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THE QUARTERLY

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July 2023

The Slowdown-Resistant Economy

Consumers defy policies intended to slow spending

Executive Summary

Despite predictions for a slowdown, the U.S. economy remains the envy of the world. Jobs are plentiful, asset values are near all-time highs, and consumers are spending. Things are good. But inflation is still well above the Fed's target, and persistent monetary tightening is likely to usher in a mild recession by year-end or early in 2024. Some of the highest inflation rates have been in the grocery store and at restaurants, and that is now triggering consumer pushback. In contrast, energy prices are down considerably, limiting the pain felt at the gas pump and with monthly cooling bills amid sweltering summer heat.

Weather has been the biggest factor in agricultural markets, as a broad swath of the Midwest struggles through a summer of drought. Recent rain has brought some relief to the Plains, but more is needed. Tight soybean stocks and a historically small hard red wheat crop will help keep grain and oilseed prices elevated. Retail prices for meat, poultry, and dairy have come off their highs, and typical supply/demand dynamics are now back in charge. Prices are generally above pre-pandemic levels, but so are input costs including feed and labor.

Both the communications and power sectors are strategizing about the latest transformational impact, now coming from generative AI. A ChatGPT search consumes about 50-100 times more energy than a Google search, and the use of AI tools is in the early stages. Both sectors will be forced to adapt again to changes in data volume and energy consumption. ■

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:

- *Midwest drought looms over U.S. grain and oilseed production*
- *Farm labor update: Immigration rebounds, but farm wages soar*
- *The good news about gas and groceries*

Inside this issue

SPOTLIGHT

Women and non-native workers storm back into the labor force

By Dan Kowalski

Since the early days of the pandemic's economic rebound in 2020, we've talked a lot about the tightness of the labor market. Hiring has been a challenge for CoBank customers in rural areas and for companies in urban areas alike. But over time, the labor situation has slowly improved. As pandemic concerns subsided and wages rose, many workers have returned to the labor force. At the tightest point in the job market, there were two job openings for every one unemployed person. That number has improved to 1.6, though it is still far off from the pre-pandemic figure of 1.2.

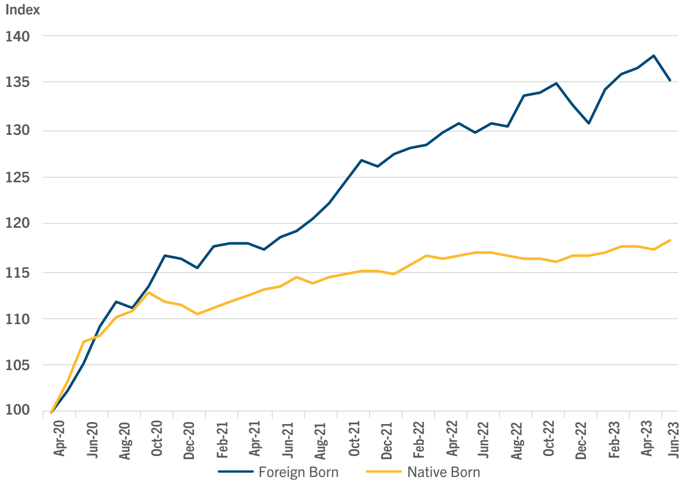
Two significant contributors to this improvement have been increases in female and non-native workers. Immigration declined in the years leading up to the pandemic, limiting the availability of additional workers. And women, who exited the workforce in greater numbers than men in 2020, were also slower to return. Remote schooling and lack of childcare were flagged as the main contributors.

Both groups have stormed back into the labor force. Since the trough in April 2020, foreign-born employment has increased at roughly double the pace as native-born employment *(Exhibit 1).* The labor force participation rate for women between the ages

1 As pandemic concerns subsided and wages rose, **many workers have returned to the labor force.**

2 **The employment rate for women ages 25-54** now stands at an all-time high at 77.8%.

EXHIBIT 1: Native and Foreign-Born Employment, Indexed



Source: St. Louis Fed FRED Database

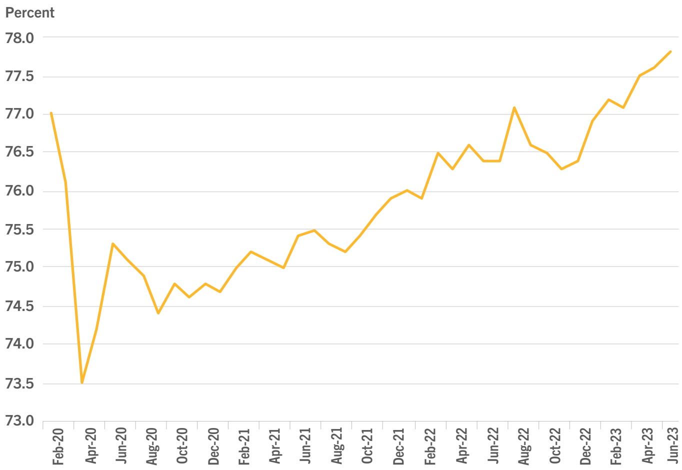
of 25-54 ("prime employment aged") now stands at an all-time high, up more than 4 percentage points from the low in April 2020 *(Exhibit 2).* As for prime-age men, their labor participation rate has also improved since April 2020 *(Exhibit 3),* but only by 2.8 percentage points (which is still well below the peak set in 1953).

Foreign-born workers are more likely than native-born workers to be employed in the services industry (22% vs. 15%). This boost in services work has played an outsized role in rebalancing the U.S. economy, given that the services sector is still hurting the most for workers, and thus is a major driver for the U.S. economy's persistent inflation.

The labor participation rates for women and non-native workers have been critical thus far in the economic recovery. But looking forward, it raises the question of how many more workers are available to be coaxed in off the sidelines. Labor force challenges are far from over.

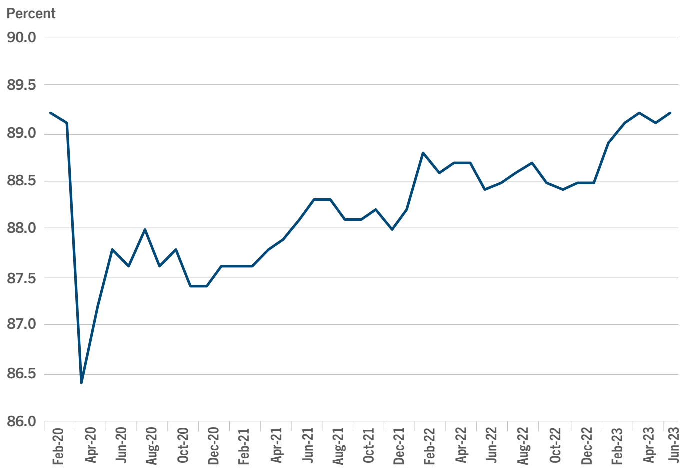
3 **Since the trough in April 2020, foreign-born employment has increased at roughly double the pace as native-born employment.**

EXHIBIT 2: Prime-Age Participation Rate, Women



Source: U.S. Bureau of Labor Statistics

EXHIBIT 3: Prime-Age Participation Rate, Men



Source: U.S. Bureau of Labor Statistics

MACROECONOMIC OUTLOOK

The economy is still humming, but a slowdown is coming

By Dan Kowalski

The U.S. economy just keeps surprising to the upside. Consumers, powered by rising disposable incomes, are still spending aggressively on services. Businesses are still investing. And the labor market, though less tight than a few months ago, is still incredibly strong.

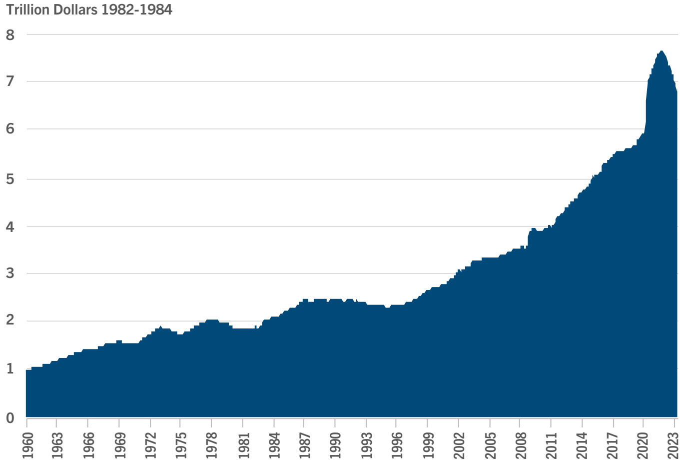
There are good reasons to believe this economic tailwind could last for a while longer. As long as consumers feel wealthy (rising wages, secure jobs, stock market near record highs, and resilient home values) they will continue to spend. Secure jobs are the most important element in consumer spending. And even as the Fed continues raising rates, hurting some business sectors, most businesses are going to hold off as long as possible before laying off workers. After spending three years struggling to hire sufficient staff, and eyeing what may be a mild recession ahead, business managers will be reluctant to let workers go even when the economy begins to weaken. Well-employed Americans with a desire to spend have powered the economic recovery for three years, and that is not yet at an end.

However, the forward risks are continuing to increase in number and size. The Fed will raise rates again in July, and perhaps once more after that. Commercial banks have been aggressively tightening lending standards. The excess savings that Americans have enjoyed from 2020 and 2021 may be exhausted by October. Also in October, millions of people will begin paying again on their student loans.

