

Meat Supply Chains, COVID-19 and the Outlook for U.S. Agriculture

2020 FDRS Virtual Conference

October 13, 2020



The views expressed here are those of the speaker and do not necessarily reflect the opinions of the Federal Reserve Bank of Kansas City or the Federal Reserve System.

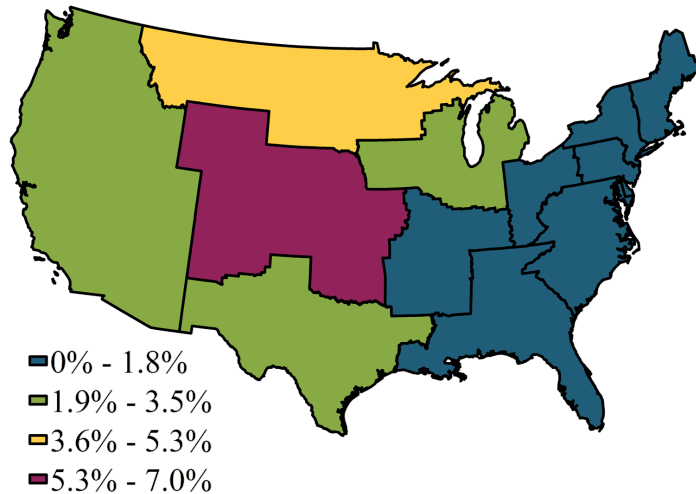
Cortney Cowley
Economist



The Kansas City Fed has a high concentration of agriculture and monitors conditions closely.

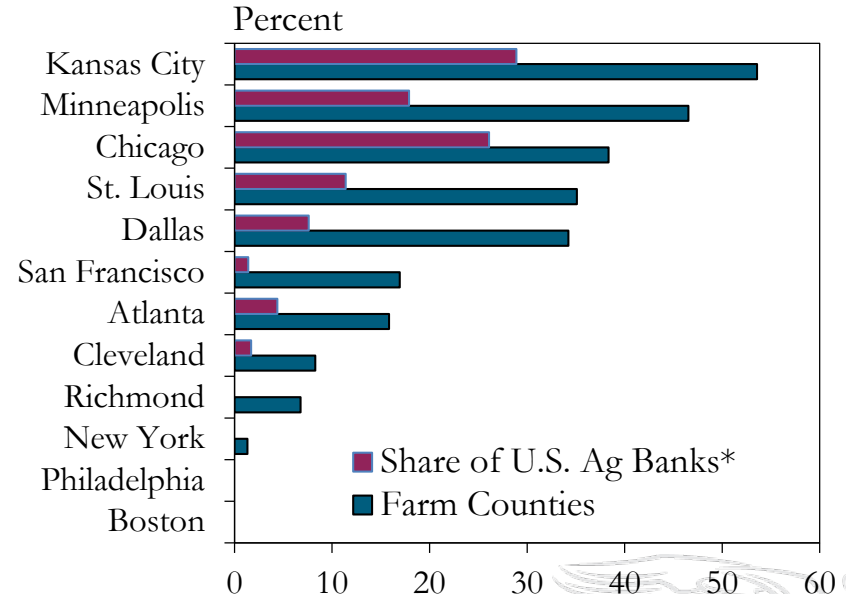
Average Farm Income as a Share of Total Personal Income

Average Across Counties by Fed District, 2015-2017



Source: BEA and staff.

Proportion of “Farm Dependent” Counties and Agricultural Banks



Source: BEA, USDA, Ag Finance Databook and staff

*Agricultural banks are defined as banks with farm production and farm real estate loans equaling approximately 18 percent or more of total loans.

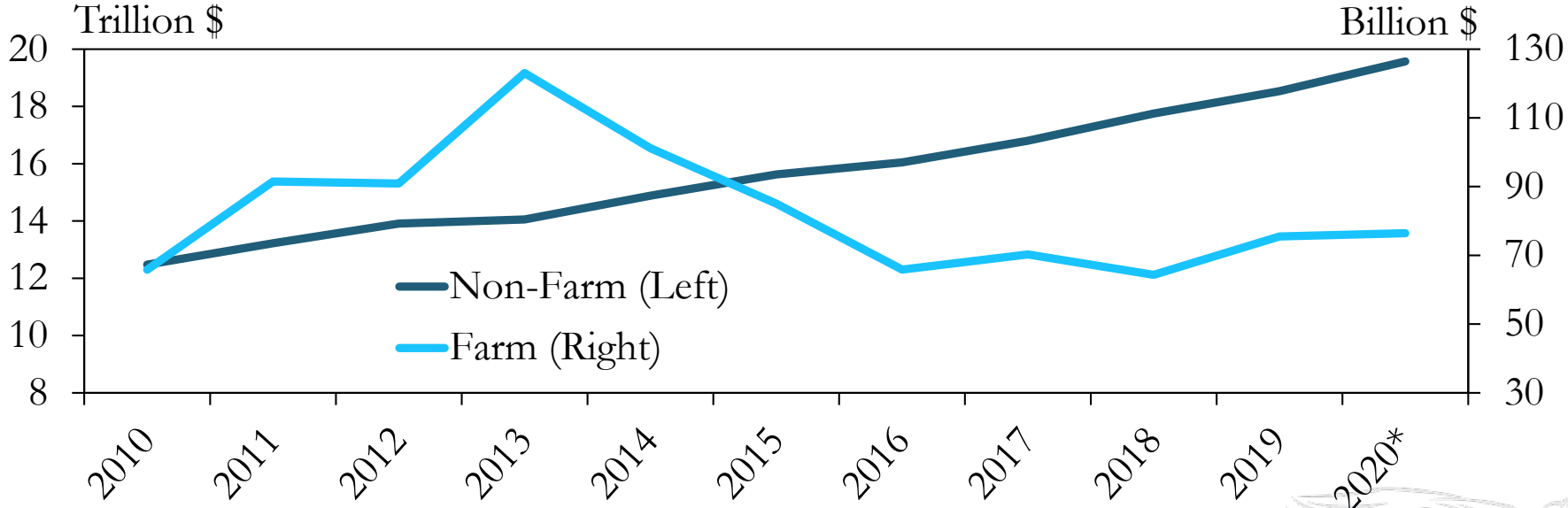
Outline

- In contrast to the broader economy, U.S. agriculture had been in a prolonged downturn even before the pandemic.
- Earlier this year, the emergence of COVID-19 in the United States created substantial challenges for all segments of the meat supply chain, but especially for producers and consumers.
- Economic conditions in agriculture have improved since April, but due in large part to government programs.



