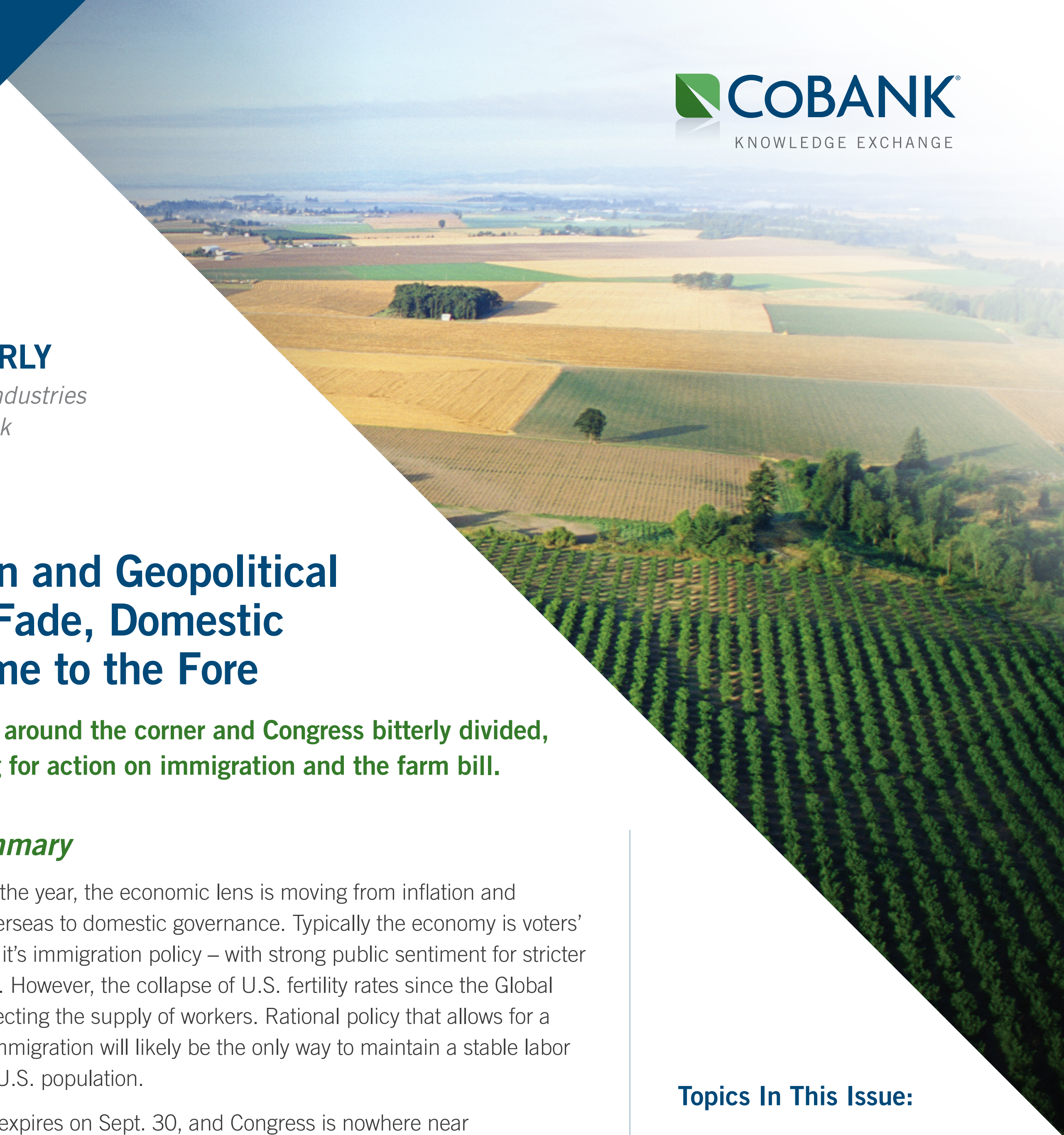

CoBank Knowledge Exchange

THE QUARTERLY

Dedicated to the industries financed by CoBank

July 2024

As Inflation and Geopolitical Concerns Fade, Domestic Issues Come to the Fore

With the election around the corner and Congress bitterly divided, voters are looking for action on immigration and the farm bill.

Executive Summary

In the second half of the year, the economic lens is moving from inflation and geopolitical crises overseas to domestic governance. Typically the economy is voters' top concern but now it's immigration policy – with strong public sentiment for stricter limits on immigration. However, the collapse of U.S. fertility rates since the Global Financial Crisis is affecting the supply of workers. Rational policy that allows for a steady flow of legal immigration will likely be the only way to maintain a stable labor force amid an aging U.S. population.

The current farm bill expires on Sept. 30, and Congress is nowhere near reauthorizing a replacement. Historically, the agriculture committees had been the most bipartisan group of legislators in the U.S. Congress; in our current embittered political environment, that's no longer the case. How the farm bill plays out remains anyone's guess.

Increased acreage and generally good weather in the U.S. plus ever-increasing crop production in South America have pulled grain and oilseed prices back to near pre-Ukraine invasion levels. Unfortunately, combined with elevated farming costs, the lower prices will hurt crop profitability. Livestock producers will fare relatively better, but also face headwinds from the strong U.S. dollar and increasing trade frictions.

Rural utilities have quickly become among the most dynamic industries with wireless operators scrambling for fiber capabilities and energy providers looking at solar solutions and end-user behavior to head off the oncoming electricity crunch.

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:

- *Just when attitudes are shifting toward more strict immigration policy, declining fertility rates will squeeze labor supply*
- *Political rancor on Capitol Hill is making a new farm bill in 2024 increasingly unlikely*
- *Expected big harvests in the U.S. and South America combined with elevated costs of production will squeeze farm incomes*

CoBANK KNOWLEDGE EXCHANGE

Inside this issue

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SPOTLIGHT

Immigration: A political problem but potential economic solution

By Rob Fox

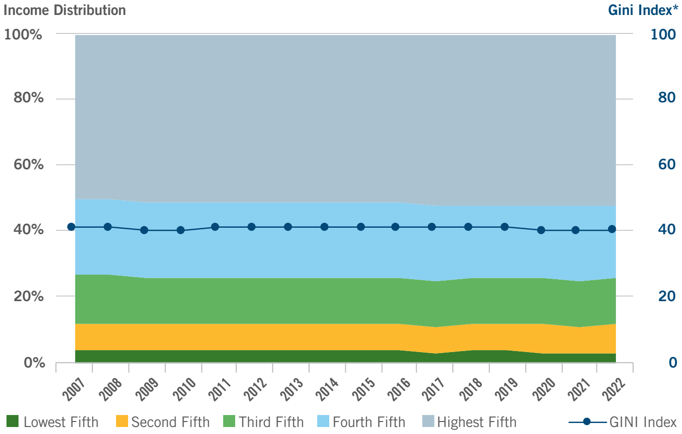
A recent poll from Gallup found that Americans now view immigration as the most important problem facing our country – at 27% the issue polls far ahead of the government (18%), the economy (17%) and inflation (13%). This is a relatively new development – the economy has normally polled as voters' primary concern in recent decades. Another poll by Pew Research this June showed that voter sentiment is moving sharply toward the opinion that undocumented immigrants should not be able to stay in the country – up from 22% in 2017 to 41% today. Responding to these shifting voter attitudes, the Biden administration has now embraced many of the same tough border policies that were in place under President Trump.

From an economic standpoint the effect of immigration on the U.S. economy today is hard to measure. Immigration unequivocally increases the nation's overall GDP but there is not much research that has studied the effect on per capita GDP. The lack of research is not particularly surprising because immigration has various and complex effects for decades thereafter: How can you parse those from the numerous other factors that impact economic growth? The latest figures from the Bureau of Labor Statistics show that in 2023, median usual weekly earnings of foreign-born full-time workers were about

1 Fertility rates have steeply declined since the global financial crisis.

2 The declining supply of workers will drive wages higher causing inflation and hurting our overall global competitiveness.

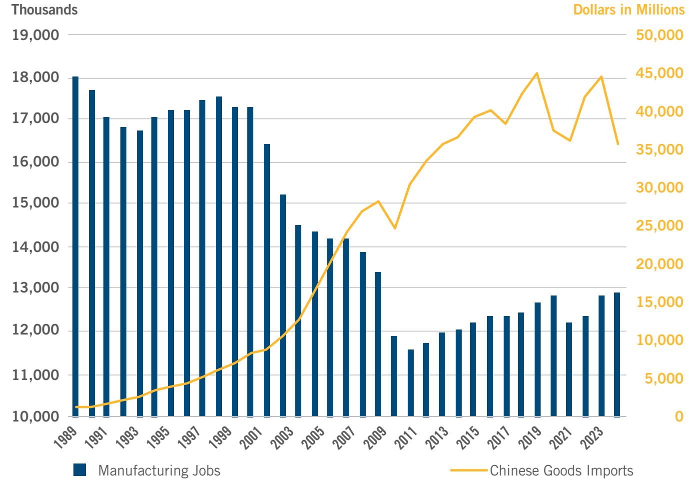
EXHIBIT 1: Household Income Distribution by Quintile



Source: U.S. Census Bureau, Current Population Survey, 1968 to 2023 Annual Social and Economic Supplements (CPS ASEC).

**The Gini index is a measure of statistical dispersion intended to represent the income inequality within a nation. An index of zero reflects perfect equality, where all incomes are the same; an index of 1 (or 100%) reflects maximal inequality, where a single individual has all the income while all others have none.*

EXHIBIT 2: U.S. Manufacturing Jobs and Chinese Imports



Source: Federal statistics retrieved from FRED, Federal Reserve Bank of St. Louis

87% of the earnings of their native-born counterparts. But that discount likely fades as they spend more time in the U.S. Unemployment metrics suggest immigrants have initial difficulty breaking into the labor market in their first three years but disappears thereafter, according to Oxford Economics.

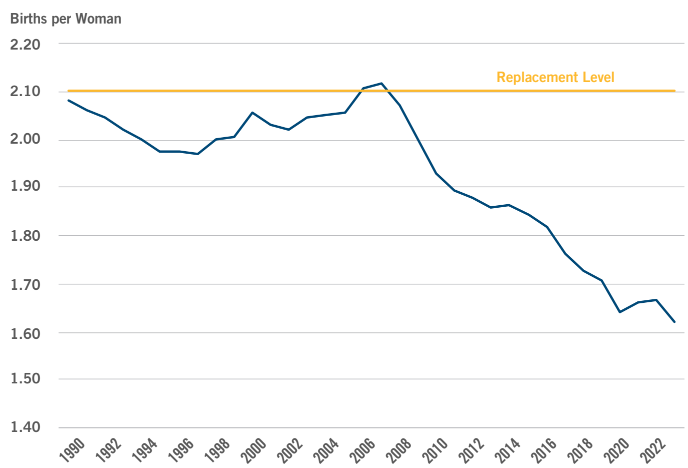
Some argue that immigration takes away middle-class jobs and leads to a worsening of economic inequality. But the data doesn't support that theory. In modern times the biggest surge in immigration came roughly between 1990 and 2010. Overall income inequality did not really change over that time, nor in the years thereafter. In fact, by some measures income inequality has improved since 2019 *(Exhibit 1).* We would argue that the steep loss in manufacturing jobs (held by both natives and immigrants) from 2000 to 2010 caused by cheaper imports from China and elsewhere had a much greater impact on the U.S. economy *(Exhibit 2).*

Immigration has always been integral to the country's economy and political debate dating back to colonial times. In the late 1800s and early 1900s the issue became extremely contentious – leading to the creation of the American or "Know-Nothing" Party in the 1850s, and multiple congressional attempts to limit immigration.