1 **After spending three years struggling to hire sufficient staff, most businesses are going to hold off as long as possible before laying off workers.**

2 **We maintain our call for a mild recession in Q4 2023 and into Q1 2024. The impacts from monetary policy have yet to be felt, and they are inescapable.**

EXHIBIT 1: U.S. Real M2 Money Supply



Source: St. Louis Fed FRED Database
Note: Real M2 money supply is a measure of the total amount of currency and near money in a country's economy. It is a broader and more liquid measure than M1, which only includes cash and checking deposits.

None of these risks alone spell demise for the economy. But collectively, they make the path ahead more daunting than the path behind.

A year ago, economists were almost unanimous in predicting a recession that should have hit by now. But, the economy has defied gravity at each turn, and as a result, economists are now more split in their projections. A recession is no longer a forgone conclusion for many.

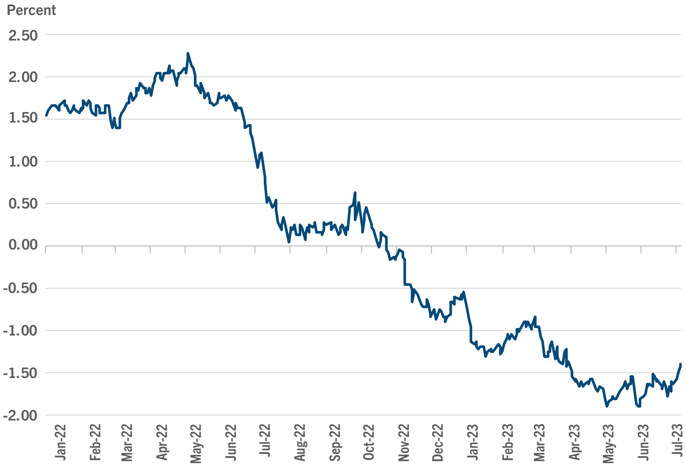
We maintain our call for a mild recession in the fourth quarter of 2023 and into the first quarter of 2024, but not only, or even mainly, for the reasons listed above. We believe that the impacts from monetary policy have yet to be felt, and they are inescapable. Higher interest rates are not the only tool currently being used by the Fed. They are also engaging in quantitative tightening (reducing the size of the Federal Reserve balance sheet) and contracting the money supply *(Exhibit 1)* by the most since the 1930s. (In 2018, the Fed briefly engaged in quantitative tightening but had to abandon the policy in 2019 when financial conditions badly deteriorated). Moreover, until now, the Fed had never contracted the money supply in the history of the modern era of economics.

Lastly, there is the inverted yield curve. The 3-month bond yield has risen above the yield of the 10-year bond before each recession dating back to the 1960s. And the inversions preceded the recessions in a range of time between four and 16 months. This go around, the 3-10 has been inverted since October, and is closing in on nine months *(Exhibit 2)*. Monetary effects can be slow in developing, and history tells us that the economy can seem just fine right before a recession hits.

There is still a lot of wind at the back of this economy. And we do not expect a severe contraction ahead. But we also believe that it's important to not misinterpret delayed impacts for minimal impacts.

3 It's important to not misinterpret delayed impacts for minimal impacts.

EXHIBIT 2: U.S. Treasury Bond, 3-month/10-year Spread



Source: St. Louis Fed FRED Database

GRAINS

Midwest drought looms over U.S. grain and oilseed production

By Tanner Ehmke

USDA shocked the market with a major reduction in its planted soybean acreage estimates in the June Acreage report versus the March Prospective Plantings report. To meet demand, soybeans will need to achieve record or near record yields this growing season. Offsetting the smaller soybean crop, acres increased for corn, hay, sorghum and spring wheat. Drought conditions, though, are negatively impacting crop conditions in the Midwest. As of July 4, 88% of the U.S. Midwest was experiencing drought *(Exhibit 1).*

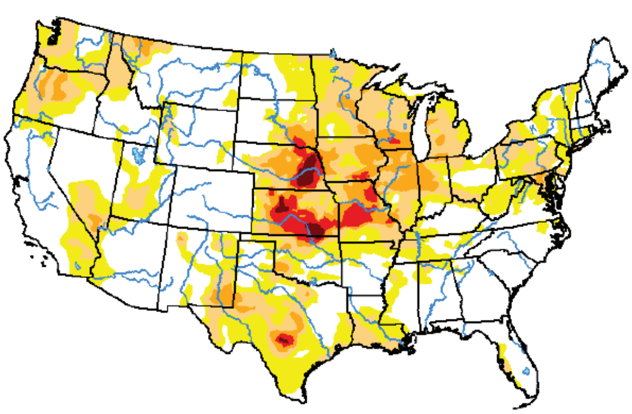
U.S. grain and oilseed shipments have slowed to multi-year lows with old-crop corn, wheat and soybean FOB prices notably higher than that of world competitors. Added headwinds to the U.S. export program are coming from the combined strength of the U.S. dollar, rising barge rates amid low river levels in the U.S., and large exportable supplies among exporting competitors like Brazil, Russia and Australia. Cumulative U.S. corn, wheat and soybean exports are expected to remain slow in the next quarter because unshipped sales on the books are significantly lower than historical averages *(Exhibit 2).*

Russia continues to bluster about potentially withdrawing from the Black Sea Grain Initiative in July following the explosion of a dam in Ukraine that affected 1 million acres of cropland in Ukraine. But given that China and Turkey are the two largest beneficiaries of the deal, we are doubtful of a long-term closure. Regardless, Ukrainian grain and oilseed shipments have found alternative routes overland into Eastern Europe and through the Danube River.

1 **USDA's shocking cut to U.S. soybean acreage estimates** **means crop yields must be at record levels to comfortably meet growing domestic crush demand without significantly cutting exports.**

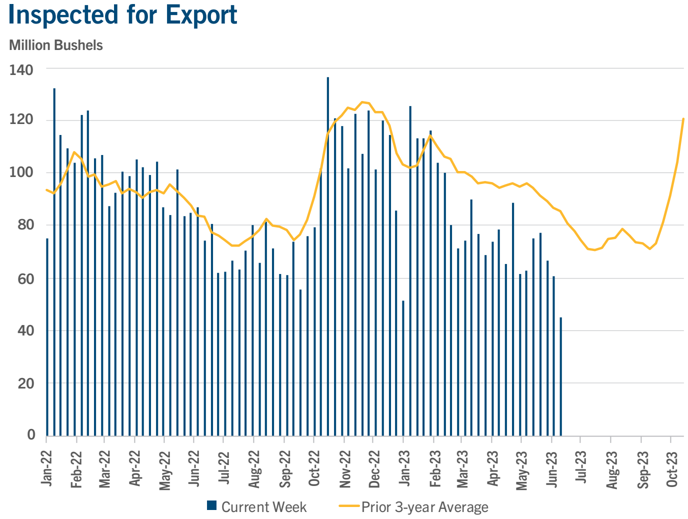
2 **Although EPA's recent announcement governing RVOs disappointed the marketplace, soybean oil demand for renewable diesel production remains positive long-term.**

EXHIBIT 1: U.S. Drought Monitor Contiguous U.S., July 4, 2023



Source: National Drought Mitigation Center, https://droughtmonitor.unl.edu/

EXHIBIT 2: U.S. Corn, Wheat and Soybeans Inspected for Export



Source: USDA-FGIS

Corn: Although USDA currently forecasts a record large U.S. corn crop at 15.320 billion bushels on expanded acreage, crop conditions across the Central U.S. are below historical averages. Mild temperatures in the Midwest thus far have prevented a faster decline in corn crop conditions. Weather in July during corn pollination will be key to establishing yield potential *(Exhibit 3).*

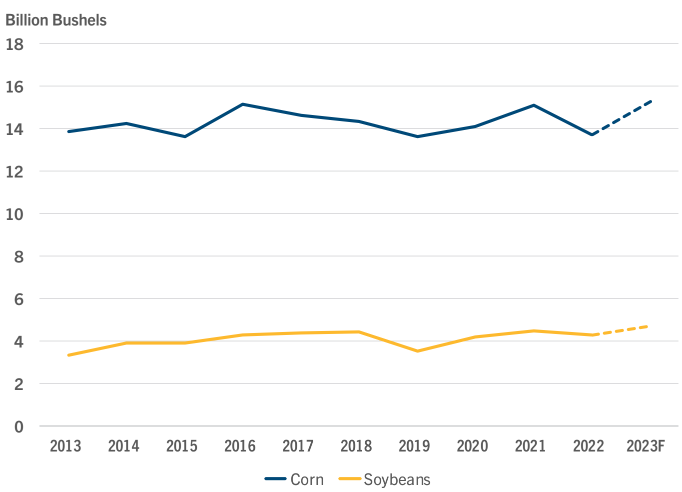
Soybeans: Drought across the central U.S. may further reduce soybean production via lower yields. As of yet, drought conditions have not yet impacted soybean prices as flowering in August will establish the eventual yield potential. USDA currently predicts the 2023-24 U.S. soybean crop at a tight 4.30 billion bushels on reduced acreage, but record high Brazilian soybean exports continue to drag on prices.

Soybean oil futures prices dipped briefly in June after the EPA announced a lower than expected blending mandate for renewable volume obligation (RVO) rates, which could negatively impact margins for soybean crushers. However, renewable diesel credits in California and other states should drive greater demand for soybean oil over the long term.