The U.S. agricultural economy had been in a prolonged downturn prior to COVID-19.

U.S. Personal Income



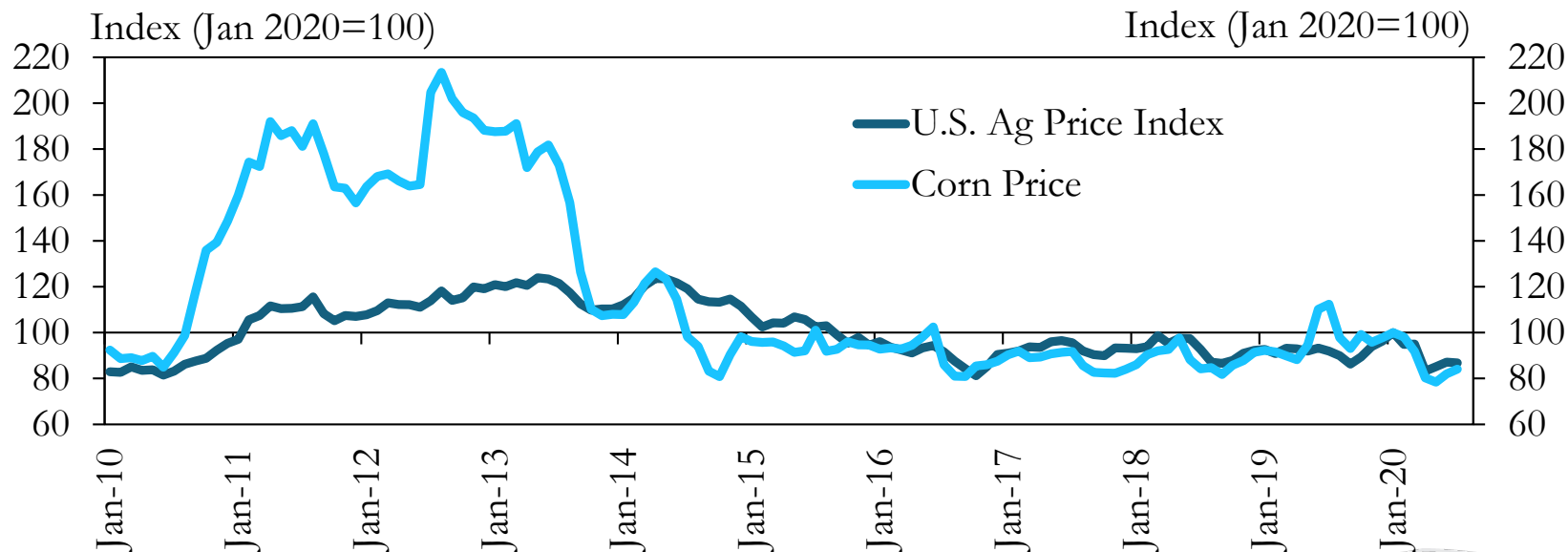
*Annual average through Q2 2020

Sources: U.S. Bureau of Economic Analysis and Haver Analytics.



Despite some variation across markets, agricultural prices had been flat for multiple consecutive years.

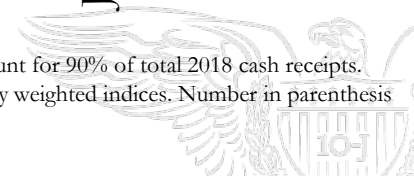
U.S. Agriculture - Price Index*



*2019 and 2020 weighted based on share of total 2018 agricultural cash receipts attributed to each individual commodity. Individual commodities allocated account for 90% of total 2018 cash receipts.

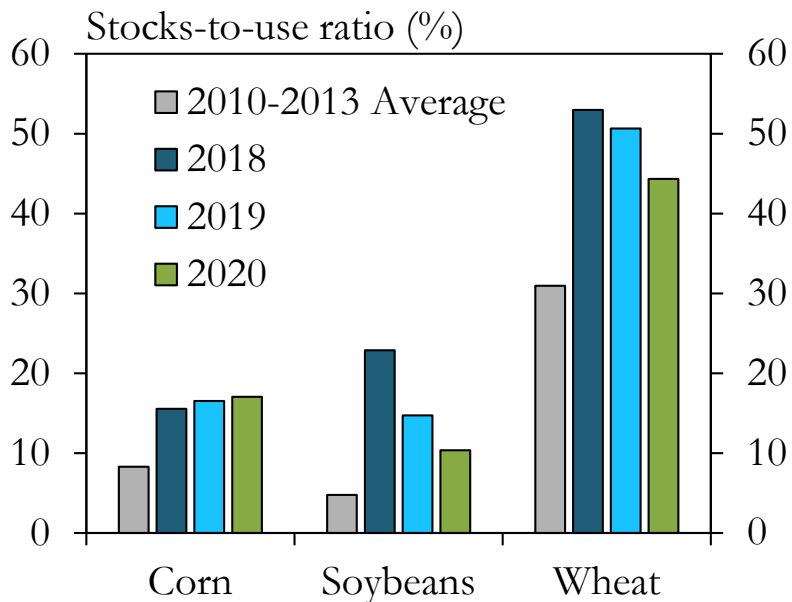
**Based on changes in weighted indices of individual commodities and corresponding contribution to the change from Jan. 2020 in the sum of those individually weighted indices. Number in parenthesis denotes share of total cash receipts.

Sources: USDA, WSJ and staff calculations.

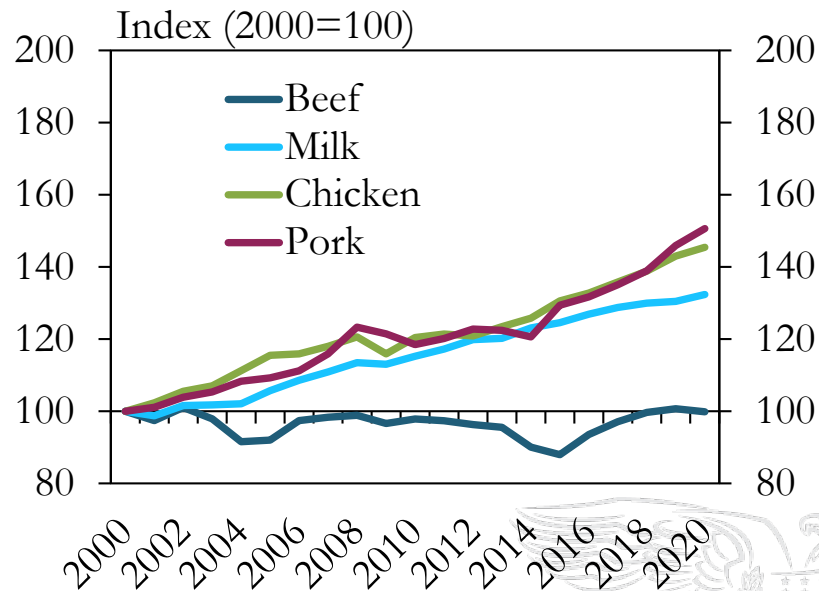


Record-setting levels of production and a build-up of inventories limited the potential for higher prices.