But the U.S. is in a much different demographic situation than it was in the late 1800s. Due to steeply declining fertility rates since the global financial crisis *(Exhibit 3),* we are poised to enter a long, likely permanent period in which the number of retirees will outpace the number of native-born workers entering the labor force. In the coming decades we will have ever fewer workers *(Exhibit 4)* supporting an overall aging population – all while dealing with a federal debt larger than our annual GDP. The declining supply of workers will drive wages higher causing inflation and hurting our overall global competitiveness. Several European and Asian countries (most notably China) have attempted to reverse their own declining birth rates through various government policies, but all have failed. If we are to maintain a stable workforce in the future, some level of steady legal immigration will likely be the only option.

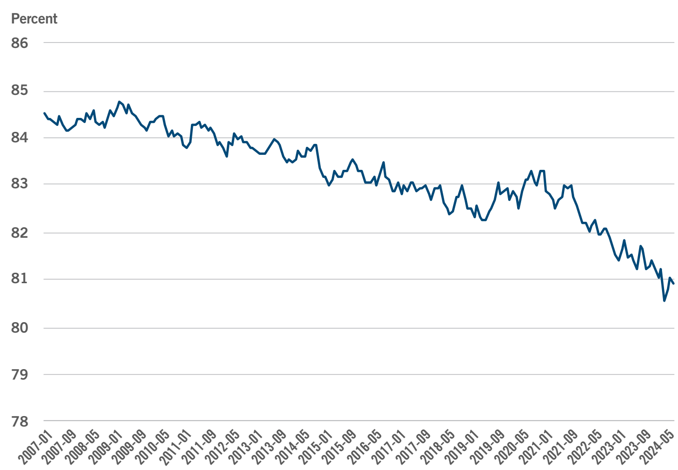
3 Steady legal immigration will likely be the only option for maintaining a stable workforce in the future.

EXHIBIT 3: U.S. Fertility Rate



Source: World Bank, Fertility Rate, Total for the United States. Retrieved from FRED, Federal Reserve Bank of St. Louis

EXHIBIT 4: Native Born Share of U.S. Labor Force



Source: U.S. Bureau of Labor Statistics, Civilian Labor Force Level - Native Born; retrieved from FRED, Federal Reserve Bank of St. Louis

MACROECONOMIC OUTLOOK

Is rising unemployment different this time?

By Rob Fox

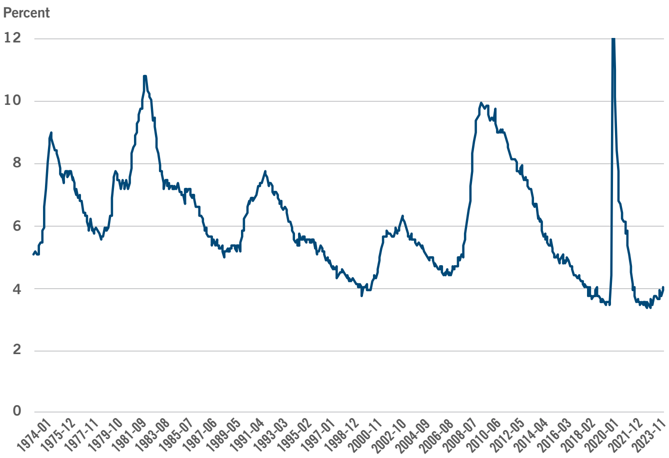
Unemployment edged up to 4.1% in June and has risen a total of 0.7% since January 2023 when unemployment hit its cyclical low at 3.4% *(Exhibit 1).* The numbers for April and May were also revised significantly downward. Over the April-June time frame the average number of jobs added per month was only 177,000. That isn't enough to keep up with the slow but steady increase in the labor force participation rate, which has now risen above 2019 levels.

Since 1959, every time the unemployment rate rose by at least 0.5% on a rolling three-month average, a recession was in the near-term offing (encompassing nine recessions). We are a hair's breadth from that point right now. Could this time around be different?

First, almost all of the unemployment increase is found in the 16-24 age category: after briefly bottoming out at the lowest level in modern history (6.6% in April 2023), that age segment's unemployment rate rose to 9.2% in the most recent May report *(Exhibit 2).* That seems bad at first, but, when zooming out our view of the dataset, we

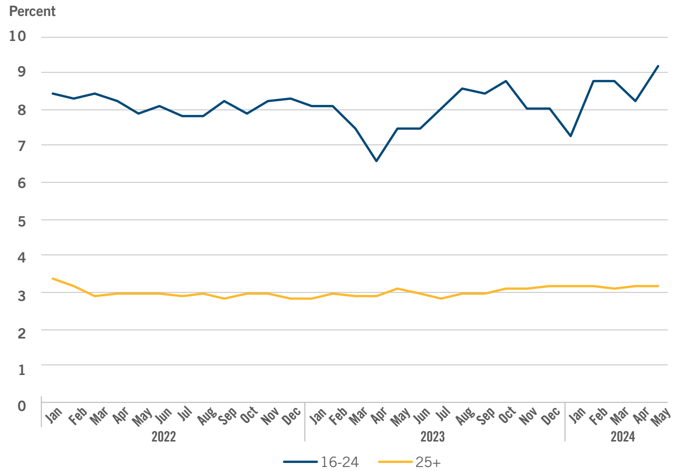
1 The monthly job openings number is below the pre-pandemic trend line.

EXHIBIT 1: U.S. Unemployment Rate



Source: U.S. Bureau of Labor Statistics, Unemployment Rate

EXHIBIT 2: Unemployment Rate By Age Group

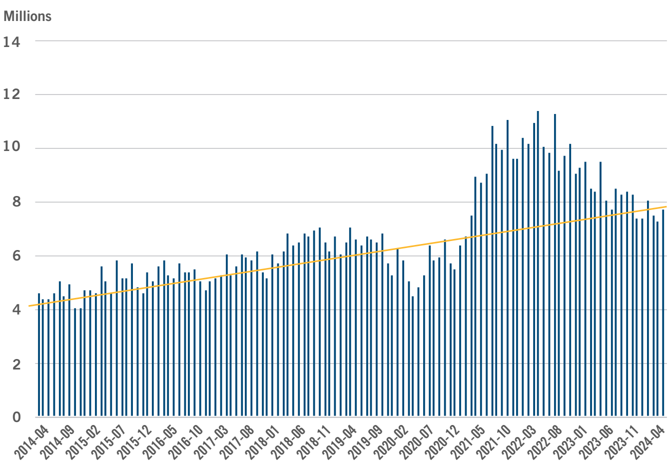


Source: U.S. Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey find that the relationship between the unemployment rates of the 16-24 and 25+ age segments is returning to its long-term levels (roughly a 6% spread between the two metrics from 2015-2019). It was only the incredibly tight labor conditions that pushed age 16-24 unemployment that low, and the labor market is now returning to normal.

In our opinion, of bigger concern than the incremental increase in the unemployment rate is the monthly job openings number which has dropped by more than a third since mid-2022 and has now fallen below the pre-pandemic trend line *(Exhibit 3).* After years of trepidation about being short-handed, employers have taken down their digital "help wanted" signs. But they have not yet stopped hiring nor started laying workers off *(Exhibit 4).* Any further weakening in labor demand would likely begin to involve the latter two options, but that hasn't happened yet.

2 Employers have not yet stopped hiring nor started laying off workers.

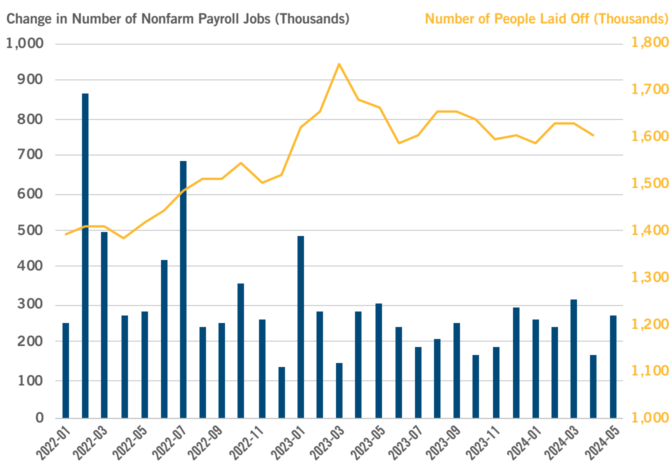
EXHIBIT 3: U.S. Job Openings



Source: U.S. Bureau of Labor Statistics, Job Openings: Total Private

EXHIBIT 4: Nonfarm Payroll Change & Layoffs

Rolling 3-Month Average



Source: U.S. Bureau of Labor Statistics

GOVERNMENT AFFAIRS

The farm bill pickle

By Lauren Sturgeon Bailey

For many years, the House and Senate agriculture committees had been the most bipartisan group of legislators in the U.S. Congress, with members' support for farm and food programs solidly bipartisan. Any fights were generally between regions of the country, not the parties. As legislators have become increasingly partisan and disconnected from production agriculture, the agriculture committees and the industry interests have begun to suffer the same fate as the rest of Congress. This challenging reality has become clear this year as the House and Senate committee principals have each brought forth their own individual farm bill proposals, rather than working together.

The current extension runs through Sept. 30, 2024, and the reauthorization is nowhere near finished in either chamber. The House committee has successfully passed H.R. 8467, the Farm, Food and National Security Act of 2024, on a bipartisan vote (33-21). Democrats filed a formal objection to the bill, but it has been reported to the full House of Representatives. While this is progress, the legislation in its current form will not pass the House. Many in the House Freedom Caucus refuse to vote for any legislation that spends money. With too few GOP votes to pass this bill, negotiations must garner bipartisan support.

The House currently has 220 Republicans, 213 Democrats and two vacancies. House Agriculture Committee Chair Glenn Thompson, R-Pa., needs at least 25 Democrats (preferably more) to vote with him. This makes floor consideration uncertain. Additionally, the cost of the bill has not yet been verified by the Congressional Budget Office. The committee must continue to work through budgetary issues and additional policy changes.

The Senate is no closer to a farm bill markup than it was a year ago. Senate Agriculture Committee Chairwoman Debbie Stabenow, D-Mich., released her farm bill framework, which includes many individual bipartisan bills introduced in the 118th Congress. It is noteworthy that this proposal does not include the increase to farm programs Ranking Member John Boozman, R-Ark., has advocated for during his time leading the committee's Republicans. Boozman recently released his own proposal, similar to Thompson's. This type of posturing has not previously occurred between principals, a sign to industry groups that the path forward is difficult.

One thing that could break the stalemate is the upcoming election. With less than five months until the 2024 presidential election, Congress has six legislative session weeks to reauthorize the current farm bill and to continue funding the government. At a time where partisanship is still high, the disapproval rate of Congress also remains high. Elections can inspire interesting actions by Congress. Many in the agriculture community hope the 2024 election results will force Congress to finally pass a five-year farm bill.

1 **The current farm bill extension runs through Sept. 30, 2024, and the reauthorization is nowhere near finished in either chamber.**

2 **Legislators' growing partisanship and disconnection from production agriculture have complicated matters.**

3 **Industry groups see the posturing between ag committee principals as a warning sign for the farm bill's path forward.**

GRAINS AND OILSEEDS

Ample corn, soybean and wheat stocks blunt fears of potential crop losses

By Tanner Ehmke

Corn

USDA shocked the market at the end of June with higher-than-expected totals on corn acreage and stocks. Planted corn acreage was reported at 91.48 million acres *(Exhibit 1),* well above expectations and up 1.6% from the March Prospective Plantings survey. Corn stocks on June 1 were 1.087 billion bushels, also well above expectations and up 23.3% YoY *(Exhibit 2).* Notably, farmers held a hefty 61% of all corn bushels in the U.S. in on-farm storage, indicating their strong reluctance to sell. Farmers over the last 10 years have held an average 55% of the crop on-farm.