Wheat: Wheat harvest is advancing northward in the U.S. and revealing high variability in crop quality. Recent rainfall on the Plains boosted yield potential for much of the still-maturing crop, but negatively impacted quality of fully matured crops. USDA expects the U.S. hard red winter wheat crop to be bigger than last year's small crop as late-season rains have boosted yields across the Central and Southern Plains following a period of extreme drought. The new U.S. wheat crop should be 4.4% bigger than last year at 1.739 billion bushels, while USDA currently forecasts a record-large world wheat crop. Extreme weather – including dryness in major growing regions like Canada, Ukraine, Russia, India and Europe, and excessive rains that damaged crop quality in China – points to a potentially tighter world balance sheet than what USDA currently forecasts *(Exhibit 4).*

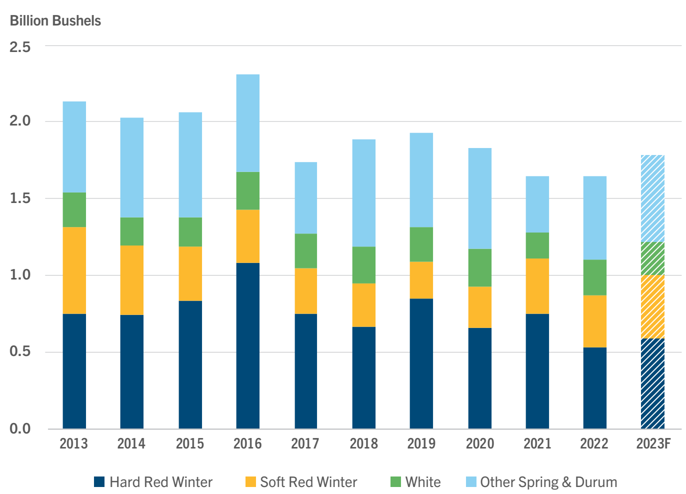
3 Wheat harvest in the U.S. is revealing crop quality issues caused by rains late in the season.

EXHIBIT 3: U.S. Corn and Soybean Production



Source: USDA-NASS

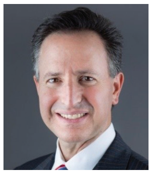
EXHIBIT 4: U.S. Wheat Production



Source: USDA-NASS

FARM SUPPLY

Fertilizer prices generally lower ahead of crucial summer fill



By Kenneth Scott Zuckerberg

Ag retailers faced an incrementally more difficult operating environment during the second quarter of 2023, given the ongoing decline in fertilizer prices *(Exhibit 1),* although they are positioning themselves for an active summer buying season. Recent channel checks with several large farm supply cooperatives indicated that last fall's large advanced purchases (i.e., prepayments) restrained spring 2023 fertilizer demand. A second factor was producer disinterest in spending money in general in an environment of falling grain prices.

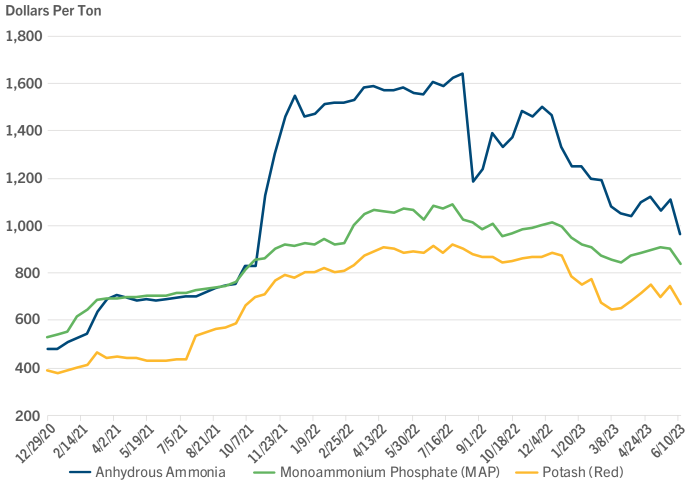
The other big headline in the second quarter was the dramatic rise in property insurance costs incurred by U.S. agribusinesses. As we wrote in our June research report, "It Is Time for Ag Co-ops to Pay the Insurance Piper," after three years of increasing property catastrophe losses, grain and farm supply cooperatives paid about 50% more for property and casualty insurance coverage during both the January and April 2023 renewal seasons. Given our belief that commercial property insurance rates could remain elevated over the next 12 to 18 months, cooperatives face an increased risk of margin pressure as property and casualty insurance companies raise premium rates to stabilize profits after recent losses.

1 **Nutrient prices fell again during Q2,** **led by anhydrous ammonia (-9%).**

2 **Prices were weighed down by reduced seasonal demand.**

3 **Ag retailers continue to face rising costs** **– especially for property insurance coverage.**

EXHIBIT 1: Iowa Fertilizer Production Cost Summary



Source: USDA-AMS

BIOFUELS

Q2 brought steady ethanol production, strong profitability, but RFS confusion

By Kenneth Scott Zuckerberg

The ethanol complex delivered strong second quarter results with steady production and above-average profitability. Production averaged 15.4 billion gallons annualized vs. 15.2 billion gallons sequentially, which modestly exceeded five-year average levels *(Exhibit 1).* Despite ample volatility during the quarter, pretax operating margins averaged $0.45/gallon through late June, well above the average profit margins of $0.32/gallon year-to-date and $0.28/gallon long-term *(Exhibit 2).*

After considerable delay, the EPA released final blending requirements under the Renewable Fuel Standard (RFS) on June 21. The announcement – initially perceived as negative – resulted in a short-term sell-off in vegetable oil and Renewable Identification Numbers (RINs). However, while EPA did in fact lower blending quotes for conventional fuel (ethanol), it actually incrementally raised requirements for biomass-based diesel fuels.

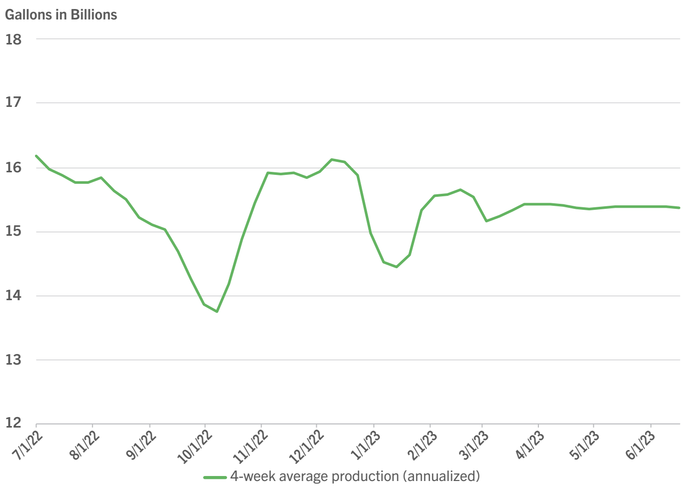
The bottom line is that EPA's new rules call for 2.82 billion gallons of combined biodiesel and renewable diesel in 2023 (a 2.2% increase from the 2022 mandate), 3.04 billion gallons in 2024, and 3.35 billion gallons in 2025, which are modest increases relative to EPA's initial proposed guidance. The real issue is that the 3.35 billion gallon figure falls short of expected capacity expansion projects, a situation that will likely delay renewable diesel expansion until EPA's rules narrow the gap.

1 **Average U.S. ethanol production in Q2 was flat YoY,** **but slightly above five-year average levels.**

2 **Strong ethanol plant profitability averaged about $0.45/gallon** **was nearly double the long-term average.**

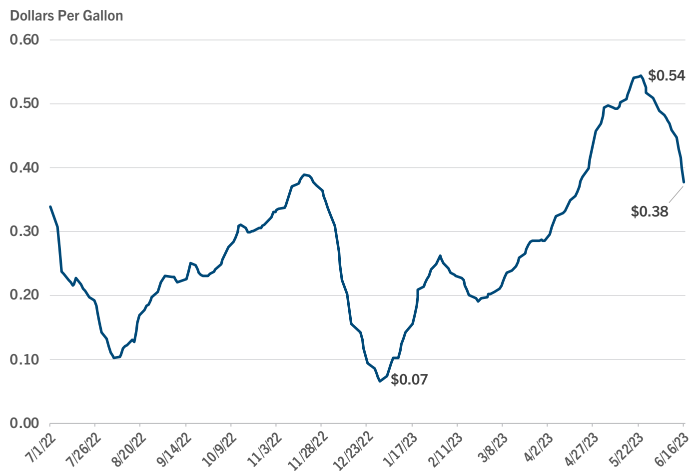
3 **EPA's finalized RFS rules for 2023-25 were disappointing for ethanol** **but incrementally positive for biomass-based diesel.**

EXHIBIT 1: U.S. Fuel Ethanol Plant Production



Source: U.S. Energy Information Administration

EXHIBIT 2: 30-Day Moving Average Ethanol Operating Margin



Source: ISU-CARD

ANIMAL PROTEIN

Persistent inflation prolongs challenging environment for producers

By Brian Earnest

Drastic increases in prices that consumers are paying for food and particularly animal protein items such as eggs *(Exhibit 1)* have been top of mind within the sector over the last year. While all-food inflation has been steadily easing this year, it still remains at 5.7% in June, which is more than double the 30-year average of 2.8%. Food away-from-home inflation is still at a discouraging 7.7%.