U.S. Crop Inventories



U.S. Production of Livestock & Dairy Products

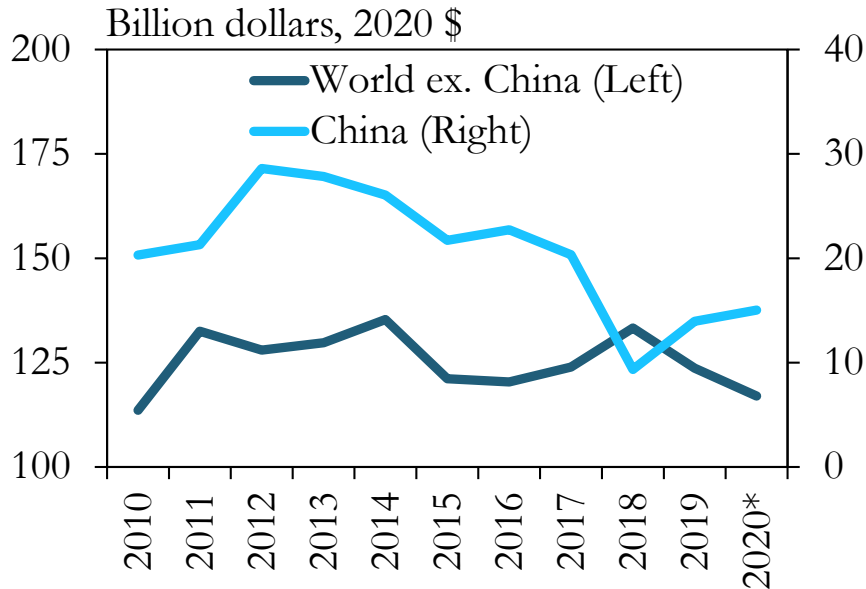


Source: USDA and staff calculations.

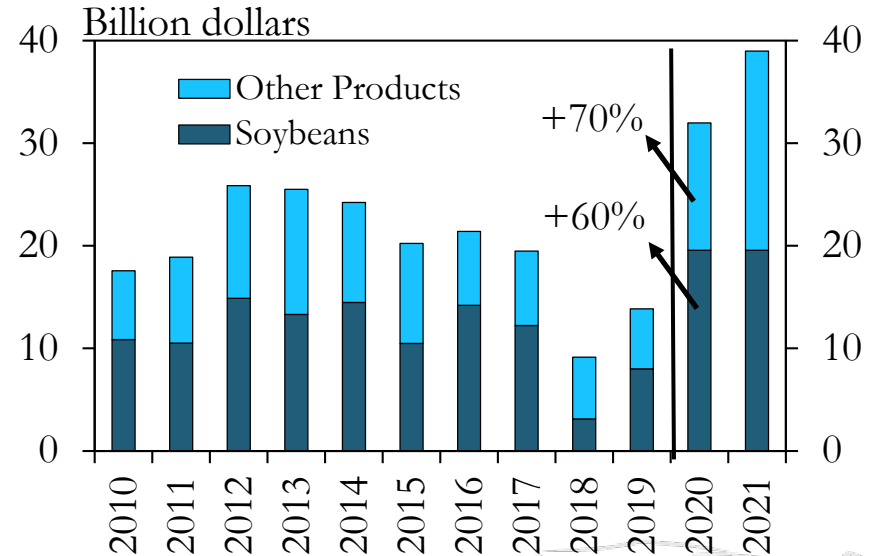


Trade disruptions have weighed heavily, despite some optimism in early 2020 on a trade deal with China.

U.S. Agricultural Exports



U.S. Farm Exports to China: “Phase 1” Trade Deal



*Exports from January 2020 to July 2020 annualized based on percent change from same period in 2019.

Note: Projections assume increases from 2017 baseline of \$12.5 billion in 2020 and \$19.5 billion in 2021. % Changes indicated percent increase in exports from 2017. A 60% increase in soybean exports to China would total 90% of all U.S. soybean exports.

Source: USDA, Bloomberg and staff calculations.



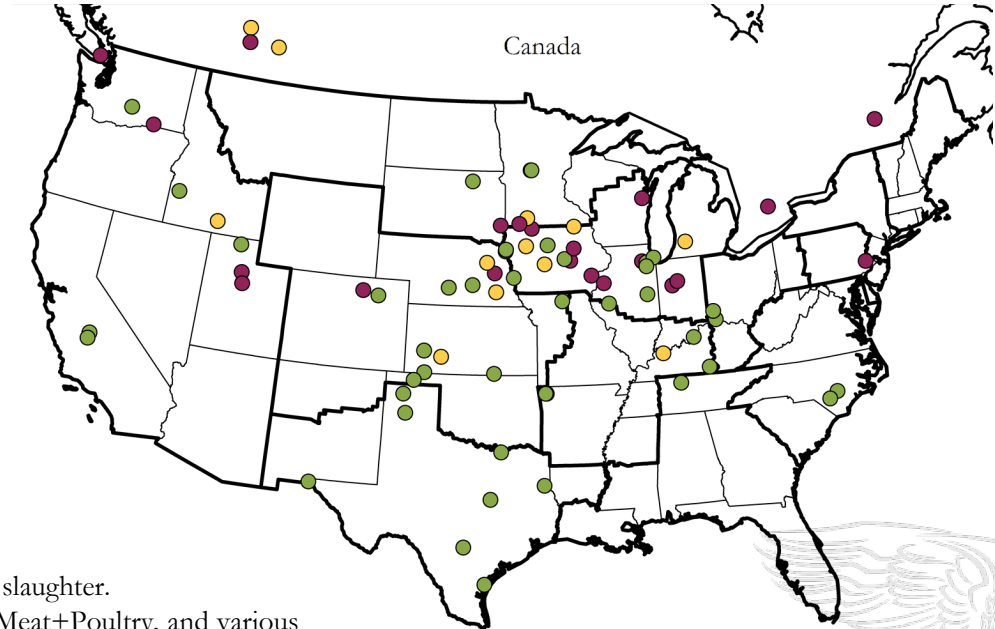
COVID-19 Disruptions in the U.S. Meat Supply Chain



Following the outbreak of COVID-19, closures at packing plants caused significant disruptions in meat supply chains.