The larger planted acreage and higher stocks will provide supply cushion against potential production losses from widespread floods across Iowa, Minnesota and South Dakota in June. Historic flooding in key corn-growing regions likely will result in lower harvested acreage and lower yields. The U.S. corn crop also risks yield losses from extreme heat this summer. The National Weather Service forecasts warmer and drier conditions across the Corn Belt this summer.

Corn basis has strengthened amid farmers' lethargic selling pace and strong ethanol demand. A strong dollar and a record Brazilian corn harvest, though, inhibit a faster export pace needed to clear inventories. Corn prices ended 11.5% lower for the quarter.

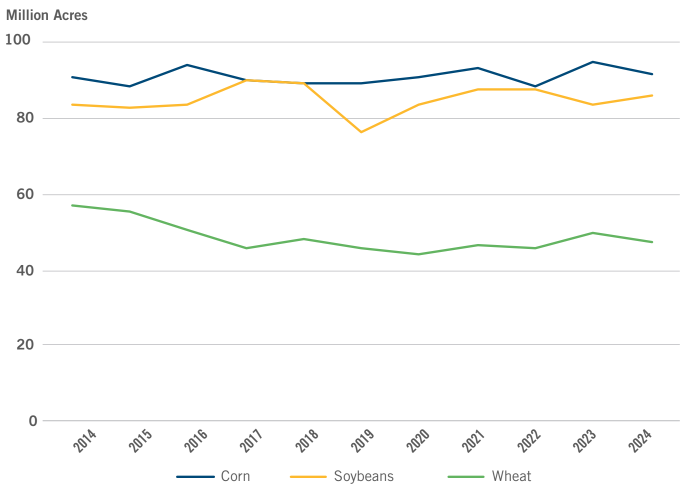
Soybeans

Soybeans are struggling with a disappointing export pace as a strong dollar and record South American harvest discourage sales *(Exhibit 3).* China showed up as a major buyer of old-crop soybeans at the end of the quarter, but China remains absent in new-crop sales,

1 **USDA shocked the market at the end of June with higher-than-expected totals on corn acreage and stocks,** buffering potential crop losses to regionalized floods or summer heat.

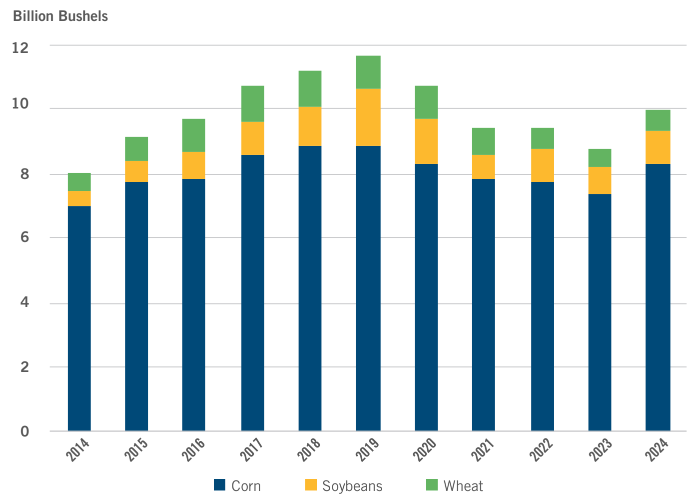
2 **Soybean crush continues to reach record highs,** but record imports of canola, tallow and used cooking oil have softened soybean oil prices and weakened crush margins.

EXHIBIT 1: U.S. Planted Acreage



Source: USDA NASS

EXHIBIT 2: U.S. Stocks on June 1



Source: USDA NASS

which ended the quarter at a 20-year low for that time of year. Sales to other destinations were also slower. Rising trade tensions with the U.S. following the Biden administration's imposition of new tariffs on Chinese products – and now greater uncertainty over trade policy under a potential return of former president Donald Trump to the White House – may be discouraging new-crop sales in anticipation of greater trade disruptions ahead.

Soybean meal exports are at a historic high as foreign buyers take advantage of the record-large crush in the U.S. amid a slower crush pace in Argentina. However, record imports of canola oil, tallow and used cooking oil (UCO), though, have blunted soybean oil prices and crush margins, resulting in an unexpected but temporary drop in April crush.

USDA reported ample soybean stocks on June 1 at 969.987 million bushels, up 21.8% YoY. Planted acreage was tallied at 86.1 million acres, down slightly 0.5% from the March estimate but up 3.1% YoY.

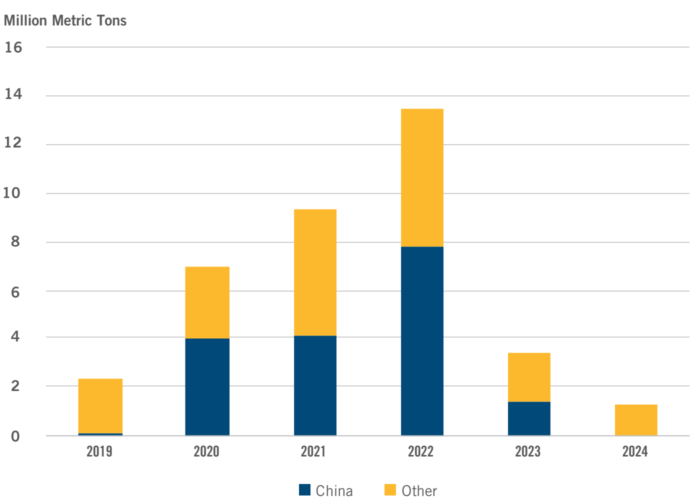
Wheat

Harvest of the winter wheat crop is moving at a swift pace with farmers on the plains reporting significantly higher yields compared to last year's drought-afflicted crop. Protein levels are reported to be variable. USDA reported June 1 wheat stocks at a hefty 702.06 million bushels, up 23.3% YoY. Spring wheat acreage is at 11.27 million acres, down 0.6% from March but up 1.2% YoY.

The world wheat stocks-to-use ratio is historically tight. USDA estimates Russia's wheat crop at 83.0 MMT, down 9.3% YoY *(Exhibit 4)*. India also lifted its import tax on wheat while Turkey banned imports through mid-October. The bigger U.S. crop and wet weather in the Canadian prairies and western Australia, though, have dampened a recent price rally. Chicago wheat fell 2.6% for the quarter.

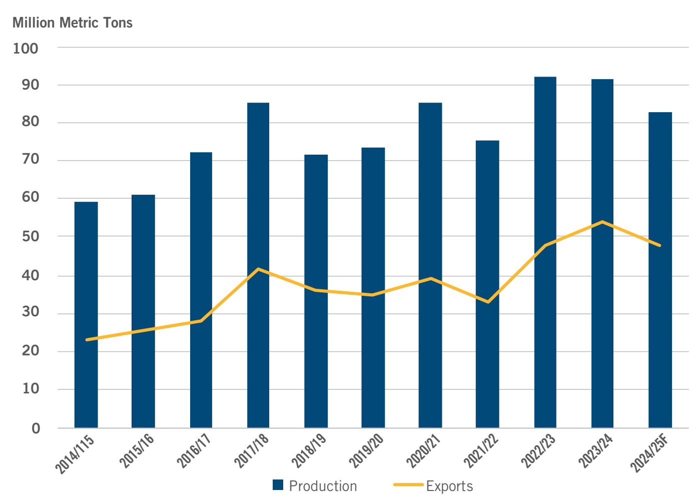
3 The U.S. wheat harvest is moving at a fast clip with farmers reporting much better yields compared to last year's drought-ravaged crop.

EXHIBIT 3: Accumulated New-Crop Soybean Export Sales
By Last Week of June



Source: USDA FAS

EXHIBIT 4: Russian Wheat Production and Exports



Source: USDA FAS

FARM SUPPLY

Farmers' operating cost burden grows

By Jacqui Fatka

Commodity prices falling faster than input costs have pushed many farmers to seek additional financing this growing season, resulting in higher operating loans. Farmers' real estate debt remained robust, but many have used appreciating farmland as collateral to help weather the lower commodity price environment.

In June, USDA forecast that production costs would remain relatively stable in 2024 and 2025. Fertilizer and chemical costs have seen the greatest reductions from the highs set in 2022, while seed costs have remained steady *(Exhibit 1).* USDA anticipates minimal changes in 2024 and 2025 production costs. Farmers will make most 2024 input purchases after the growing season but will pre-purchase some chemicals and fertilizers this summer for the 2025 growing season.

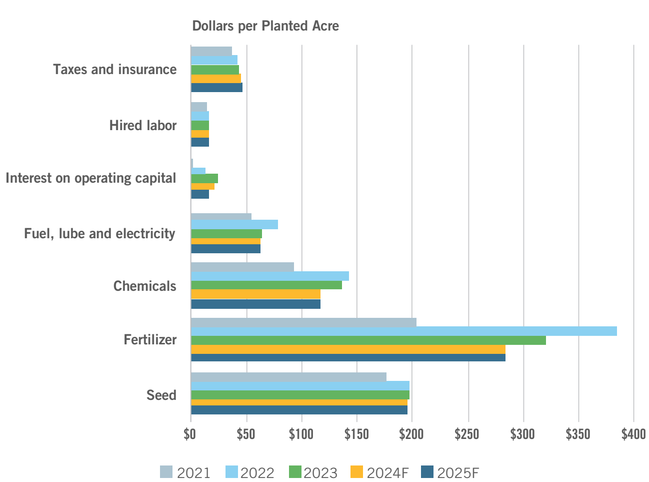
Farm production costs have stayed relatively flat over the last four years *(Exhibit 2),* while prices have dropped considerably since 2022. Fertilizer is the largest component for corn production, varying between 40% and 55% through time, and estimated at nearly 40% for 2024. Seed cost share on corn acres has averaged around 30%, and the pesticide cost share declined from around 28% in 2000 to 15% in 2012 but has since increased back to nearly 30%, the University of Illinois reports. Going forward, sustained high fertilizer prices compared to lower new crop corn values may push some farmers to delay fall application until winter/spring. If this is widespread, logistics could struggle to get product where it is needed.

1 **Farmers entered the 2024 growing season with higher financing needs** to cover increased input costs.

2 **Fertilizer and chemical costs came down from the highs set in 2022** while seed prices remained flat.

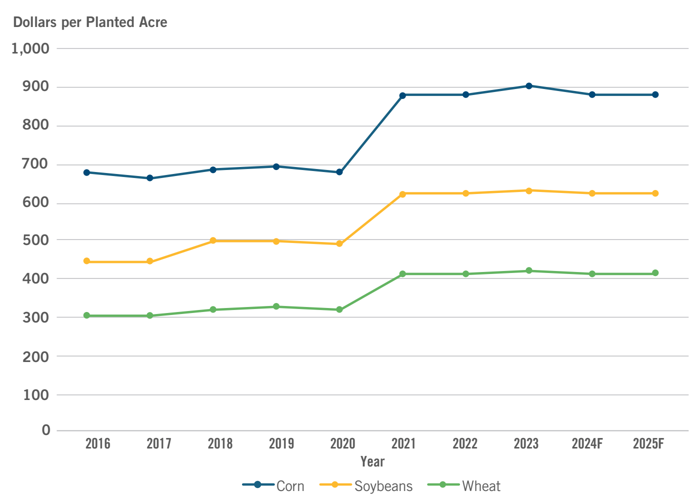
3 **Sustained fertilizer prices are keeping corn production costs high** in a difficult commodity price environment.