But higher retail prices will not always improve packer and producer performance. Despite elevated retail prices for pork and poultry during May and June, wholesale values had trouble finding support at times. With markets returning less-favorable margins for animal protein processors, the focus has turned to improving operating efficiency with layoffs, plant closures and expanded automation.

Meat and poultry supply has largely trended above prior forecasts through the quarter. This greater supply has weighed on prices at times, and boosted cold storage levels. However, some of the production increases are in anticipation of what comes next. Within the beef sector, for example, expectations of declining future cattle availability remains supportive of both fed cattle values and declining weights.

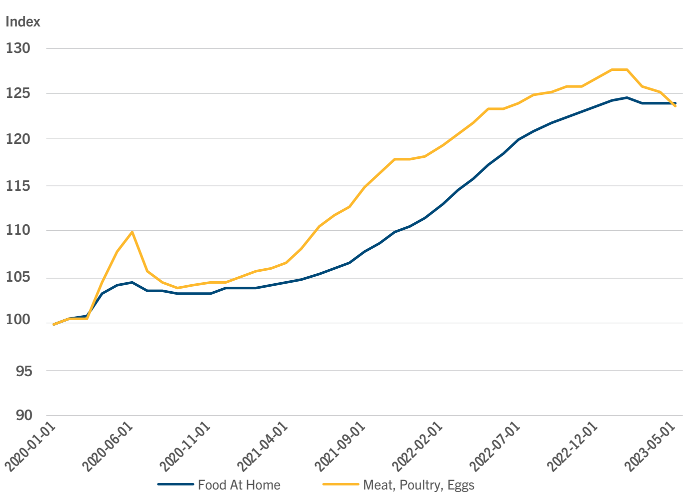
Overall, the animal protein space remains a proven winner with the consumer, which lends itself to optimism. However, elevated feed *(Exhibit 2)* and other input costs will impede growth in the months ahead as dwindling consumer savings meet seasonal sluggishness at the culmination of grilling season.

1 **The CPI for food began cooling in March, but the index still remained up 5.7% YoY in June,** **keeping food prices top of mind for consumers, processors, and retailers alike.**

2 **Feed input prices for corn and soybeans have weakened YoY,** **but volatility remains a challenge for producers.**

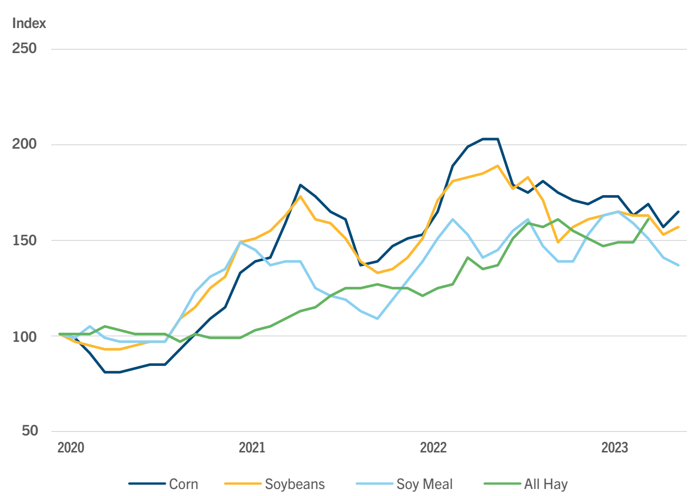
CHICKEN

EXHIBIT 1: Food-At-Home Price Index



Source: St. Louis Fed FRED Database

EXHIBIT 2: Livestock Feed Cost Index (2020 = 100)



Source: CME, USDA, CoBank

Overall, cumulative broiler production was 2.8% higher YoY through the end of May, reflecting operational improvements and improving mortality rates. The cumulative total includes record high broiler production during May, reported by USDA at 4.04 billion lbs., up 7% YoY. The broiler-type hatchery supply flock was up 3.4% YoY on May 1, but chick placements have been trailing year-ago figures by about 1% in recent weeks, suggesting chicken supplies are likely to moderate over the next few months.

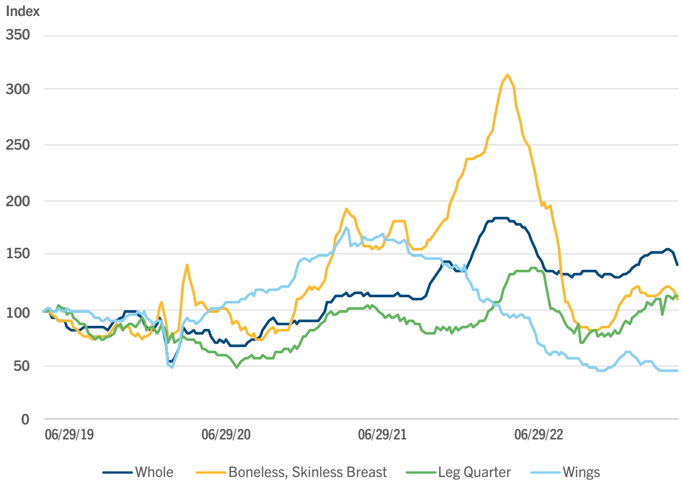
Following significant declines in the back-half of 2022 and early 2023, wholesale broiler meat prices have largely rebounded to levels at or above pre-pandemic (2019) levels *(Exhibit 3)*. The national composite broiler index was about 20% below a year ago, but up 40% from June 2019 levels. Boneless/skinless breast values strengthened through May to $1.40/lb., up 10% from 2019 but still down about 60% YoY. Domestic chicken consumption is up about 4% YoY through 12 months ended June 1 *(Exhibit 4)*, which has helped chip away at elevated cold storage holdings. Propped up by exceptional export opportunity for dark meat, leg quarter values were up 17% YoY to end June and 12% above 2019 levels. Jumbo wing offtake has not rebounded after last year's high prices cut into demand and prices are languishing in the $0.90/lb. range.

Feed costs have come down about 10% from where they were last year, but remain about 65% above historic averages. For broiler integrators, increased feed costs coupled with higher operational expenditures have damaged profitability amidst lackluster chicken prices. Seasonal trends suggest softness arising in markets later this year, which minimizes expectations for meaningful output growth as the year progresses.

1 Broiler production growth has been robust in recent months **despite dwindling wholesale values, higher feed costs and diminished hatchery productivity rates.**

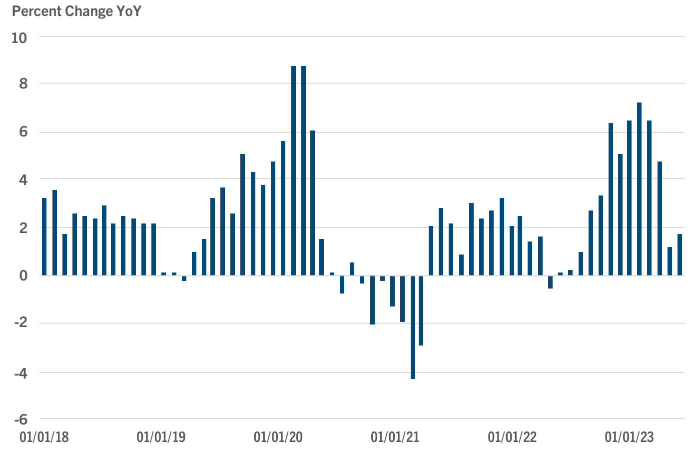
2 Domestic chicken consumption is up about 4% YoY through 12 months ending June 1, **which has helped chip away at elevated cold storage holdings.**

EXHIBIT 3: Wholesale Broiler Index
(June 2019 = 100)



Source: USDA-ERS, CoBank calculations

EXHIBIT 4: Domestic Chicken Consumption Growth
(3-month moving average)



Source: USDA, CoBank calculations

BEEF

There has been no shortage of attention on beef this year as consumers fire up their grills and consider inflation in their grocery spending. However, as grilling season kicked off, beef demand, while not completely immune to the damage of higher prices, has remained robust overall. Retail beef prices averaged $7.50/lb. during May, which was record high for the period, and up 2% YoY.

Although beef prices rose at grocery, retailers were feeling the squeeze of tighter beef supplies in wholesale markets. The choice boxed beef cutout value averaged a 17% YoY premium from April through late June and was 19% above the five-year average. The combination of a 3% YoY decline in cattle slaughter and lower cattle weights contributed to a 5% YoY reduction in overall beef production during the second quarter.

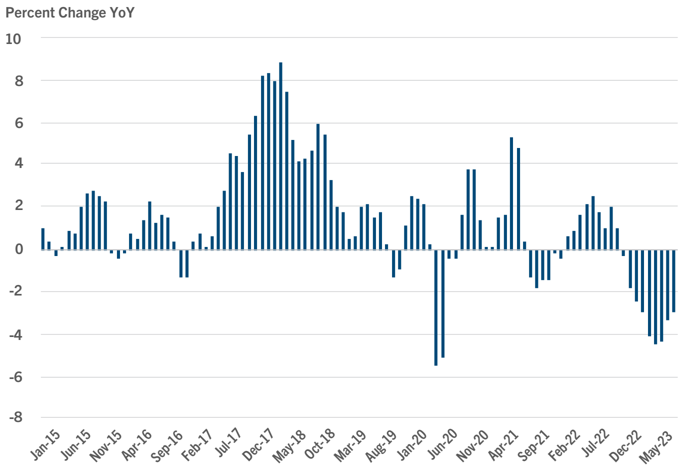
Outside of the Corn Belt, range and pasture conditions have improved markedly throughout much of the cattle feeding regions. After two years of brutal drought, total U.S. range and pasture conditions are in line with the five-year average with only about 25% rated poor to very poor. Even with optimism over improved forage conditions, the decline in cattle availability will take some time to turn around. Cattle on feed were reported down 3% YoY on June 1, the smallest on-feed total for the same month in six years *(Exhibit 5).*

Robust beef demand combined with tighter cattle supplies induced market momentum for cattle. Fed cattle values reached record levels, above $180/cwt. *(Exhibit 6).* Likewise, feeder cattle shot above $240/cwt. Support has been nothing short of incredible to date. But bottom line, while consumers have yet to balk at higher beef prices, as seasonal support wanes and the economy slows, all market participants must be on the watch for the potential of sharp pullback in consumer grocery spend.