Meat Packing Plants Affected by COVID-19

- Positive COVID-19 cases, but never closed
- Closed for less than one week - subsequently reopened
- Closed for more than one week - subsequently reopened



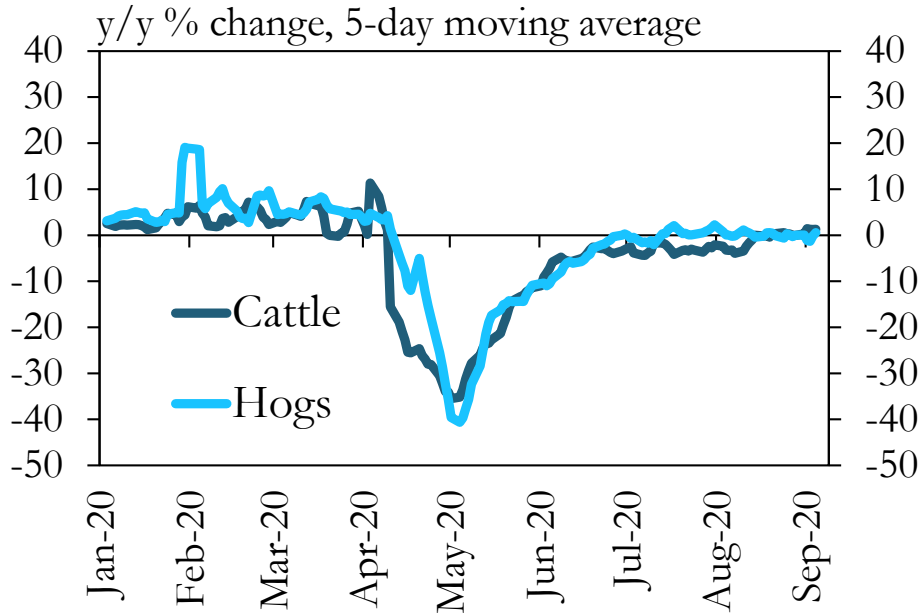
Note: Includes beef and pork plants that purchase animals for slaughter.

Sources: Food & Environment Reporting Network, Drovers, Meat+Poultry, and various local news outlets.

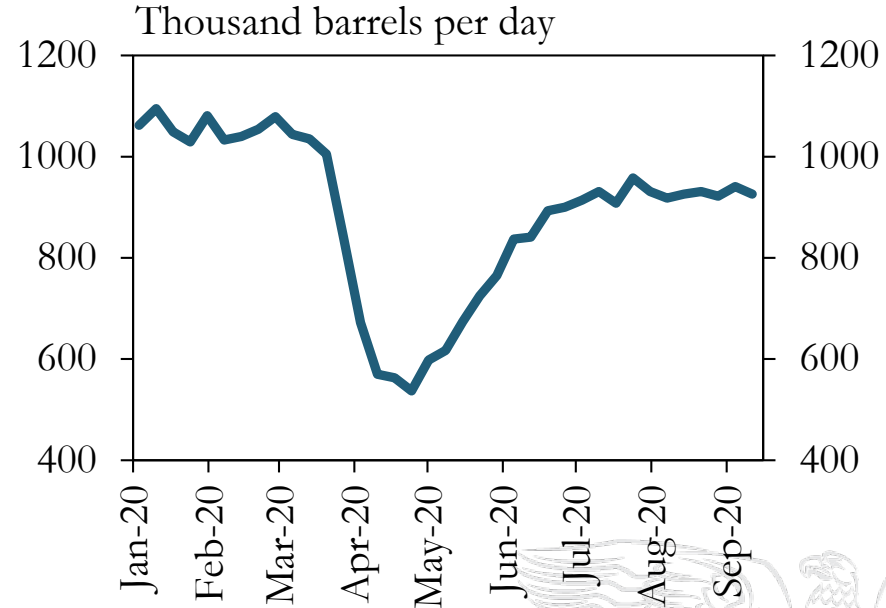


In April, the outlook for agriculture was very weak alongside slowdowns in meat production and other key market disruptions.

Cattle and Hog Slaughter



U.S. Ethanol Production

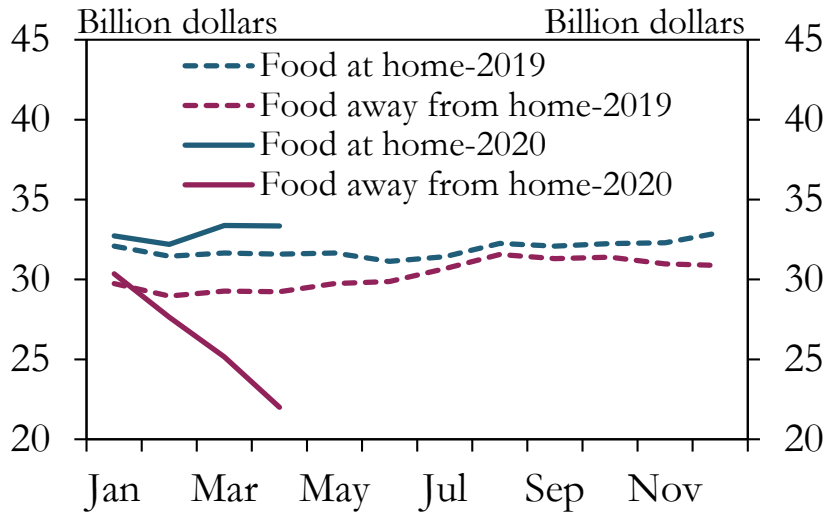


Sources: USDA, EIA and staff calculations.