EXHIBIT 1: U.S. Farm Production Input Costs



Source: USDA ERS

EXHIBIT 2: Farm Production Total Cost Per Acre



Source: USDA AMS

BIOFUELS

Positivity builds for domestic biofuel producers

By Jacqui Fatka

Sustained lower corn and natural gas prices have helped boost ethanol margins, with well-managed facilities looking to continue to take advantage of the higher margin environment in the months ahead. Domestic ethanol demand has tracked lower in tandem with decreased gasoline demand in recent months, while production remains near levels from recent years *(Exhibit 1).* The latest narrowing of the ethanol price discount to gasoline could affect price-sensitive markets, as opposed to more policy-driven markets. The summer driving season in the Northern Hemisphere markets helps offset some of those price challenges.

Meanwhile, U.S. ethanol exports offer a shining light in an otherwise dim U.S. trade outlook. In May, USDA increased its estimates for ethanol exports by $400 million to match the previous record set in FY2022 of $4 billion. Although the ethanol industry lamented Brazil's decision to impose an 18% duty on U.S. ethanol imports, the country had essentially stopped buying from the U.S. after peaking in 2018. Canada has stepped in as a replacement and nearly doubled what the U.S. had previously sent to Brazil, and now sits as the top destination for U.S. ethanol.

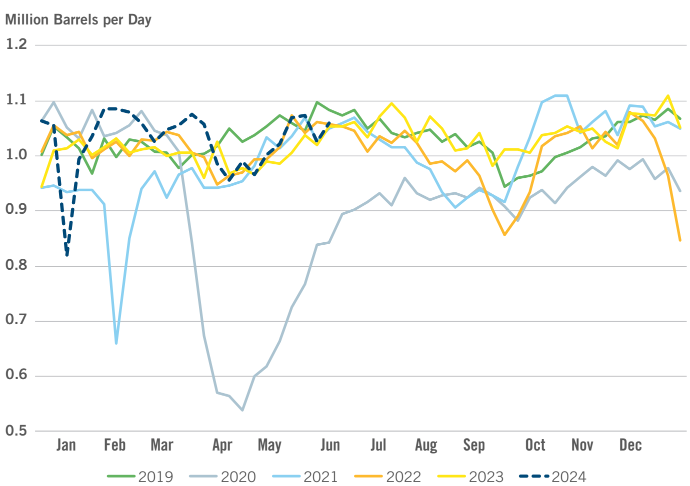
On the renewable diesel front, imports of used cooking oil and tallow have both taken on a growing share of feedstocks for renewable diesel blending. This has softened some demand for U.S. soybean oil for blending and caused larger operators to delay some proposed RD plants and expansions. Some analysts are expecting RD margins may rise to $0.25/gallon this fall compared to early June levels. If realized, that would likely boost Renewable Identification Number (RIN) values and incentivize more soybean oil use to meet mandated blended levels. The industry has asked EPA to reevaluate its three-year "set rule" because production continues to outpace mandated levels *(Exhibit 2).* ■

1 Ethanol margins have benefited from lower corn and natural gas prices despite lower overall gasoline demand.

2 Export channels offer promising demand going forward to the new top market, Canada.

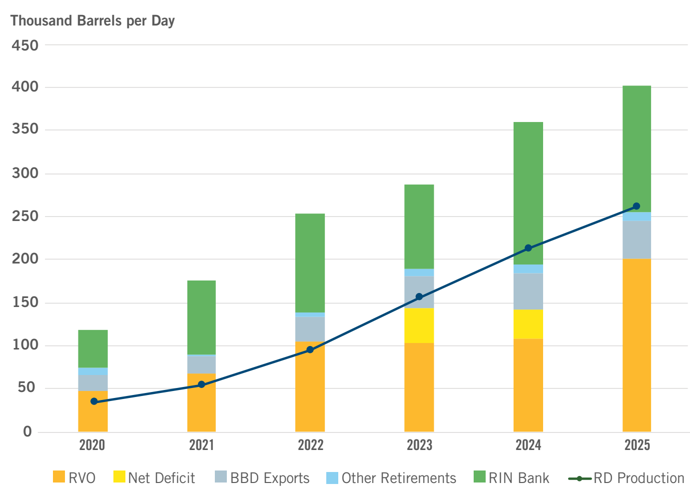
3 Despite increased competition from tallow and used cooking oil, strong soy oil demand exists for renewable diesel blending.

EXHIBIT 1: U.S. Ethanol Production



Source: U.S. Energy Information Administration, Weekly Ethanol Plant Production

EXHIBIT 2: Implied U.S. Renewable Diesel Demand in RFS



Source: Bloomberg Intellligence

ANIMAL PROTEIN

Inflation shows up in consumption, tempering outlook for growth

By Brian Earnest

Inflation may finally be playing a role not only in what animal protein items consumers are purchasing, but where. The most recent KSU meat demand monitor survey results showed a moderate decline in consumption of meat among respondents who said they were worse off financially than a year earlier *(Exhibit 1)*. However, inclusion of beef in meals is holding strong among all income sentiment categories. Additionally, those who feel they are worse off now financially than they were 12 months ago are eating more chicken and less pork, while those who are feeling better off are swapping chicken for pork. So too, inflation adjusted food-at home spending is increasing at a pace exceeding food away from home *(Exhibit 2)*.

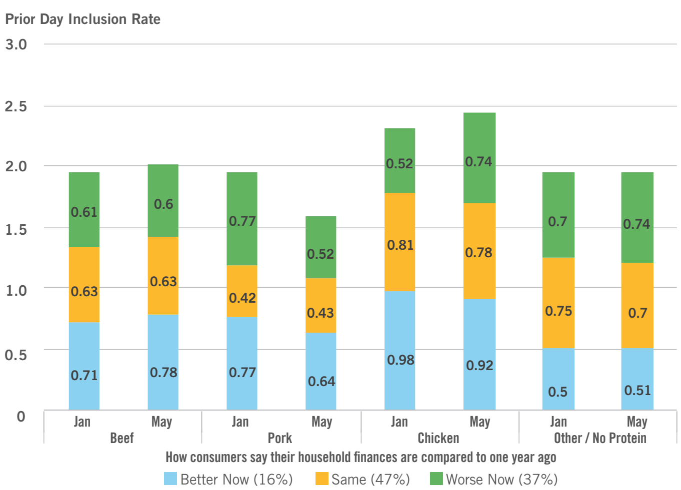
With demand steady but hardly robust, producers are looking at production costs to help evaluate expansion opportunities. Here the signals are mixed, with different dynamics in each segment. The cattle herd has yet to hint at expansion, but beef production remains high for the time being. Pork production has advanced minimally, and while pullet additions to the broiler barns are rising, inefficiencies ranging from disease to genetics are moderating any supply response. In all, U.S. animal protein production grew about 1% YoY during the second quarter.

Although global decoupling is disrupting trade in other sectors, U.S. animal protein exports continue to impress. U.S. animal protein export volume totaled 17.5 billion pounds over the last 12 months, which is 16.5% of production, about even with the prior 12 months. A strong dollar has been a headwind to some major destinations. However, Mexico is the top destination for U.S. pork and poultry. Despite a firmer dollar and weakening peso, we expect trade will remain strong for the animal protein sector.

1 **Despite declining feed costs,** **animal protein production expansion remains subdued.**

2 **Consumers are moderately pivoting from pork to chicken in some markets,** **but exports remain a bright spot for U.S. animal protein values.**

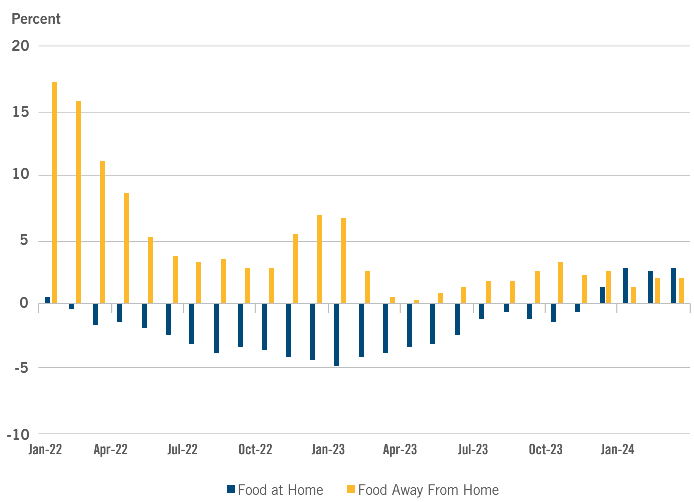
EXHIBIT 1: Consumers' Meat Consumption by Financial Condition



Source: KSU Monthly Meat Demand Monitor

EXHIBIT 2: Inflation-Adjusted Food Spending YoY Change

Three-month moving average



Source: USDA ERS

CHICKEN

For quite some time, chicken has been a default choice as consumers seek out nutrition, convenience and value. The U.S. broiler industry is hitting those marks in stride with consumer-friendly prices and new innovative offerings ready for quick-and-easy appliances like air fryers.

The latest BLS data showed the price for boneless chicken breast averaged $4.12 during May, down about 3% YoY, and down 13% from the highs in 2022. Featuring activity for chicken is showing the consumer even more value *(Exhibit 3)*. Value pack fresh boneless breast feature activity is back to pre-pandemic (2019) levels. Prices are still up about 21% from 2019, but actually 5% lower than a decade ago.

Dampened feed costs for chicken should continue to drive consumer savings, but that will be for the market to figure out, and the transition will take time. For now, inventory levels on key items do not appear to be overly burdensome. Cold storage levels for breast meat are at the lowest levels since the end of 2022, down about 8% YoY and 11% lower than at the new year. Prices at the wholesale level for most key broiler items including wings have been firming.

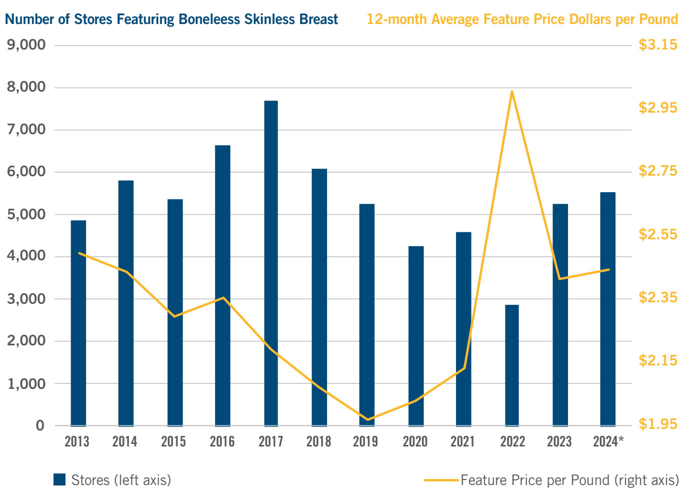
Pullet placements are up 1.2% so far in 2024, following a 4.5% increase in 2023, so integrated processors are actively adding to flocks *(Exhibit 4)*. However, disease and genetic issues remain an ongoing limitation to achieving productivity and livability levels in recent years. USDA forecast for broiler meat production growth is modest, up 1% YoY. The additional pounds produced remains easily absorbed in current market conditions.