1 **Fed cattle prices reached all-time highs during June,** **challenging feeder and packer margins.**

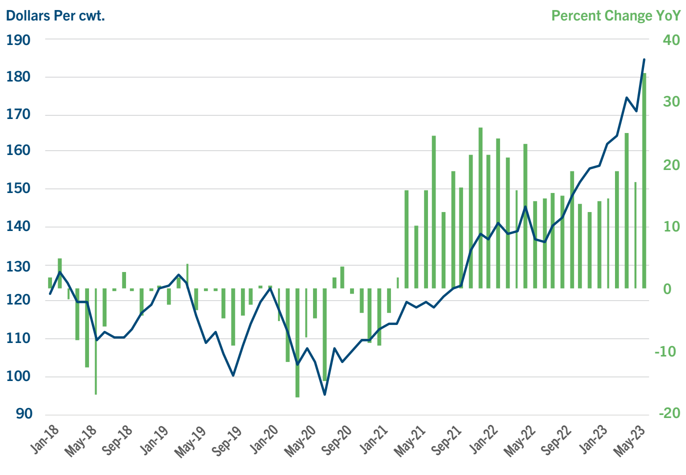
2 **In May retail beef values rose 5% YoY while wholesale values surged 17%,** **suggesting producers are receiving a bigger share of consumer dollars.**

EXHIBIT 5: Cattle on Feed



Source: USDA, CoBank calculations

EXHIBIT 6: Five Market Steer Price



Source: LMIC, USDA

PORK

Excess hog supply and weak pork demand placed hog prices in peril this spring. After a steady start to the year, the CME lean hog index tumbled about $10/cwt., to $72 from mid-March to late April. However, more favorable market conditions across the animal protein segment persuaded lean hog values to rise by 30% through May and June. It is worth noting that, now in the low 90s, hog prices are still about $30 lower than a year earlier, and not nearly high enough to generate expansion interest. Depressed hog values meant farmers' share of retail pork was about 12%, down from a long-term average of about 14%, and down from the summer highs last year of about 16% *(Exhibit 7).*

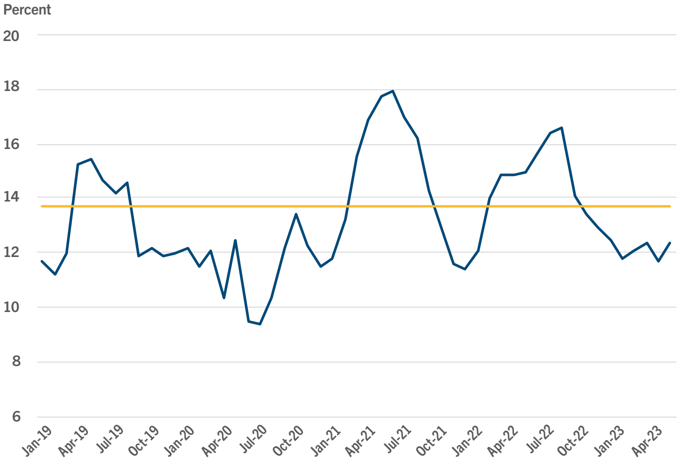
Through much of the first and second quarters, sluggish domestic demand was the main contributor to weak pork and hog prices. Key items like bacon, ribs and loins frequently found difficulty clearing markets early in the quarter, reflecting general lackluster performance. But the late start evolved into improved market conditions by the end of June. While still down about $15 YoY, the pork cutout landed in the upper 90s by gaining about $20/cwt. through the quarter. After struggling for several months, export volume was up 12% YoY for March and 10% during April, providing moderate optimism for pork clearance across borders *(Exhibit 8).*

USDA's June 1 *Quarterly Hogs and Pigs Report* revealed the all hogs and pigs inventory about even with what was reported a year earlier at 72.4 million head, and down about 1% from the prior quarter. These numbers do not appear to be rebounding to previous highs reported in 2020, and we expect the aforementioned market challenges will dampen output growth for the sector nearby.

1 **While abnormally sluggish pork demand weakened hog prices,** retailers' renewed interest boosted lean hog values $20/cwt. through the quarter.

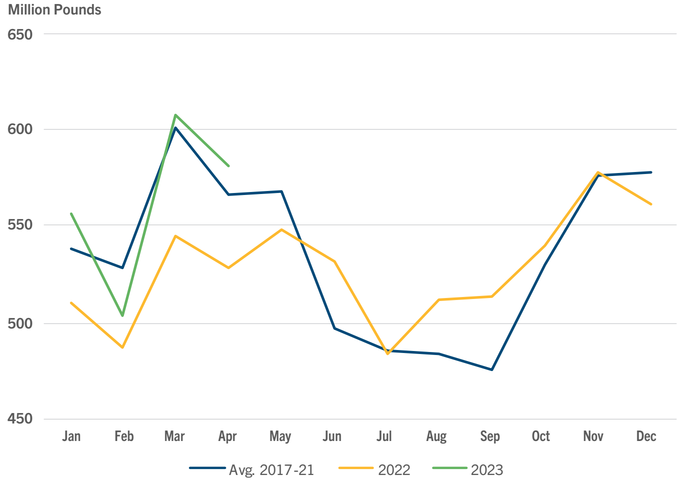
2 Holding flat at year-ago levels, **pork production has exceeded earlier expectations.**

EXHIBIT 7: Farmer Share of Retail Pork Price



Source: USDA , LMIC
**The long run average for 2011-2018 was 16%*

EXHIBIT 8: U.S. Pork Exports



Source: USDA

DAIRY

Producer profitability faces summertime blues

By Rob Fox

Even the most efficient milk producers are struggling in the current price environment: For historic perspective, USDA's estimated milk-price to feed-cost ratio is now at its lowest level since 2012[1]. Milk and feed futures suggest profitability bottoming out in in July and August but then improving considerably by October when Class III milk prices (used for cheese) are anticipated to increase by about $3/cwt. This should eventually bring some relief at the farm where the national all-in mailbox price has dropped below the $20/cwt. mark after averaging $25.34/cwt. in 2022.

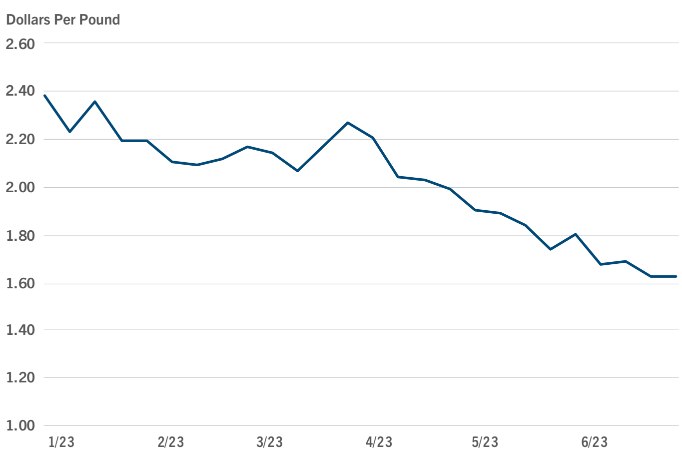
Although several factors are to blame for this year's milk price decline, the first place to look is American/cheddar-style cheese prices, which have dropped by one-third since Jan. 1 *(Exhibit 1).* A few causes are at play:

1. American cheese production is up 2.6% YTD through April (versus -0.5% for other styles) due to recent plant expansions.
2. Domestic consumption of all-cheese is up only 1.2% through the first four months of 2023 – half the decade average and one of the lowest rates on records kept since 1970.
3. Cheese exports are flat year-on-year but really slowed as of late. The key problem is that sales to our No. 2 market, South Korea, are down a whopping 20% through the first four months of the year. If that reduced pace holds, it would equate to a 65 million lb. drop for the year. Our largest cheese customer, Mexico, is doing its best to make up the difference, with 14% higher volumes thus far this year.