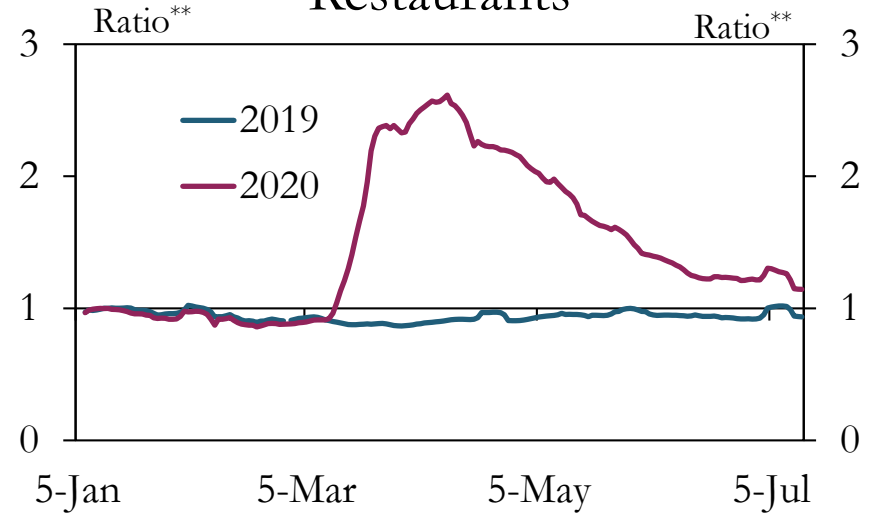


Rapid shifts in consumer demand also shocked supply chains following the emergence of COVID-19.

U.S. Monthly Food Expenditures*



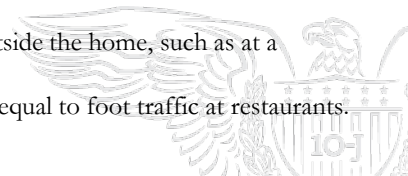
Foot Traffic at Supermarkets vs. Restaurants



* Food at home is food bought at a grocery store to be consumed at home. Food away from home is food bought and consumed outside the home, such as at a restaurant.

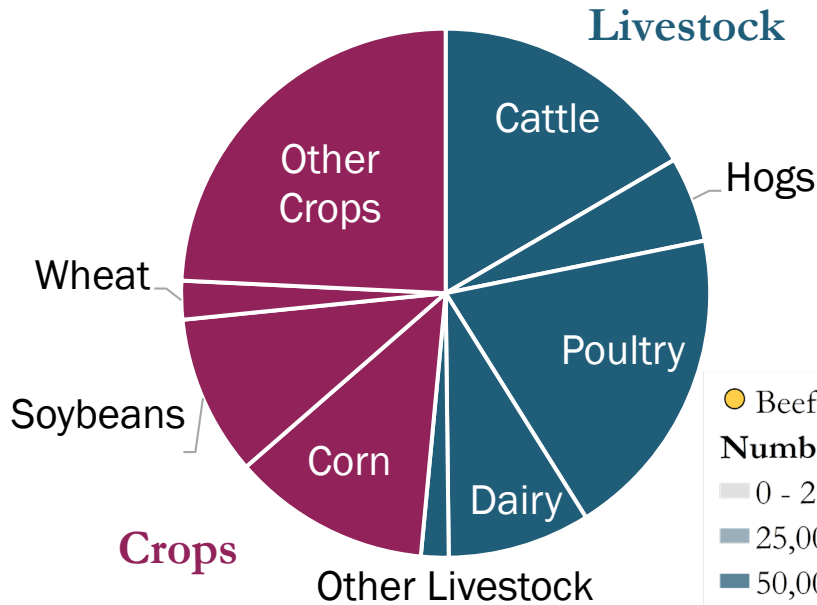
** Ratio of foot traffic at supermarkets to foot traffic at restaurants. A ratio equal to one indicates that foot traffic at supermarkets is equal to foot traffic at restaurants.

Sources: USDA and SafeGraph

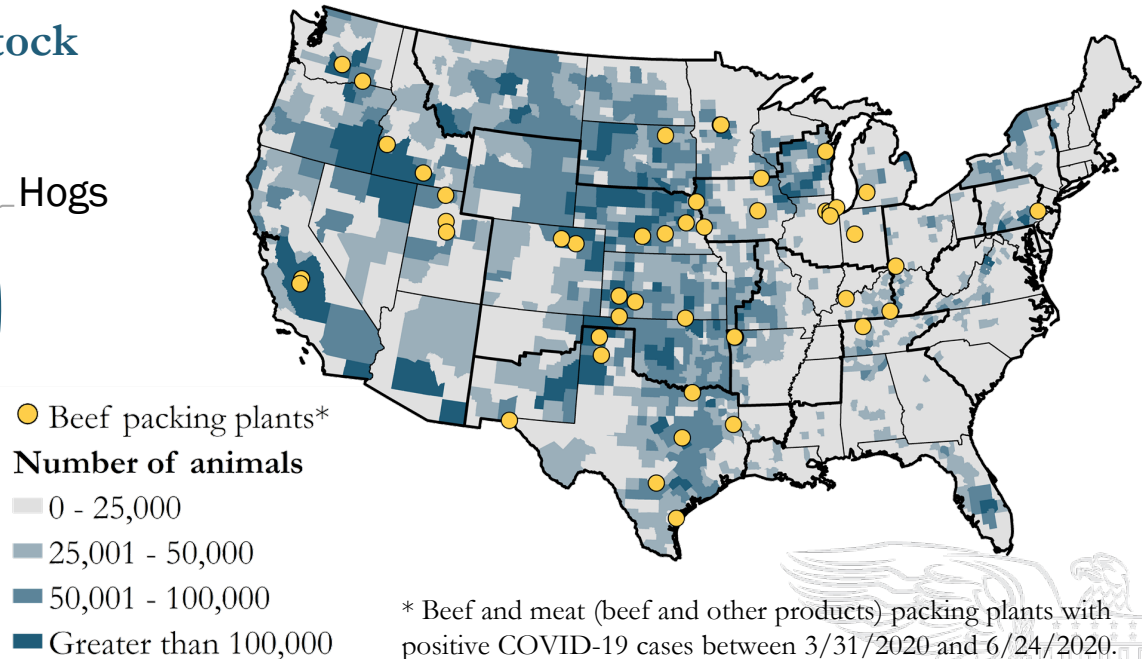


The livestock sector accounts for a large portion of the U.S. farm economy.