1 Broiler integrator margins are improving as markets heat up and input prices fall.

2 The latest forecasts suggest broiler production will advance moderately, up 1% to 46.9 billion pounds in 2024.

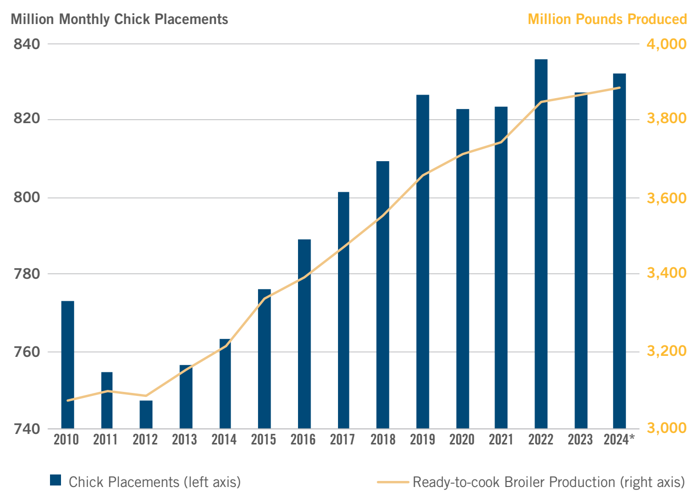
EXHIBIT 3: Chicken Breast Feature Activity

Store Count vs. Average Price



Source: USDA AMS, CoBank caluations
**Annual Average, 2024 YTD*

EXHIBIT 4: Broiler Chick Placements vs. Chicken Production



Source: USDA
**for 2024, used a 12-month rolling average through May 2024*

BEEF

U.S. beef production is in decline as expected for this year, but it is not falling as fast as once projected. Over the past three months, feeder cattle have stayed in feedlots for longer and put on more weight. However, these heavier weights are counter seasonal. Throughout the second quarter of 2024, weekly dressed cattle weights were up 3% than year-ago levels at about 850 pounds per head *(Exhibit 5)*. Cattle on feed is up 4% year-to-date at 70.5 million head, with no changes year-over-year in June.

With feed costs softening and improved weather conditions, cattle have performed well and have transferred more money into producers' pockets. As beef markets have softened, cattle prices have increased and thereby are reducing packer incentives and shortening kill schedules. At the end of June 2024, packers were losing $79 per head and feeders were profiting $499 per head to widen the margin spread to $578 per head. This correlates with year-to-date federally inspected cattle slaughter being down 4.4%.

These heavier beef cattle have caused the beef 50s trim supply to jump significantly and are hindering the 50s trim price *(Exhibit 6)*. Fewer beef cows are being processed resulting in lower supply of beef 90s trim. Changes in supply have caused the price spread between beef 50s and 90s to hit a record wide spread of $282.08/cwt. in mid-June. If weights stay up and slaughter numbers remain down, we expect these spreads to continue widening.

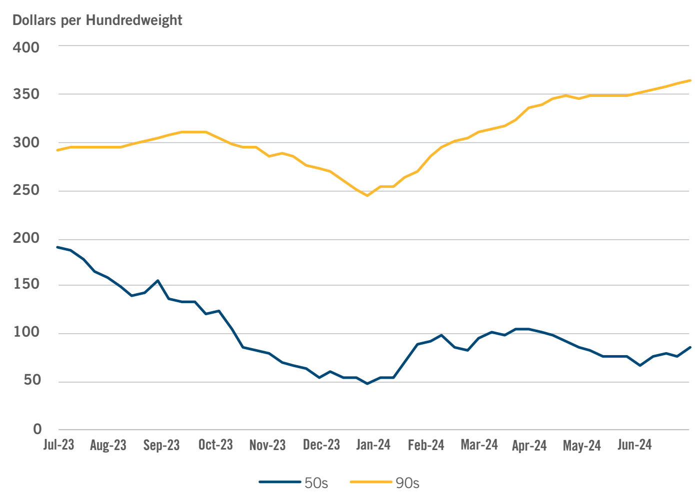
1 **Cattle spent extra days on feed during the second quarter with carcass weights averaging 850 pounds,** **10 pounds heavier than Q1.**

2 **Profits in the value chain have transitioned away from beef to cattle,** **softening packer margins and boosting producer/feeder revenues.**

EXHIBIT 5: USDA Steer and Heifer Slaughter Weights
Federally Inspected, Dressed

Source: USDA, LMIC

EXHIBIT 6: USDA Beef Trim Values



Source: USDA AMS

PORK

With feed costs down more than 25% in the second quarter, Iowa State estimates wean-to-finish operations averaged profits of more than $20 per head for the period, a huge swing from losses of $40 per head a year earlier. Not only have falling feed costs played a pivotal role in improving producer profitability, but value at the meat case also appears to be helping pork disappearance. COVID-pandemic related savings are depleted and consumers are relying more heavily on credit, which is supportive of disappearance of budget-friendly meat options.

Additionally, the wholesale cutout price strength of the first six months of 2024 and improved processor demand has brought with it a prolonged stretch of elevated hog prices *(Exhibit 7)*. Lean hog values recently stalled out in the mid-90s, but this was largely a result of managed money being overextended rather than weak fundamentals. Exports are in outstanding shape: Nearly 31% of all pork and pork variety meats produced in the U.S. were exported during the first four months of 2024, a record achievement.

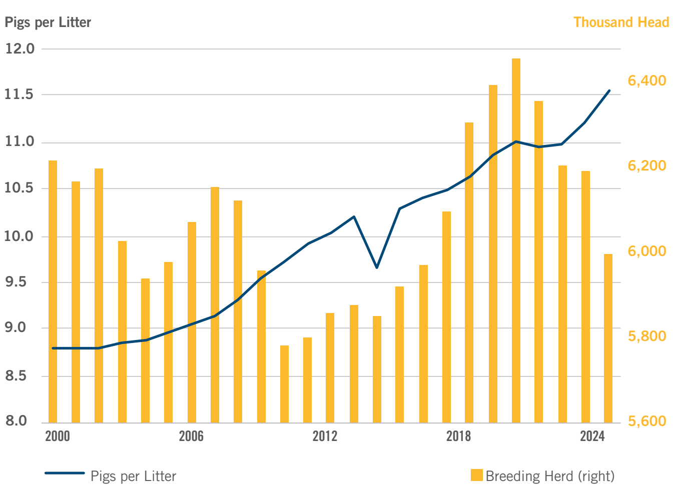
Yet, cumulative sow slaughter was up 8.5% through the end of May. The pace is leading USDA sow slaughter forecast to reach 3.355 million in total during 2024, an increase of 5% YoY, besting every year since 2008. Usually, the increased sow slaughter would be indicative of contraction, but pigs saved per litter continues to surge *(Exhibit 8)*. We are hearing this suggests a more productive breeding herd, so expectations for declines are limited. USDA forecast for pork production is up nearly 3% YoY for 2024.

The bottom line is while there may be some work to do in the months ahead as hog numbers swell and capacity tightens, the first six months of 2024 have shown much improvement for the hog and pork sector.

1 Producer profitability remains bolstered on soft feed prices and firm hog values.

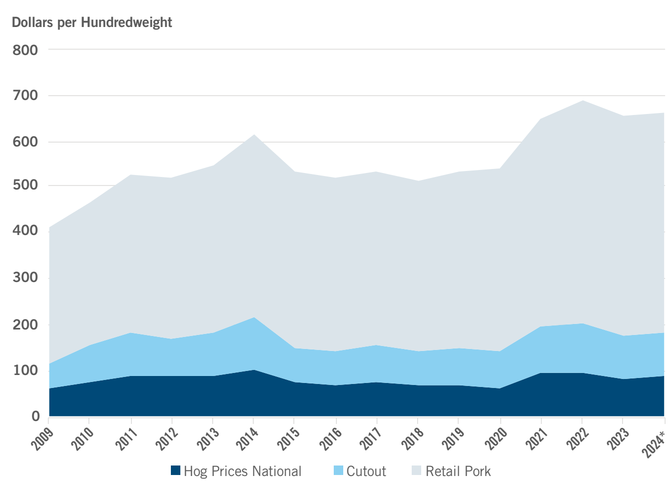
2 During the first four months of 2024, the U.S. exported 31% of all pork and pork variety meats produced, a record achievement.

EXHIBIT 7: June 1 U.S. Hogs and Pigs Inventory



Source: USDA NASS Quarterly Hogs and Pigs

EXHIBIT 8: Value of U.S. Pork by Production Segment



Source: USDA, LMIC
**ERS forecast for National Hog, CoBank for Cutout, average YTD for Retail*

DAIRY

Milk components matter more than milk production

By Corey Geiger

Milk production has been USDA's gold standard for measuring dairy productivity in the U.S. since 1931. However, as milk composition has changed significantly since 2011, and butterfat and protein percentages have moved to record highs, the productivity standard is shifting. From 2011 to 2023, butterfat pounds shipped from farms grew by 27.9% to reach 9.3 billion pounds. Meanwhile, milk production posted a smaller gain of 15.4% to reach 226.4 billion pounds *(Exhibit 1).*

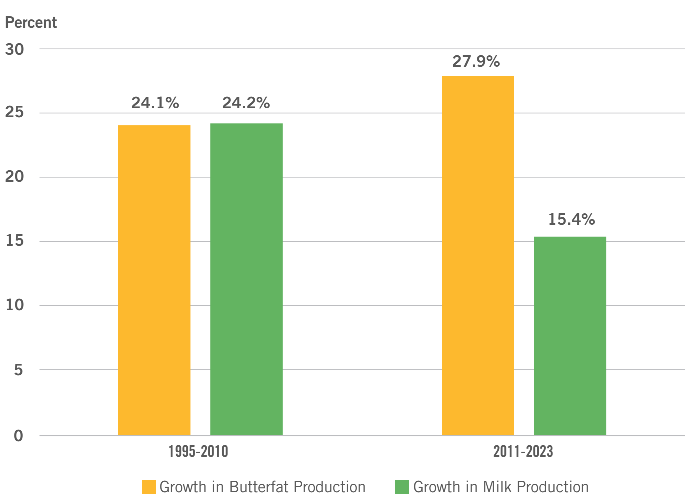
Recent milk production trends show U.S. milk production fell for the 11th straight month this May when it dropped 0.9%. On the flip side, combined butterfat and protein production has been up 10 of the past 11 months *(Exhibit 2).* This number was calculated from U.S. milk production data and butterfat and protein percentages from Federal Milk Marketing Order data. While not a perfect measure due to depooling of milk and the absence of a top five dairy state (Idaho) from the FMMO system, the combined butterfat and protein production metric gives a solid proxy of higher-content milk that is yielding more dairy products with each passing year. This market trend shows why tracking combined butterfat and protein pounds is a better measure of production from U.S. dairy farms as consumers purchase more nutrient-dense dairy products.

Although cheese sales started the year on a sluggish note with domestic consumption down more than 3.5% in January and February, Americans ate more cheese this March and April compared to the same time last year. Low cheese prices on the spot CME

1 **While U.S. milk production fell for 11 straight months,** combined butterfat and protein production posted gains in 10 of them.

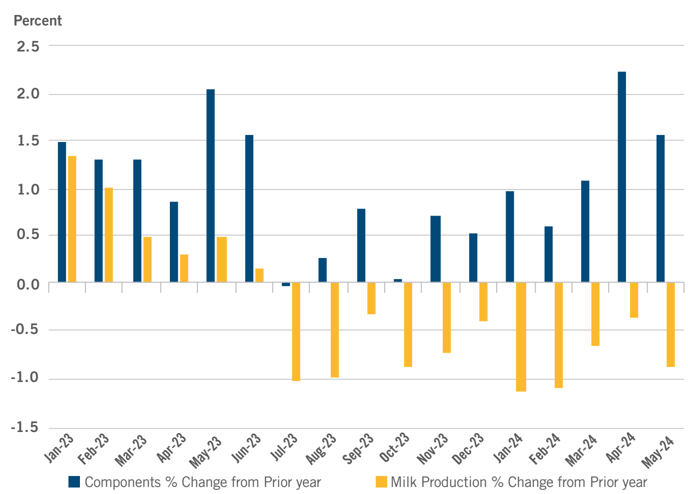
2 **Aided by lower prices, the U.S. exported a record 8.7% of its total cheese production** February through April.