1 **Milk and feed futures suggest profitability will bottom out in July and August** **but then improve considerably by October.**

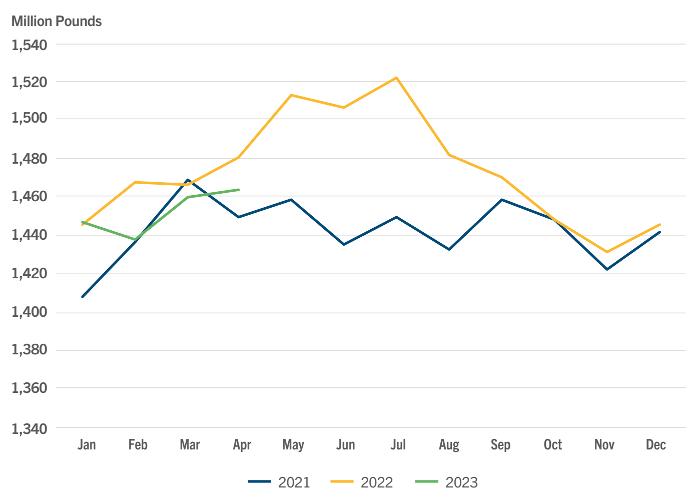
2 **Higher prices may be keeping manufacturing margins healthy,** **but they are taking a toll on dairy grocery volumes.**

EXHIBIT 1: Midwest Cheese Price - 40 lb. Cheddar Block



Source: USDA-AMS Dairy Market News

EXHIBIT 2: Total Cheese in Cold Storage



Source: USDA-ERS

4. One thing to note is that current cold storage cheese inventories are in line with historic inventory/use levels *(Exhibit 2),* which is more puzzling than enlightening: Is the market oversold, or are traders extremely bearish on export demand in the coming months?

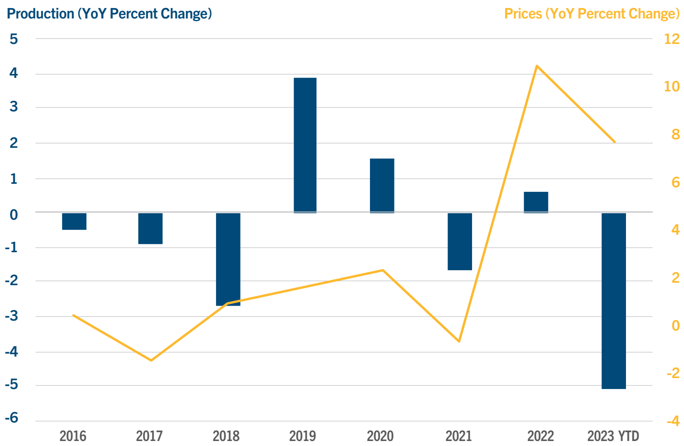
As we have discussed numerous times regarding the broader food industry, higher prices may be keeping manufacturing margins healthy, but they are taking a toll on dairy grocery volumes. Per USDA, fluid milk sales volumes are down 2.7% YoY. And while not the largest of dairy segments, the dynamics of the frozen dairy dessert industry shows clearly the "demand destruction" caused by high prices: After price hikes of 10% in 2022 and 8% in 2023, ice cream unit sales have fallen by an estimated 5% YTD *(Exhibit 3).* Thankfully, we are starting to see grocery inflation moderate, but it remains above 5% in most grocery categories.

Other factors at play:

- China aggregate dairy import demand continues to wane with whole milk powder imports down 40% YTD. As we get further into the year, this looks less like a blip and more like the new normal. China's domestic milk production continues to increase in the face of a weakening economy and COVID "baby bust."
- Global milk supply has been modest by historic standards but stronger than previous expectations. The U.S. is up 0.8% year-on-year, the EU up 0.7%, and New Zealand is finishing up its 2022/23 milking season very strong (8% higher in April and May) to end the campaign even with the previous year.

[1] *USDA ERS - Feed Grains Database*

EXHIBIT 3: Ice Cream and Frozen Yogurt: Production and Prices



Source: USDA NASS Dairy Products Report, AMS Retail Dairy News

COTTON, RICE AND SUGAR

Slowing global economy threatens cotton and apparel demand

By Tanner Ehmke

Cotton

U.S. cotton production is rebounding from last year's crop that was devastated by extreme drought across the southwest. Recent rainfall in top-producing Texas is also expected to reduce abandonment following three years of severe drought. As farmers switched acres from cotton to corn due to differences in profitability, USDA revised its estimate on U.S. cotton acreage to 11.09 million acres, down from the previous estimate of 11.25 million. The U.S. cotton crop is now figured at 16.5 million bales, up 14% from last year's drought-affected harvest.

USDA forecasts a rebound in world cotton trade as mill use increases to meet rising global demand for clothing and apparel from consumers making up for spending put on hold during the COVID-19 pandemic. Price inflation for clothing and apparel in the U.S. continues to ease with the moderation of cotton prices off of last year's highs *(Exhibit 1)*, which may work to draw in new consumer demand. Unfortunately, the outlook for a sluggish global economy may negatively impact consumer demand and cotton mill use in the months ahead with reports of inventory already accumulating in supply chains.

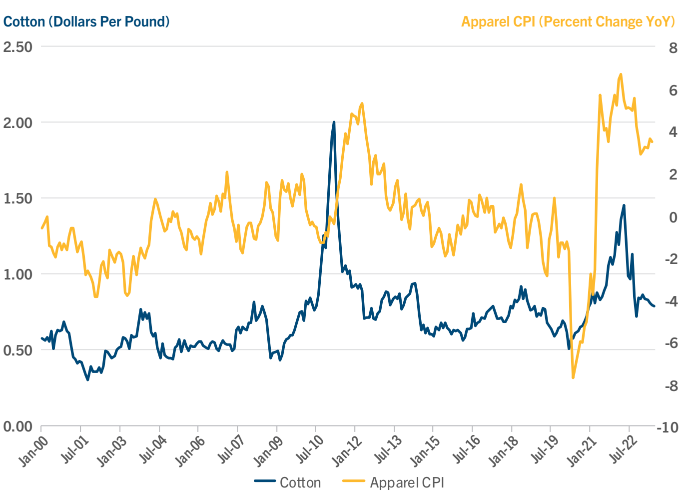
Rice

Concern over dryness in key parts of the U.S. mid-South and worsening crop conditions have brought heightened volatility to rough rice prices in the U.S. Prices of both long-grain and California medium-grain remain near record high on last year's small harvests. U.S. long-grain production currently is expected to climb 11.8% YoY

1 **U.S. cotton production is expected to rebound from last year's drought-afflicted crop,** **but sluggish economic growth threatens consumer demand for apparel.**

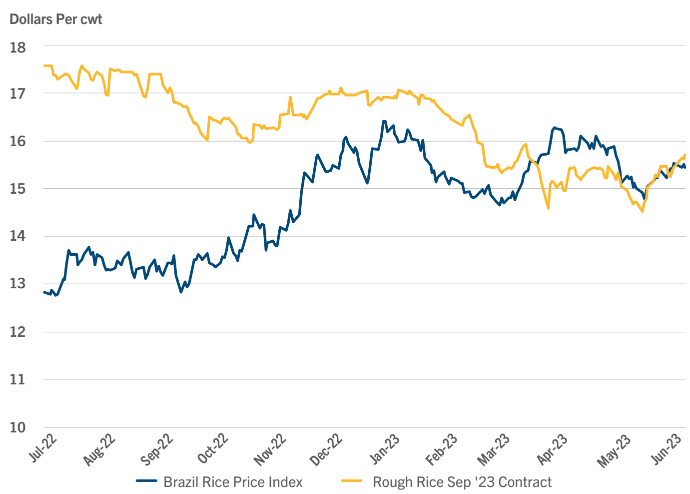
2 **U.S. rice production is expected to recover from last year's small crop,** **and U.S. rough rice prices are now becoming more competitive with Brazilian exports.**

EXHIBIT 1: Cotton Prices vs. Apparel CPI



Source: Intercontinental Exchange, Inc.; BLS

EXHIBIT 2: U.S. Rough Rice Futures vs. Brazilian Rice Price Index



Source: CME Group; CEPEA

to 144.8 million cwt. With improved water availability this year, California medium grain rice production is also expected to rebound with planted acreage at 465,000 acres – a substantial increase from last year's small acreage of 220,000 acres that were restricted by historic drought conditions.

The U.S. export pace remains lethargic as it struggles against a strong dollar and cheaper world prices, particularly in Brazil, which competes directly with the U.S. for exports into the key western hemisphere market. Cheaper Asian rice is also finding its way into the Western Hemisphere. Rising Brazilian prices, though, hint at tightening Brazilian stocks *(Exhibit 2).* Globally, USDA expects rice production to reach a new record high of 520.5 million tons, up 1.6% YoY. Weather issues in key producing regions India and China raise questions over USDA's optimism for a global increase in supply.

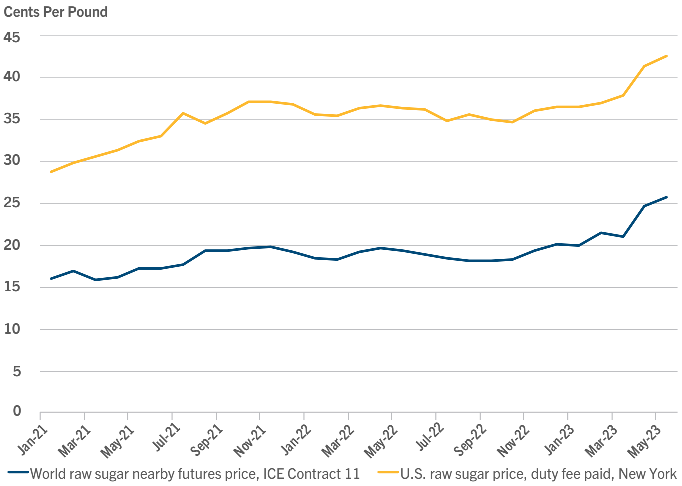
Sugar

World sugar prices remain historically high as markets ration supplies amid world tightness. World raw sugar prices accelerated higher this quarter to 25.75 cents/lb., up 34% YoY, with U.S. raw sugar up 17% YoY to 43.56 cents/lb. *(Exhibit 3).* Production hiccups in major growing regions like India and Europe tightened global supplies this marketing year. USDA currently calls for a modest rebound in world production for 2023/24, but concerns are growing that El Niño will result in smaller harvests in 2023/24.