U.S. Farm Revenues



U.S. Cattle Inventories, by County

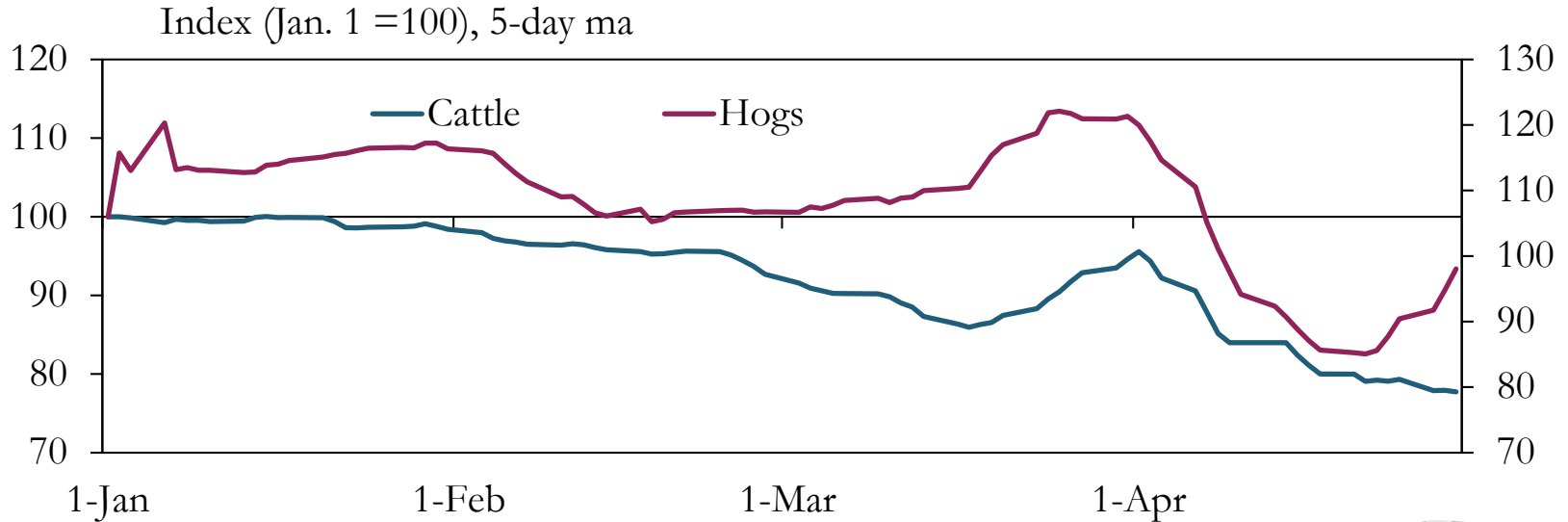


* Beef and meat (beef and other products) packing plants with positive COVID-19 cases between 3/31/2020 and 6/24/2020.

Source: USDA.

Amid disruptions related to COVID-19, agricultural commodity prices declined sharply.

Agricultural Commodity Prices

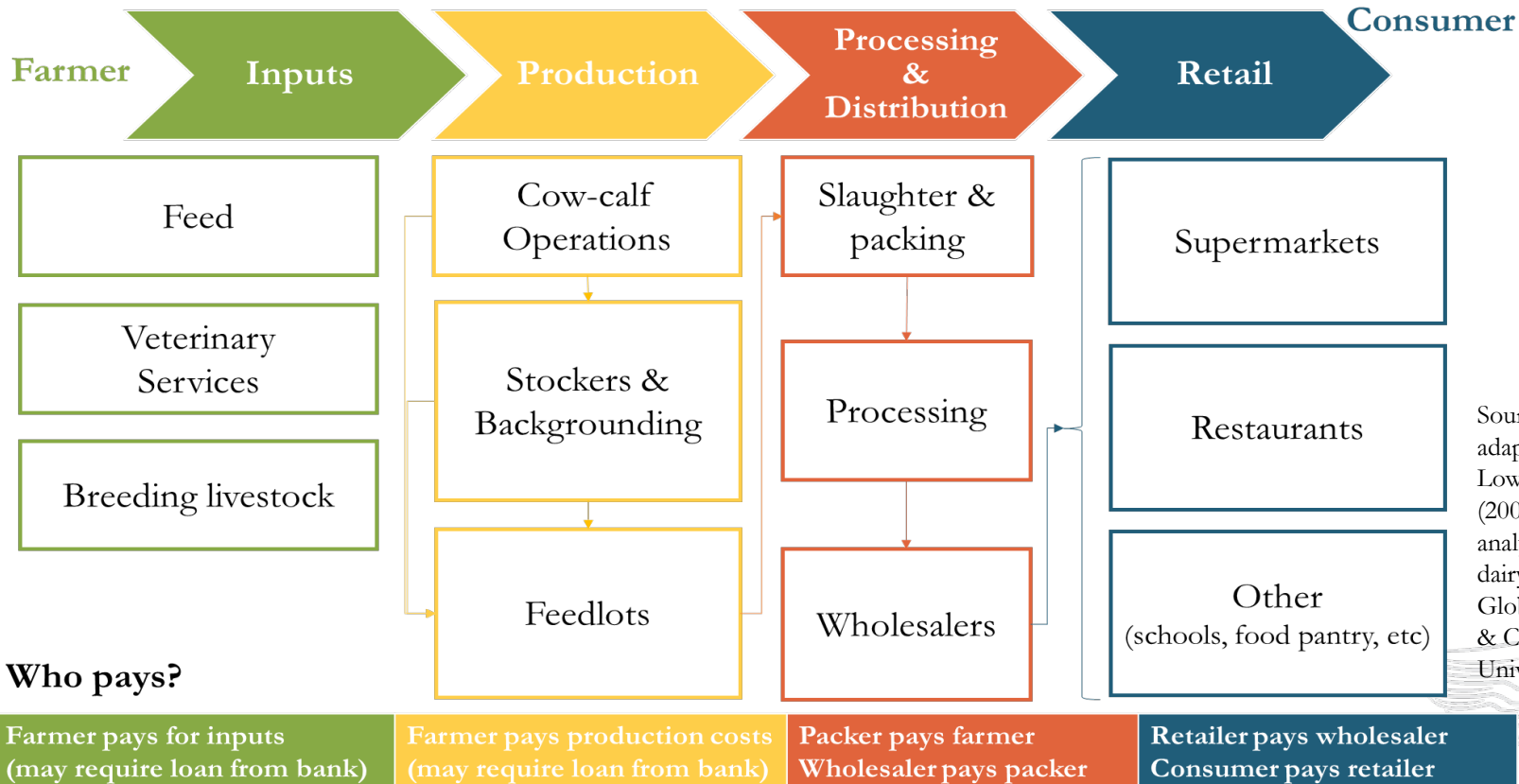


Notes: 2019 and 2020 are forecasts. Working Capital reported by USDA beginning 2012. Cattle: national 5-area-weighted average cash price for live FOB steers and heifers / Hogs: national purchase-type-weighted average cash price for barrows and gilts under all purchase types.

Source: USDA.



Disruptions in any one segment of the supply chain can have direct and indirect implications for other segments.

