rural operators are also experiencing a slowdown** as they face many of the same issues as urban and suburban operators.

EXHIBIT 1: 2023 Fiber Buildouts



Source: Cowen and Company, company reports, February 2023. Targets reflect Cowen's estimates from ~1 year ago vs. now.

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.

Brian Earnest
Lead Economist, Animal Protein

Tanner Ehmke
Lead Economist, Dairy and Specialty Crops

Rob Fox
Director, Knowledge Exchange

Jeff Johnston
Lead Economist, Communications

Daniel Kowalski
Vice President, Knowledge Exchange

Christina Pope
Senior Research Editor, Knowledge Exchange

Teri Viswanath
Lead Economist, Power, Energy and Water

Kenneth Scott Zuckerberg
Lead Economist, Grain and Farm Supply

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