EXHIBIT 1: Butterfat Production Outpaced Milk Production by Over 12%



Source: USDA ERS

EXHIBIT 2: Milk Component and Milk Production Change



Source: USDA NASS and FMMO data

market spurred international sales, as well. For the first time ever, U.S. cheese export sales exceeded 100 million pounds in one month *(Exhibit 3).* In March, the U.S. shipped 110.3 million pounds of cheese, up 20.5% year-over-year, and 102 million pounds in April, and 106 million pounds in May, with 40 million pounds going to Mexico.

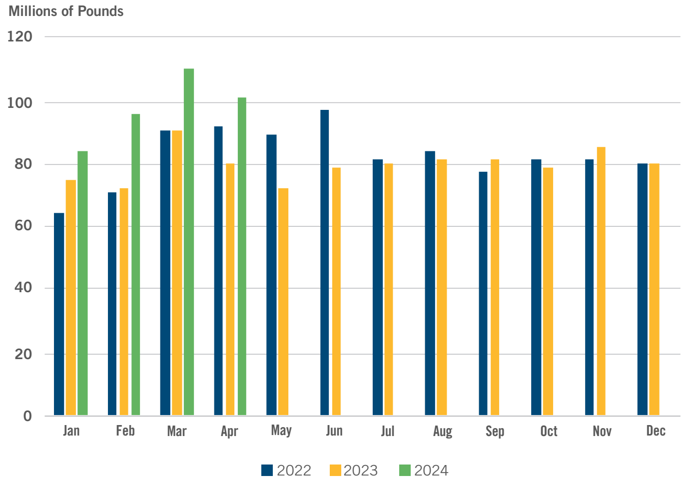
Through June 22, dairy cow culling is down 218,500 head compared to the same time last year. That's a dramatic downturn when compared to the four-year national trend *(Exhibit 4)* and is due in part to the beef-on-dairy market development that has produced between 3 million and 3.25 million animals from a beef sire and a dairy dam. As a result, dairy heifer replacements available to take the places of cows leaving the herd has fallen to a 20-year low. This inventory scarcity has pushed dairy heifer replacement values past the $3,000 mark at multiple auction markets across the country. Given the high value of beef-on-dairy calves and the nearly three-year cycle from conception of a heifer until she has her first calf, this situation shows no signs of near-term reversal.

Highly Pathogenic Avian Influenza (HPAI) continues to affect cows in at least a dozen states, although the two largest dairy states – California and Wisconsin – had no reported cases through mid-June. USDA Secretary Tom Vilsack announced that a host of companies are working on a vaccine to thwart the spread of HPAI in cattle. Until a potential vaccine reaches the market, the dairy community and others in agriculture will be dealing with cows that contract H5N1, the resulting lower milk output and other ramifications from this virus.

3 The dearth of dairy replacements has caused dairy farmers to pull back on dairy-cow culling to the slowest pace in years.

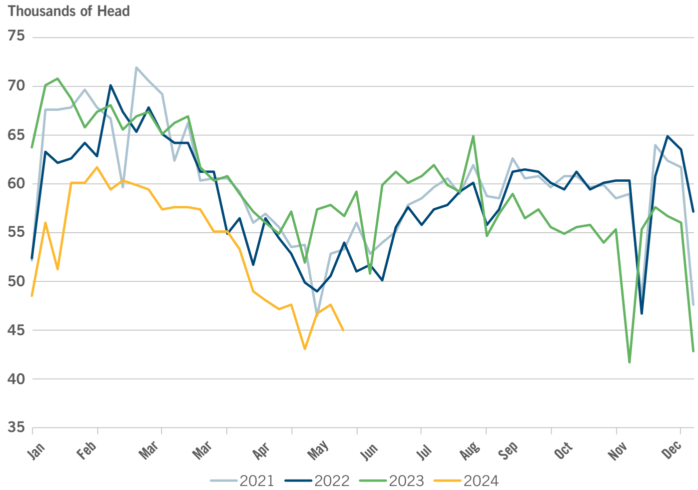
4 HPAI continues to affect some dairy cows in over a dozen states. Multiple companies are working to develop a vaccine to thwart the disease.

EXHIBIT 3: U.S. Cheese Exports on a Record Pace so Far This Year



Source: U.S. Dairy Export Council and Trade Monitor Data

EXHIBIT 4: U.S. Dairy Cow Slaughter



Source: USDA NASS, AMS, and Food Safety Inspection Service

COTTON, RICE AND SUGAR

Rebound in U.S. cotton production collides with slowing Chinese demand

By Tanner Ehmke

Cotton

Cotton prices tumbled 22% last quarter as U.S. farmers expanded planted acreage in response to the rally in prices at the start of the year. The global demand outlook is now dimming. USDA forecast U.S. cotton planted acreage jumping 14.1% YoY to 11.67 million acres in its acreage report released in June *(Exhibit 1).* Crop conditions throughout the U.S. are also notably better than in the recent years prior with USDA reporting the crop was 56% good-to-excellent at the end of June. This was the healthiest the crop has been in seven years and a remarkable turnaround from last year when drought gripped the southern Plains.

With China having already replenished its state reserves, the recently weaker sales pace to China coincides with strong export competition from Brazil. Brazil's cotton production climbed while its exports have had the tailwind of a weakening currency. Global cotton stocks for the 2024-25 marketing year are now projected to be the highest in five years at 83.5 million bales, up 3% YoY as global cotton production expands faster than mill use. This fall's cotton prices are expected to be below the cost of production for many U.S. farmers.

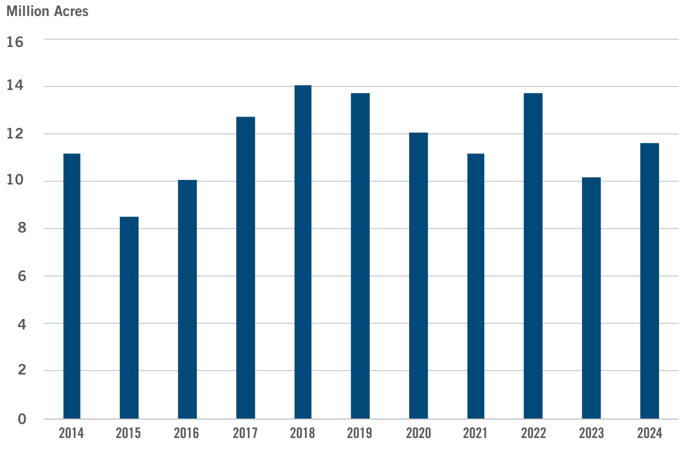
Rice

Floods in Brazil's top rice-producing state, Rio Grande du Sol, caused widespread crop damage across the region, driving Brazilian and U.S. prices higher last quarter *(Exhibit 2).* U.S. rough rice prices climbed 6.1%. The quick rise in Brazilian rice prices have made U.S.-origin rice more competitive and lifted the outlook on U.S. rice exports

1 **U.S. cotton production is expected to rebound from last year's poor harvest** **amid a slow-down in Chinese demand, which is driving cotton prices lower.**

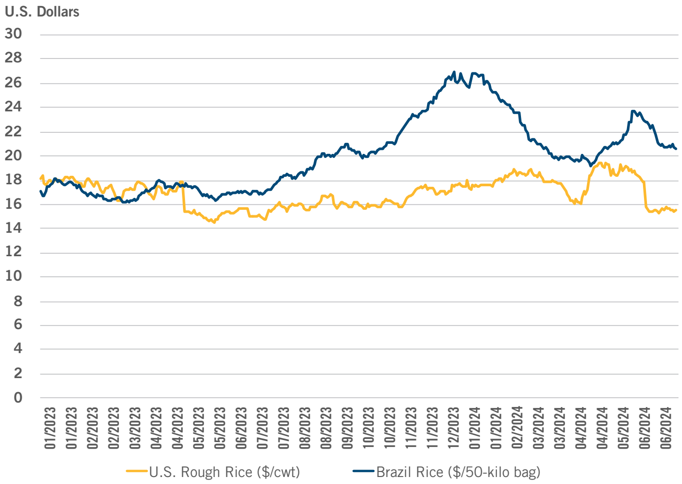
2 **Rice export prices in the Western Hemisphere are now in a tug-of-war between the U.S. and Brazil** **following widespread crop losses from flooding in Brazil.**

EXHIBIT 1: U.S. Cotton Planted Acres



Source: USDA NASS

EXHIBIT 2: U.S. Rough Rice vs. Brazil Rice Prices



Source: Cepea and CME Group

(Exhibit 3). Rice supply and demand in the Western Hemisphere is now in a tug-of-war between the U.S. Gulf and Rio Grande du Sol. USDA pegged U.S. planted rice acreage for 2024-25 at 2.94 million acres, up 1.8% YoY.

India's move to import wheat to boost state reserves and tame food prices reveals how it may approach the export ban on rice imposed last year. India currently is experiencing drought conditions, which will likely halt discussions of lifting export restrictions on rice. Prior to the export ban, India accounted for 40% of global rice exports. A continuation of the ban will send export demand to other exporters like the U.S.

Sugar

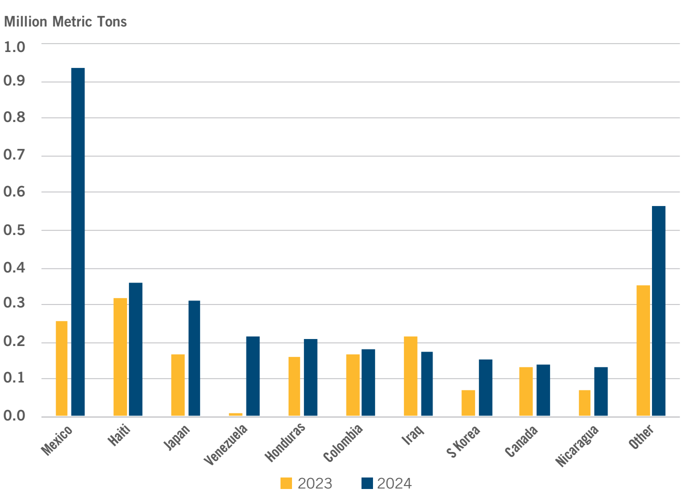
World sugar prices continued their slide lower *(Exhibit 4),* down 13.9% last quarter on improved harvest prospects in Brazil, the world's top sugar-producer, and a faster Brazilian crush pace as the crop comes to market. Brazil's agriculture ministry, Conab, projected Brazil's 2024/25 sugar crop at a record 46.3 MMT, up 1.3% YoY, on higher acreage. USDA, though, forecasts Brazil's sugar crop at 44.0 MMT, down 3.4% YoY, due to ongoing dryness.

The world balance sheet for sugar remains tight with USDA expecting 2024-25 global sugar ending stocks dropping 4.7% YoY to 38.3 MMT – the lowest in 13 years as global demand continues to accelerate. Below-normal monsoon rains in India are also expected to curb production in the world's second-largest sugar-producing country. India is widely expected to hold its sugar export restrictions in place that were imposed last year to curb food inflation.