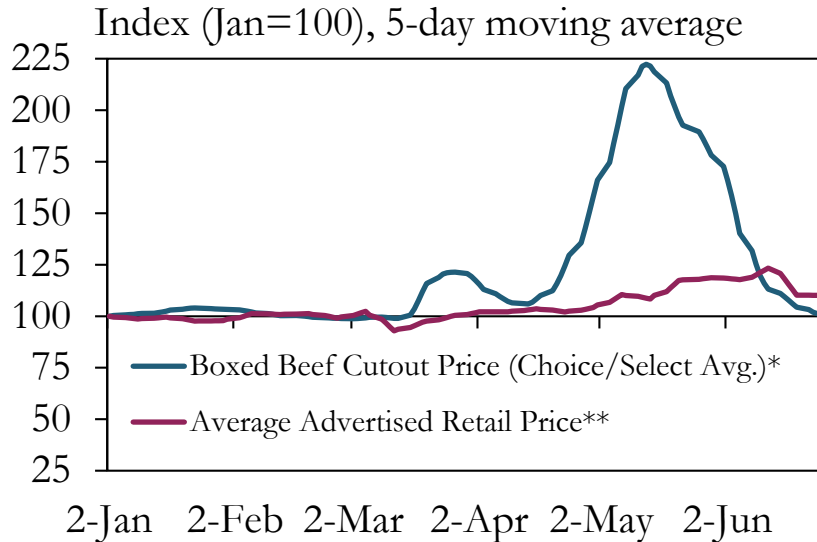


Source: The chart was adapted from a figure in Lowe, M., and Gereff, G. (2009). A value chain analysis of the US beef and dairy industries. Center on Globalization, Governance & Competitiveness, Duke University.

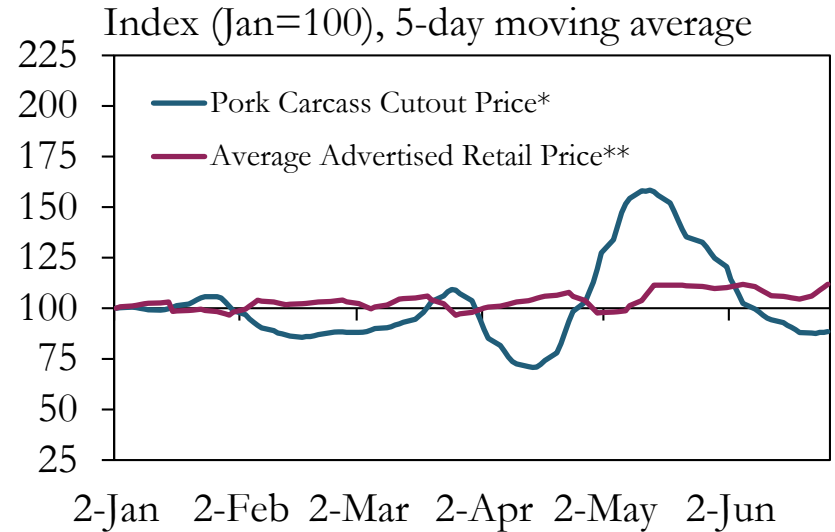


Wholesale prices increased dramatically, which led to higher retail prices for consumers.

Wholesale and Retail Beef



Wholesale and Retail Pork

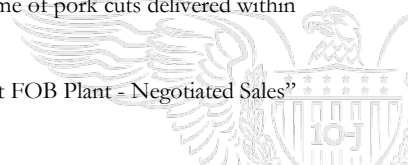


*Beef: negotiated prices and volume of boxed beef cuts delivered within 0-21 days and on average industry cutting yields. Pork: negotiated prices and volume of pork cuts delivered within 14 days and on average industry cutting yields.

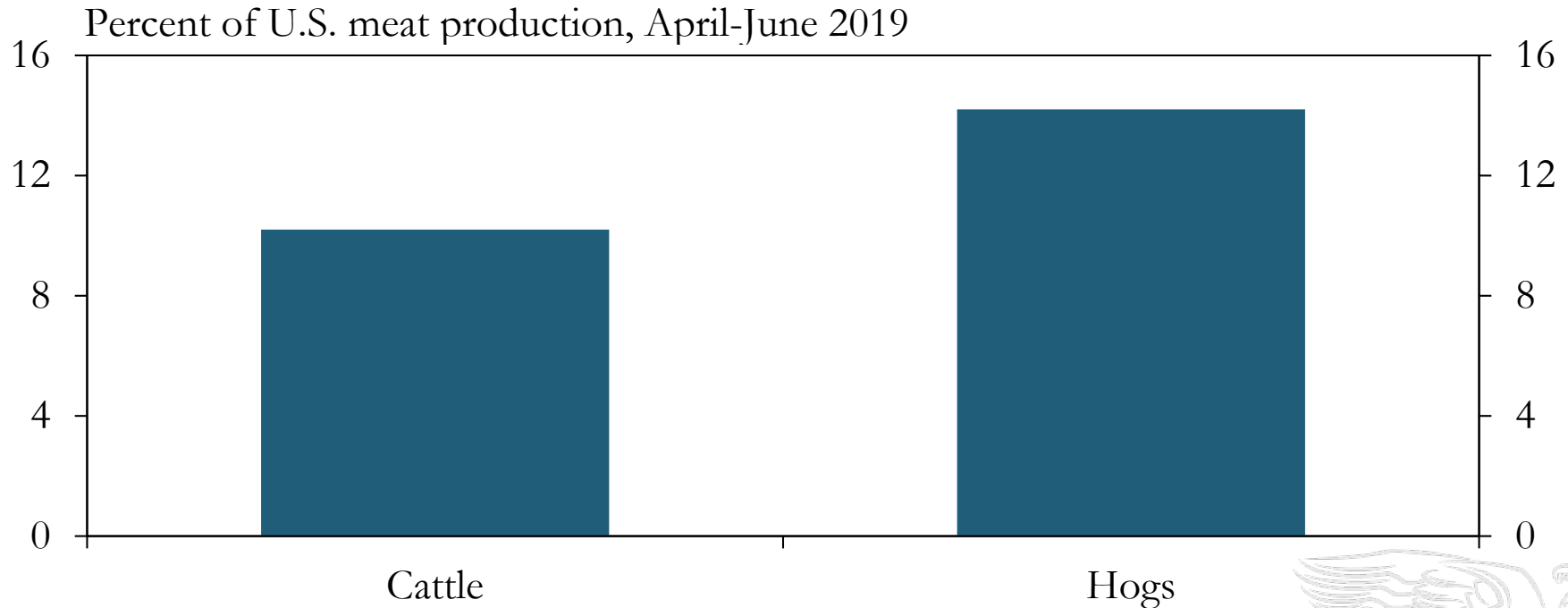
**Based on weekly national average of advertised prices, weighted based on carcass composition and interpolated to daily

Note: Wholesale represented by reports of "National Daily Boxed Beef Cutout And Boxed Beef Cuts - Negotiated Sales" and "National Daily Pork Report FOB Plant - Negotiated Sales"

Sources: USDA and staff calculations.