In the U.S., USDA forecasts production for 2023/24 at 9.199 million short tons raw value (STRV), down 0.5% YoY. Beet sugar production is expected to fall 2.4% YoY to 5.02 million STRV on reduced acreage versus last year, while the cane sugar production is expected to rise 1.2% to 4.177 STRV.

3 Sugar prices continue to rise to historical highs on tight world supplies and expectations for a smaller sugarbeet harvest in the U.S.

EXHIBIT 3: Raw Sugar Prices



Source: USDA-ERS

SPECIALTY CROPS

Farm labor update: Immigration rebounds, but farm wages soar

By Rob Fox

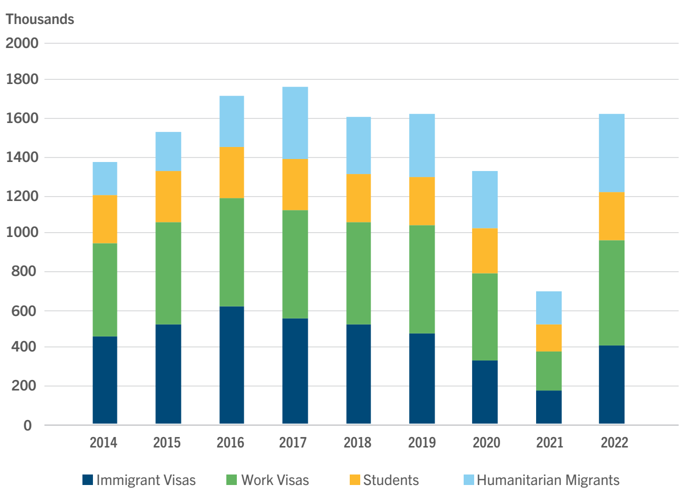
Over the past two years, U.S. wages have been growing fastest at the lower end of the wage scale and the farm sector is a prime example. Per the Federal Reserve Bank of San Francisco, weekly median wages for farm workers hit a record high $915 in April, up a whopping 24% from the year earlier. Moreover, when compared to the average wage for all workers, U.S. farm worker wages have reached 83% of the national average for all workers, the highest level since at least 2000, when the data series began[1].

Given the shortage of workers, it is not surprising that more companies involved in farming-related activities are looking at the federal H-2A program, which grants visas for foreign workers to fill temporary farm jobs. The U.S. Department of Labor certified around 370,000 H-2A in 2022, about 15% more than in 2021 and double the number from 2016. The rise is largely attributable to the increase of farm labor contractors (FLCs) using the program as declining immigration in recent years has left the farm sector starved for laborers. In 2022, the top five states for H-2A certified jobs were Florida (14%), California (12%), Georgia (9%), Washington (9%), and North Carolina (7%). FLCs have an efficiency advantage in using H-2As as they can move workers to where they are needed on a daily basis, from farm-to-farm and even potentially across state lines if needed.

1 **Weekly median farm wages jumped 24%** **year-on-year in April.**

2 **Though the immigration rate bounced back in 2022,** **it won't alleviate the long-term farm labor supply shortage**

EXHIBIT 1: Foreign-Born Immigration
Not Including H-2A Visas



Source: census.gov, Net Migration Between the United States and Abroad in 2022 Reaches Highest Level Since 2017, Fig.2.

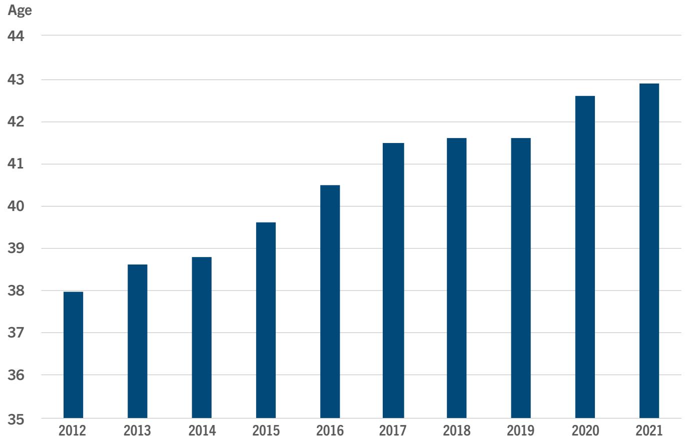
Last month, the House Agriculture Committee named a 14-member bipartisan working group, tasked with finding solutions for the labor challenges facing farmers. Its first stated task is to produce a report detailing the shortcomings of the H-2A program and proposed solutions. Any proposed legislation, however, would need to come out of the Judiciary Committee, which has purview over immigration issues, including the H-2A program.

In a bit of good news for farm businesses, after peaking in back in 2017 and then completely collapsing during the pandemic years (2020-21), legal immigration (which includes humanitarian migrants) rebounded sharply in 2022, essentially reaching pre-pandemic levels *(Exhibit 1)*. However, in the meantime there has been significant loss to the U.S. labor pool: Had the immigration rate stayed steady at the 2017 level of about 1.8 million per year, the U.S. would have about 2.2 million more immigrants today. Also, note the big increase in immigration in 2022 came under the category of humanitarian migrants. Though eligible for employment, these migrants may have practical limitations in their ability to move freely to farm jobs.

Those lost immigration years of 2020-2021 will help accelerate the pace at which the cohort of foreign born farm workers is aging – reaching an average age of nearly 43 years old in 2021 *(Exhibit 2)*. With a U.S. birth rate that is steadily declining and a shrinking potential labor pool, new immigrants have job opportunities other than farm labor. This trend will almost certainly continue in years to come, exacerbating an already tight farm labor market.

[1]*SF Fed Data Explorer, Federal Reserve Bank of San Francisco*

EXHIBIT 2: Average Age of Foreign-Born Farm Workers



Source: USDA-ERS using data from Census Bureau's annual American Community Survey.

FOOD AND BEVERAGE

The next normal may look very similar to pandemic normal

By Billy Roberts

Food manufacturers generally indicate they are back to "business as usual," per presentations from the likes of Coca-Cola, General Mills and McCormick at Deutsche Bank's dbAccess Global Consumer Conference in Paris in early June. However, while supply chain bottlenecks and disruptions may be largely in the past for manufacturers, consumers continue to grapple with the crisis-management mentality that has pervaded much of the country, particularly as it relates to food costs. Indeed, consumer behaviors suggest much of the attitudes and actions that initially developed during the pandemic have had sticking power, as people continue to dine at home amid higher prices all around.

For the food/beverage industry, this next normal has a couple of key hallmarks of the pandemic normal, namely more meals at home and persisting hybrid work arrangements. In fact, the repercussions extend well beyond at-home food spending for dinner. Lunch meals, once somewhat a given for restaurants in major metro areas, are no longer a sure bet for those locales. Per Kastle Systems, occupancy rates in the top 10 metro business centers in the U.S. continue to hover below 50% and show no signs of returning to pre-pandemic levels in the above-98% range. Additionally, Technomic research finds people are saving money by eating out less often, and the leading dayparts for cutting that restaurant spending? Dinner (72%) and lunch (47%).

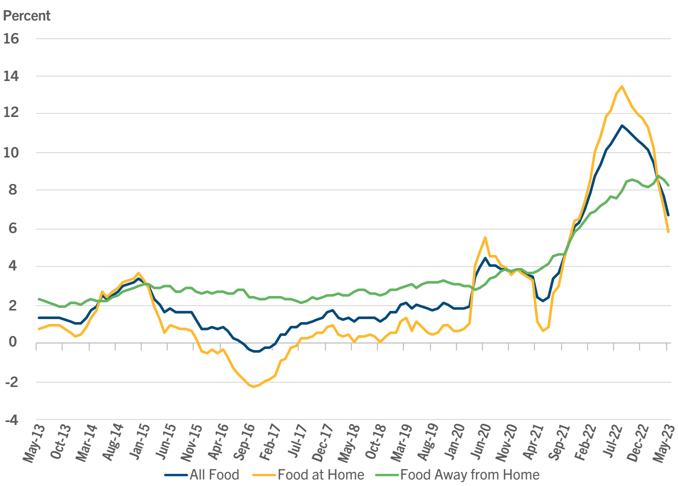
Compounding matters for consumers, the Consumer Price Index shows food inflation is well above year-ago levels. The CPI for all food in May 2023 was 6.7% higher than May 2022, and the discrepancy between away-from-home versus at-home was

1 Rising prices are challenging both at-home and away-from-home food spending.

2 Consumers are continuing behaviors initially seen during the pandemic to offset higher prices, namely eating more lunches and dinners at home.

EXHIBIT 1: Food Consumer Price Index

12-month percentage change



Source: USDA-ERS

pronounced *(Exhibit 1).* For at-home food (i.e., grocery store or supermarket food purchases), CPI was 5.8% higher in May 2023 versus May 2022. For food-away-from-home (restaurant purchases), the difference was an even more pronounced 8.3%, with the greater increase seen in typically lower-cost limited-service restaurants (an 8.0% increase over the past 12 months) than in full-service restaurants (whose 6.8% increase still well surpassed at-home price surges).