In the U.S., sugar's stocks-to-use ratio for 2024/25 is forecast to be tight at 11.5%, according to USDA, versus 13.6% for the current crop year, due to a slower import pace. U.S. production for 2024-25 is forecast to inch higher to 9,200 short tons raw value (STRV), up 1.3% YoY.

3 Although Brazil's sugar harvest has pressured prices as of late, tight global supplies should limit any further erosion.

EXHIBIT 3: Total U.S. Rice Export Commitments as of June 20



Source: USDA FAS

EXHIBIT 4: U.S. and World Sugar Prices

Source: USDA ERS

SPECIALTY CROPS

Tomato imports surge amid declines in acreage of harvested vegetables

By Billy Roberts

Vegetable sales grow, even as harvested acreage falls

Inflation-adjusted vegetable sales per farming operation increased by 82% between 2017 and 2022 *(Exhibit 1)* even though the land area harvested dropped by 1.4%, according to the recently released Census of Agriculture. This continues an ongoing trend, as harvested acreage from 2007 to 2022 fell 7.9%.

Nevertheless, the sales increase per operation has stemmed from rapid consolidation and advancements in productivity that have enabled farmers to do more with less land. In 2012 dollars, sales of vegetables (including seeds and transplants) per U.S. operation grew from roughly $280,000 in 2017 to over $500,000 in 2022.

The impact per capita consumer is mixed. The availability of fresh market vegetables in 2023 decreased 2.2% YoY, to 155.4 pounds per capita. The slight increase in fresh market vegetable production in 2023 did not offset lower import volumes of bell peppers, lettuce and onions. Processing vegetables, on the other hand, increased 5% YoY to 114.8 pounds available per person in 2023. The boost came from higher domestic production and import volumes of sweet corn and tomatoes in particular.

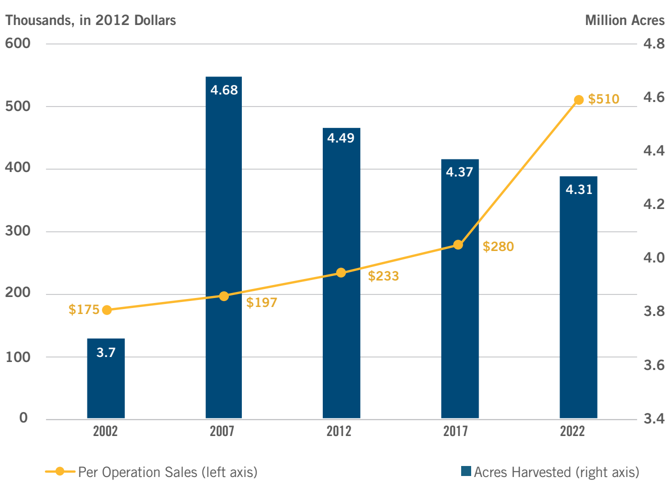
Greenhouse tomatoes feed import growth

The import volume of tomatoes into the U.S. has grown 176% since 2000 *(Exhibit 2).* Over that time, nearly all import growth has been in tomatoes grown in greenhouses, driven primarily by expanded year-round greenhouse tomato production in Mexico. In

1 **The number of farms harvesting vegetables has dropped by 6.5% since 2017.**

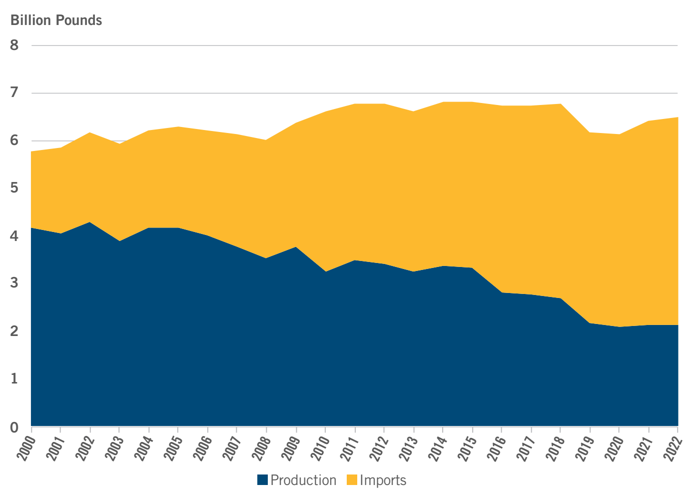
2 **Tomato imports are being driven by greenhouse-grown production.**

EXHIBIT 1: U.S. Vegetable Acres and Inflation-Adjusted Per-Farm Sales, 2002-22



Source: USDA ERS

EXHIBIT 2: U.S. Fresh Tomato Production and Imports



Source: USDA ERS

the early part of the century, greenhouse fresh tomatoes accounted for approximately 14% of fresh tomato import volume, 23% of value. They now account for 60% of total volume and 59% of fresh tomato value.

The U.S. has seen its own expansion of greenhouse tomato production, but imports accounted for roughly 88% of the greenhouse tomato supply in 2023. Almost 80% of all cherry and grape tomato imports were grown in greenhouses, as were a third of total Roma tomato imports.

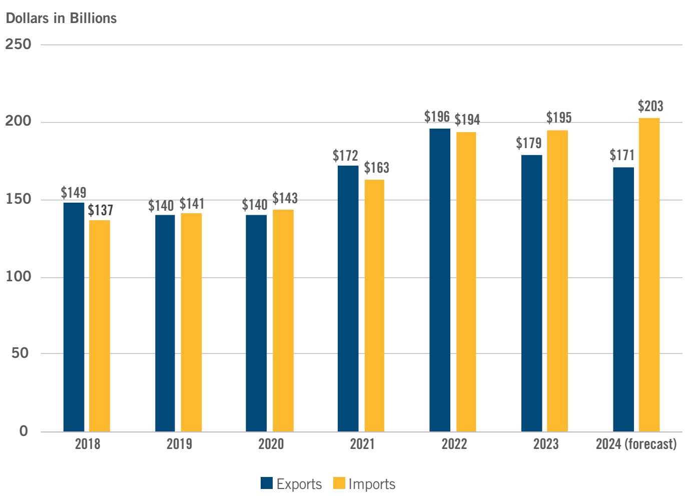
Second consecutive agricultural deficit projected

The U.S. is expected to record a second consecutive year of an agricultural trade deficit, per the American Farm Bureau Federation. This is the fourth such deficit for the U.S. in the past six years and a marked departure from the historical trade surpluses that had been seen prior to FY 2019 *(Exhibit 3).* The projected $32 billion deficit for FY 2024 stems from a number of factors including an increase in imports of fresh fruit and vegetables. However, agricultural export values have decreased on dropping commodity prices for American crops and a strong U.S. dollar. These are diminishing the overall competitiveness of U.S. products abroad.

U.S. agricultural exports in FY 2024 are expected to be $170.5 billion, with higher exports of livestock and dairy offsetting reductions in grains and feeds, oilseeds, and horticultural products. Among the latter, whole and processed tree nuts exports are expected to total $9 billion, with processed fruit and vegetables at $7.7 billion.

3 The U.S. agricultural trade deficit has ballooned to $32 billion.

EXHIBIT 3: U.S.Agricultural Trade, Fiscal Years 2018-24



Source: USDA FAS, ERS

FOOD AND BEVERAGE

Price wars erupt even as inflation cools

By Billy Roberts

Nearly two years of considerably higher prices have led consumers to seek ways to stretch their food dollar *(Exhibit 1)*. The result: Not only reduced restaurant traffic *(Exhibit 2)* but growth in private label sales at retail, leaving brands struggling to remain front of mind for consumers.

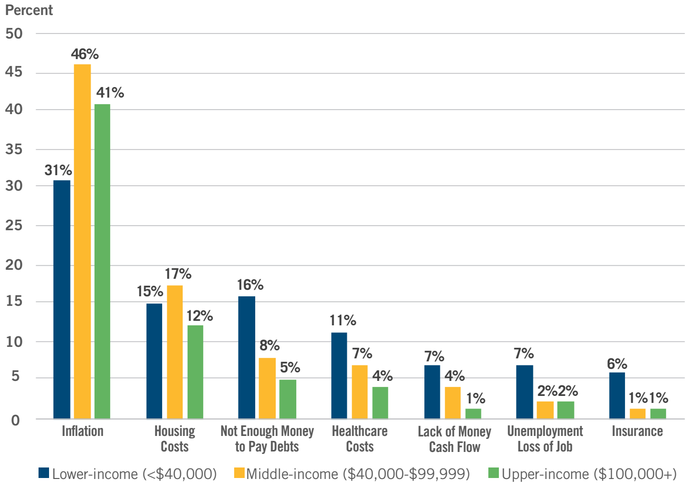
Recent financial reports from Campbell Soup, J.M. Smucker and other national food companies show continued consumer caution in categories including snacks, peanut butter and coffee. Now companies are looking to reverse volume declines that resulted from price increases. NielsenIQ data show that overall grocery sales (of shelf-stable goods not including fresh meat and produce) were up 3% for the 52 weeks ending May 25, reports the *Wall Street Journal*; however, unit volume sales declined 1.9%, as food prices in the center-store appear to have settled at levels nearly a third higher than before the pandemic. Campbell Soup has noted consumers are trading down to private labels and buying more on promotion; J.M. Smucker's most recent quarterly report likewise showed consumers "seeking a bit of value, particularly in coffee and peanut butter," the latter of which has seen "increased activity from private label."

The ongoing challenge for brands appears to be a price war brewing on two fronts, from private label within the grocery store and from restaurants' increasingly value-oriented messaging.

1 **Retail food and beverage brands have already endured volume erosion** **as consumers turned to lower-cost private label alternatives.**

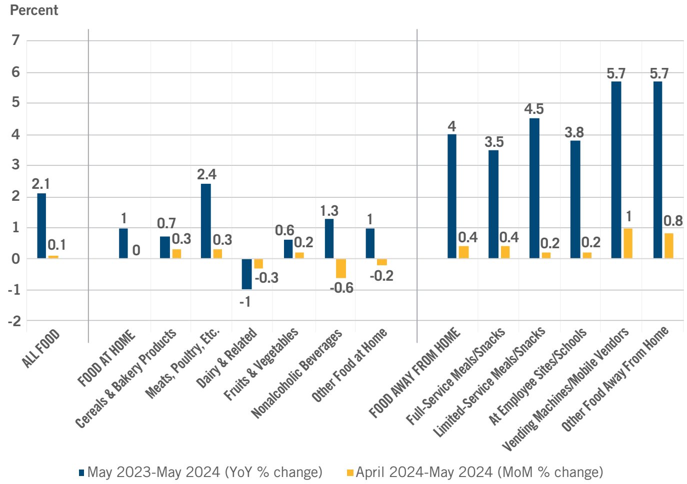
2 **Restaurants are bulking up their value-oriented offerings,** **a trend not confined to traditionally lower-cost fast-food chains.**

EXHIBIT 1: Financial Problems Facing U.S. Families, by Household Income



Source: Gallup survey "What is the most important financial problem facing your family today?," April 1-22, 2024

EXHIBIT 2: Percent Change in CPI For Food At and Away From Home (%)



Source: Bureau of Labor Statistics, Consumer Price Index, May 2024

The latter have seen a flourish of promotion activity, ranging from McDonald's and Burger King $5 value meals, which were met with Wendy's adding to its own $5 Biggie Bag options, as well as value-conscious offerings from Taco Bell and KFC. Cost-cutting has hardly been limited to quick-service restaurants, however. Buffalo Wild Wings' all-you-can-eat wings and fries promotion on Mondays and Wednesdays has led to record growth in foot traffic and a 74% increase in visits on the days the promotion ran, per Placer.ai data. Even Starbucks, seldom regarded as a value destination, has added a pairing menu: $5 for a drink and croissant, $6 for a drink and breakfast sandwich.