Higher restaurant prices have taken a toll on the industry despite the relatively benign economic environment. The National Restaurant Association (NRA) finds consumers have been consciously forgoing eating out. An NRA study in May found 44% of adults did not go to restaurants as often as they would have liked, while a third (34%) did not order takeout or delivery as often as they would have liked. Furthermore, Placer.ai data find foot traffic in restaurants has yet to return to pre-pandemic levels; May 2023 traffic alone was more than 6% shy of that seen in May 2019, and 2020 and 2021 were also well short of pre-pandemic levels (10% in the former, 4% in the latter).

Inflation in supermarkets garners significant media coverage, but the Placer.ai data demonstrate the impact of higher prices beyond even the menu, such as demands for tipping in coffee shops, cafes and quick-service (i.e., fast-food) restaurants. Indeed, a number of foodservice chains have begun adding tipping suggestions. Speaking at *Wall Street Journal's* Global Food Forum, well-known chef and entrepreneur Rick Bayless said his restaurants have instituted a 20% tipping surcharge regardless of party size; and keynote speakers during NRA's Restaurant Show in May explained that they are utilizing tipping strategies to add $4-$6 per hour to an employee's wages

Faced with such "hidden" costs of dining out, coupled with the actual price increases seen on restaurant menus, consumers continue to turn to at-home meal preparation, guided by and demanding greater convenience, choice and transparency in their purchasing decisions. Messaging to consumers must focus not only on the food's inherent attributes but also on any potential versatility of the product, as well as an appeal to emotions, specifically in terms of permissible indulgences for snacks and treats.

With consumers opting to eat meals largely at home and work there too, the immediate post-pandemic era appears notably similar to behaviors seen during the pandemic itself. As such, convenience and versatility will be essential, particularly for consumers for whom meal prep has become routine to the point of repetitive. Brands, retailers and even ingredient suppliers can lessen some of that challenge with more recommendations to replicate (or at least approximate) the restaurant experience while dining at home. ■

3 Foot traffic in restaurants remains well below pre-pandemic levels.

4 Consumers express interest in dining out but amid higher prices, likely would gravitate to suggestions that help them mimic a restaurant meal.

POWER, ENERGY AND WATER

The good news about gas and groceries

By Teri Viswanath

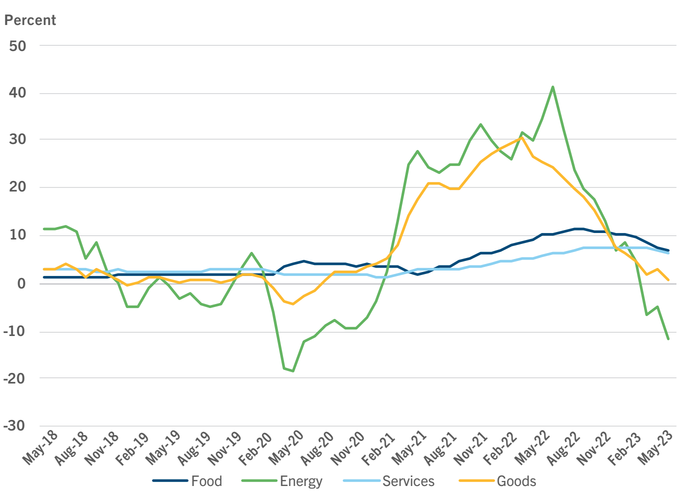
U.S. inflation has now cooled to the lowest level in more than two years, with the consumer price index (CPI) growing at a comparatively modest 3%, according to the U.S. Labor Department. Driven by falling gas and grocery prices *(Exhibit 1),* a window might be opening for Americans to finally feel a little better about the economy. Best positioned for renewed optimism are rural families; they have been uniquely disadvantaged by rising inflation, led by mounting energy bills.

With the cost of living rising faster than it has in decades, it is natural to ask whether everyone is shouldering the same burden. Measuring just how far the household dollar will stretch depends upon a number of factors that differ from community to community. However, it is difficult to get a clear picture of who is feeling most pinched as the official measure of consumer prices accounts only for what urban Americans pay for a basket of goods and services. Last year, Dr. David Peters, extension rural sociologist and professor of sociology at Iowa State University, found that during 2021 and 2022 rural households experienced 18.5% inflation compared to the 14.5% experienced by their urban counterparts.[1] Observing both sides of the balance sheet, Peters shines a spotlight on the urban-rural inflation divide, noting that rural discretionary incomes fell by a staggering 50% from 2020 to 2022, while urban discretionary incomes took a comparatively modest dip of just 13% over this period.

1 Rural discretionary incomes fell by a staggering 50% from 2020 to 2022 compared to 13% for urban residents.

2 Transportation and home energy expenses were responsible for two-thirds of the inflationary divide between rural and urban households.

EXHIBIT 1: Consumer Price Index by Category



Source: St. Louis Fed FRED Database

Peters notes that rising energy costs, in particular, have been perhaps the greatest burden for rural communities as compared to urban areas. In fact, transportation and home energy use compose slightly more than two-thirds of the inflationary divide detailed in his study – not surprising, given distinct demographic differences amongst the communities. For example, those living in rural areas drive 10 more miles in a day than those who live in cities, according to the National Household Travel Survey. Moreover, rural driving swiftly recovered from the early pandemic lull while urban mileage continues to lag 2019 levels – perhaps highlighting the differences in work commute trends. Rural families also face the highest energy burden of any household group in America. Rural households spend a disproportionally high share of their income on energy bills or 4.4% compared to the national burden of 3.3%.[2] Unlike households in more urban areas, rural households are more geographically dispersed, have distinct patterns in terms of housing type and heating fuel that directly influence energy use and expenditures.[3]

The fact that headline inflation is down but core inflation remains elevated might convey the notion that the country isn't making much progress. Yet, of all the drivers behind the dramatic rise in U.S. inflation last year, perhaps the most acutely felt by consumers was the surge in energy prices. Now, gasoline, diesel fuel, heating oil, natural gas, electricity and coal all cost less – in some cases, much less – than they did a year ago. So, if not a complete cure-all, having more discretionary income (especially for rural households) from lower energy bills provides a little more breathing room this summer, especially while the rest of that pesky basket of goods and services sorts itself out.

3 **Having more discretionary income from lower energy bills – especially for rural households – provides a little more breathing room this summer.**

[1] *"Impact of Inflation on Rural Household Expenses," David J. Peters, Iowa State University, July 2022.*

[2] *"The High Cost of Energy in Rural America: Household Energy Burdens and Opportunities for Energy Efficiency", Lauren Ross, Ariel Drehobl, and Brian Stickles, ACEEE, July 2018. Unlike households in more urban areas, rural households are more geographically dispersed, spread across 72% of the nation's land area. These households also have distinct patterns in terms of housing type, household tenure (renting versus owning), income characteristics, and heating fuel type. These characteristics can directly influence energy use and expenditures.*

[3] *Further, U.S. poverty rates are higher in rural areas and the most recent EIA household survey reflects that households identifying as energy insecure were billed $0.20 more per square foot than the national average. "U.S. energy insecure households were billed more for energy than other households", EIA, 30 May 2023.*

COMMUNICATIONS

AI will have a profound impact on the communications industry

By Jeff Johnston

Generative artificial intelligence (AI) applications such as ChatGPT have exploded onto the scene over the last few months, generating fear, uncertainty and doubt about its effect on how we live and work. But what is not uncertain is the massive amount of capital that is being invested into the technology, and the significant impact it will have on the entire communications ecosystem. For example, one ChatGPT session is estimated to consume 50-100 times more energy than one Google search. Associated with this increase in energy consumption is the need for more data centers and more processing power within them. This leads to more data traffic going over fiber networks and fiber being deployed deeper into networks.

On the capital side, we note that Microsoft invested $10 billion in ChatGPT, Google has invested $300 million in AI startup Anthropic, and Meta announced that AI represents its single largest investment as it shifts investment dollars away from the metaverse. And on the equipment side, Nvidia, widely considered to be the leader in AI semiconductor technology, is blowing away financial estimates for its business. For example, its current fiscal quarter revenue guidance is $11 billion, more than 50% higher than Wall Street estimates of $7.15 billion – a truly astonishing revenue beat for such a large company. The company is seeing huge interest in its AI computing solutions as data center operators and enterprises accelerate their AI investments.

For communications companies, these trends bode well for the fiber investments they've made and introduces new opportunities in edge computing. New AI applications will demand low latency network performance. These applications will run in locations that are far away from the major metro data center locations (think suburban and rural cities), which will require new infrastructure. The reason is that in order to meet latency requirements for some AI applications, data storage and computation needs to be done close to where the application is being run. The new infrastructure will take the form of edge computing locations and fiber networks to connect the data centers to the cloud and the customer premises. Operators in rural and smaller cities are well positioned to meet this growing need. ■

1 **Some of the largest technology companies in the world are investing billions of dollars in generative AI.**

2 **The step-function demand increase in AI processing power, data storage and transmission will have a profound impact on the communications industry.**

3 **AI adoption will necessitate new investments in fiber and edge data centers, benefitting communications companies in smaller/ rural towns.**

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

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