This value focus is hardly limited to restaurants. Retailers have announced price cuts even on their own brands. Walmart has added a 300-unit line of "chef-inspired" food options mostly in the $5-and-under range. Target is lowering prices on roughly 5,000 items ranging from coffee to pet food to bread. The company's most-recent financial data show a 3.2% drop in sales, the chain's fourth straight quarter of declines, as its "usual shopper prioritizes affording groceries over impulse purchases in the home goods aisle." Target's resulting price cuts were met with similar moves by Aldi, which cut prices on 250 items, and Amazon Fresh, which is dropping prices on some 4,000 items.

National grocery brands have largely avoided the cost-cutting fray, but increased deal-shopping among consumers and more options both at the store and at restaurants suggests the battle for volume recovery will demand a price-conscious approach. Mondelez International appears to be meeting the challenge head-on with adjusted pack sizes and price points. Similar moves have already been discussed among other companies, particularly those in categories where ingredient costs still are at or near record highs, such as chocolate confectionery, coffee and tea products, and certain condiments. In addition, many consumer packaged goods companies are trimming their portfolios and cutting underperforming products that hit margins and add complexity to their supply chain. Unilever, for example, plans a 20% reduction in its stock keeping units (SKUs), raw and packed materials, and number of suppliers; Hain Celestial launched a category-wide SKU rationalization in April; and Nestle has reduced a considerable number of units that were "essentially zero growth, zero profitability." More such efforts are likely, as companies look to maximize profitability and face both consumer backlash and brand erosion if they try to raise prices further.

3 **CPG brand response has been to trim prices and increase deals through retail promotions, portfolio pruning and supply chain optimization to maximize profitability.**

POWER, ENERGY AND WATER

Here comes the sun…and it's all right

By Teri Viswanath

Once again, temperatures this summer are on track to make it into the record books. NOAA's latest update shows that June's heat is lingering well into July and possibly beyond. Hot temperatures are in store for most of the country, with two centers of pronounced heat domes developing over the Middle Atlantic and the Rockies.

With the nine warmest years in history all in the last decade, scientists found heat wave temperature, frequency and duration are on the rise *(Exhibits 1,2,3)*. An article in the June edition of *Scientific American*, This Isn't Your Grandparents' Summer Heat, confirms that we are collectively facing more frequent, longer lasting and hotter heat waves than several decades ago. Most residents of major U.S. cities are now likely experiencing three times the number of heat waves vs. the 1960s *(Exhibit 4),* and for more days.

Heat waves kill more people than any other type of severe weather in the country and the well-known way to mitigate that risk is to stay inside with air-conditioning. The U.S. already boasts one of the highest rates of household air conditioning use in the world, up from 77% of households in 2001 to 88% in 2020. But the electric grid was conceived and engineered at a time of milder weather. The rising stake of meeting new weather-related challenges is not lost on grid operators.

1 Scientists are observing more frequent, longer lasting and hotter heat waves compared to several decades ago.

2 Grid operators are successfully engaging with the public to confront challenges posed by contemporary weather shocks.

EXHIBIT 1: Heat Wave Intensity

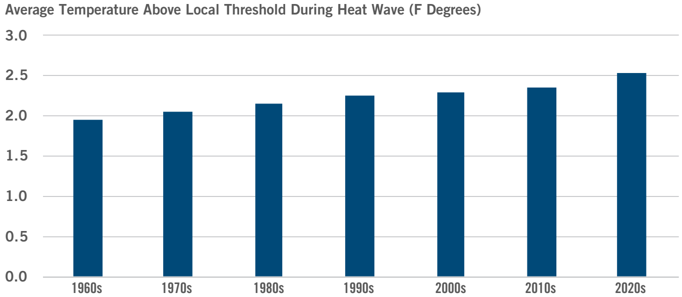


EXHIBIT 2: Heat Wave Frequency

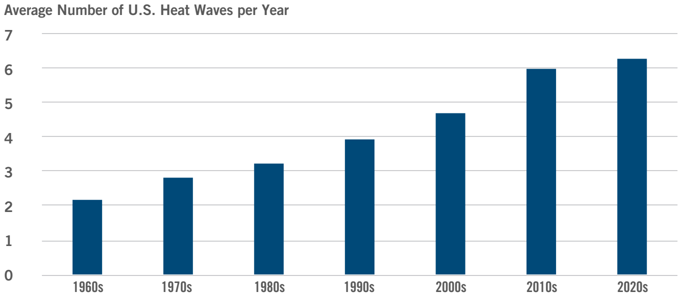


EXHIBIT 3: Heat Wave Duration

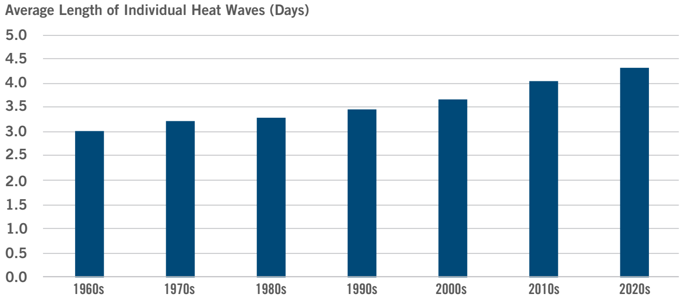
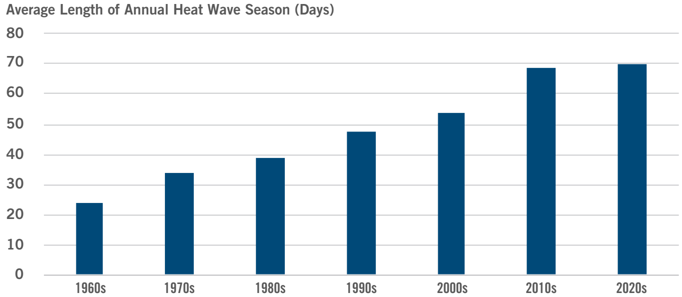


EXHIBIT 4: Heat Wave Season



Source: EPA's Climate Change Indicators in the United States

Each season these organizations customarily alert the public of the system strains that our contemporary weather shocks pose. Grid operators, state regulatory agencies and utilities are finding consumers themselves responding to intermittent extreme weather events by decreasing their demands on the grid. This is somewhat surprising, as power consumers have historically been deemed unreliable, as evidenced by the fact that utilities generally lump demand response into the category of non-dispatchable resources. Yet, formal price-based demand response programs combined with voluntary calls for conservation have worked and averted summer-time black-outs over the last several years. In fact, researchers at the Brattle Group conclude that demand response could provide the same resource adequacy benefits as a gas peaking resource or a utility-scale battery resource at 40% to 60% of the cost.

While ERCOT shows electricity use in Texas likely breaking peak-demand records for June and July, NERC's latest assessment generally reflects an industry that is up to the task. The summer assessment is a bit more encouraging than last year's due to a surge in solar power development.[1] The breakneck development of solar appears to be fortifying summer-time resiliency to the grid, as these panels perform reasonably well in summer when there is less chance for overcast weather.[2,3] This solar boost has helped some areas of the country move from what NERC calls "elevated risk" of power shortfalls in last year's analysis to "normal risk" this year. The agency notes, "all areas are assessed to have adequate supply for normal peak load due, in large part, to a record 25 GW of additional solar capacity being added since last year."

As we collectively look for ways to stretch the nation's reserve of power supply heading into warmer summers, we see expect that reliance on our neighbors and emerging resources will play a greater role in meeting the reliability challenges ahead.

3 NERC found areas that were previously at "elevated risk" have moved to "normal risk"
due to the addition of 25 GW of solar capacity since last year.

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[1] *Suparna Ray. "Solar and battery storage to make up 81% of new U.S. electric-generating capacity in 2024," U.S. Energy Information Administration in-brief analysis, Feb. 15, 2024. https://www.eia.gov/todayinenergy/detail.php?id=61424. EIA expects "a record addition" of new utility-scale solar power this year, about 36.4 gigawatts. More than half of that new capacity is planned for Texas, California and Florida. EIA expects more than 14 gigawatts of battery storage to be added this year as well.*

[2] *Paul Arbaje. "Extreme Summer Weather Threatens Gas Power Plants. Here's How.," Union of Concerned Scientists, Sept. 13, 2023. https://blog.ucsusa.org/paul-arbaje/extreme-summer-weather-threatens-gas-power-plants/ Extreme weather can pose a particular challenge to power plants, reducing output for thermal and renewable resources. When heat waves are extreme and persistent enough, gas plants can be "derated" -or reduced in capacity -beyond what's expected in the grid planning process. Or worse yet, they even can be forced completely offline unexpectedly. Gas plants that require cooling, like gas steam and combined cycle plants, are cooled less efficiently in high temperatures.*

[3] *Victoria Masterson. "Why don't solar panels work as well in heatwaves?," World Economic Forum, Aug 9, 2022. https://www.weforum.org/agenda/2022/08/heatwaves-can-hamper-solar-panels/*

DIGITAL INFRASTRUCTURE

M&A is reshaping operator strategy

By Jeff Johnston

Mergers and acquisitions in the digital infrastructure market have been robust for about five years as infrastructure funds and private equity sponsors gobble up companies to gain exposure to a fast-growing and critically important market. Strategic buyers have been active too as they look for opportunities to expand their coverage footprint and gain operating scale. But more recently operators are starting to either divest parts of their business to sharpen their focus or acquire new assets to diversify their revenue.

With some of its recent transactions, T-Mobile has been the most active wireless operator in the M&A market. The company has been acquiring fiber assets and additional wireless spectrum as it continues to build out its rural wireless footprint. As well, Shentel and TDS divested some of their wireless assets and plan to use the proceeds to invest in their fiber businesses.

T-Mobile's strategy underscores the importance of fiber assets but could portend more competition in the fiber market. The wireless giant recently announced a deal with EQT to acquire rural broadband operator, Lumos. And last year T-Mobile announced an open access fiber deal with Tillman FiberCo and SiFi Networks. More recently, it announced a $4.4 billion deal to acquire UScellular's operations and 30% of its spectrum. The wireless industry is close to saturation as most consumers already have a smartphone, and a good portion of the industry's growth in the postpaid market (its most valuable customers) is coming from the prepaid market. T-Mobile is acquiring fiber assets where the margins and growth prospects are more attractive.

Companies need scale to compete in the wireless industry, and compared to the three national wireless operators, UScellular was simply outmatched. Selling these wireless assets will enable TDS (UScellular's parent company) to pay down debt and focus its efforts and capital on the fiber market. This strategy is not dissimilar to recent moves made by Shentel. Shentel is selling its wireless towers to Vertical Bridge and plans to use the proceeds to expand its Glo Fiber business to approximately 600,000 homes and business passings by the end of 2026.

The race to build fiber networks in underserved and unserved markets is in full effect, causing rural broadband operators with non-fiber assets to reassess their strategy. Selling these assets and reinvesting the proceeds into their fiber networks seems like a prudent strategy given the high valuations these networks are fetching. And for the national wireless operators, adding complementary assets to their wireless network makes sense, and diversifying into the broadband market is also a sound strategy – especially given the success they've had in bundling smartphone service plans with fixed wireless broadband.

1 **Recent M&A represents a strategy shift as some operators shed non-fiber assets and double down on fiber.**

2 **T-Mobile's interest in the fiber market is growing with its deal to acquire Lumos and its various open access fiber network agreements.**

3 **With strong growth and rich margins, fiber to the premise is expected to grow more competitive.**

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