And disruptions at meatpacking plants created an oversupply of animals on farms.

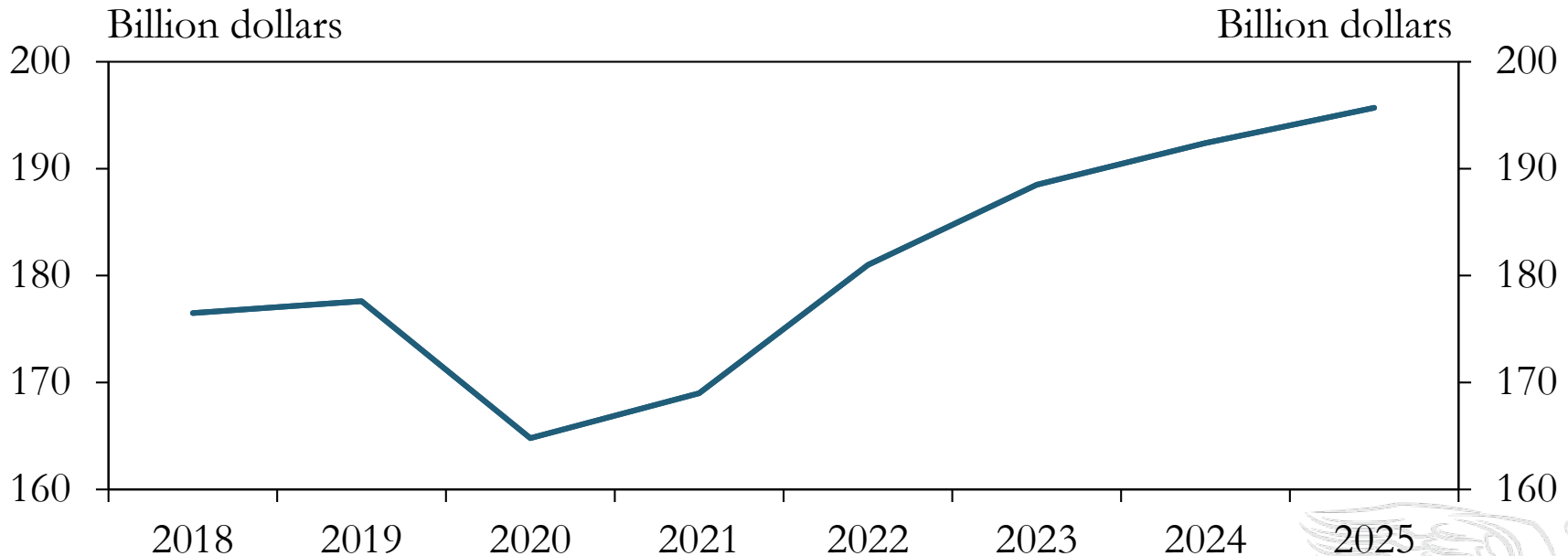


Sources: USDA, National Pork Board, and KC Fed Calculations.



Reduced demand for livestock has further weighed on the outlook for farm finances in 2020.

Farm Revenues in the Livestock Industry

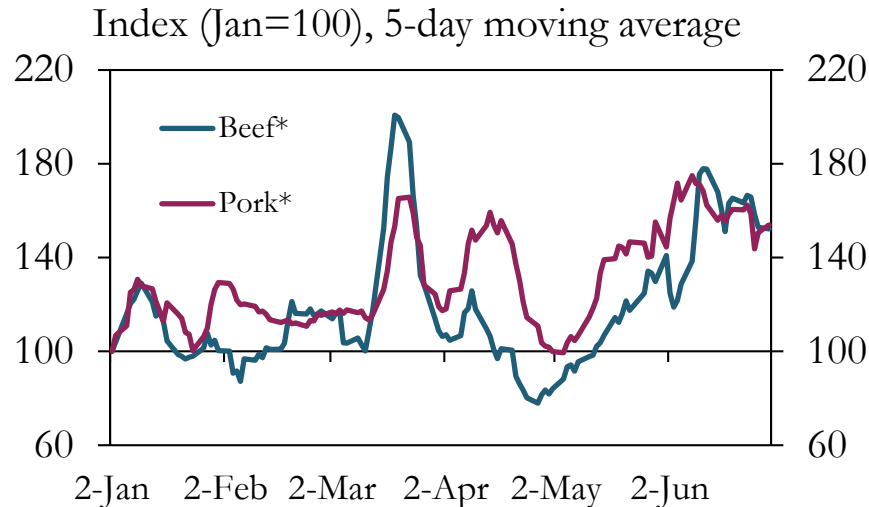


Source: University of Missouri Food and Agricultural Policy Research Institute

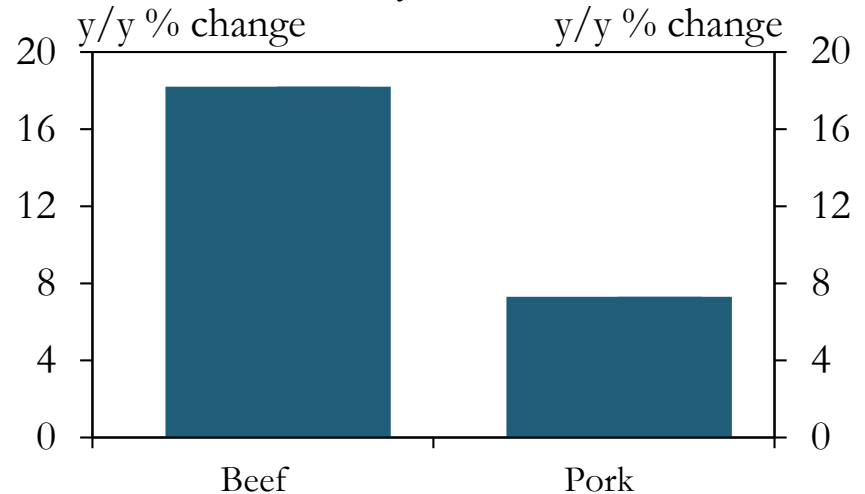


Higher demand for meat at grocery stores amid reduced supplies placed additional inflationary pressure on retail prices.

Beef and Pork Purchases



Consumer Price Indexes for Meat, May 2020



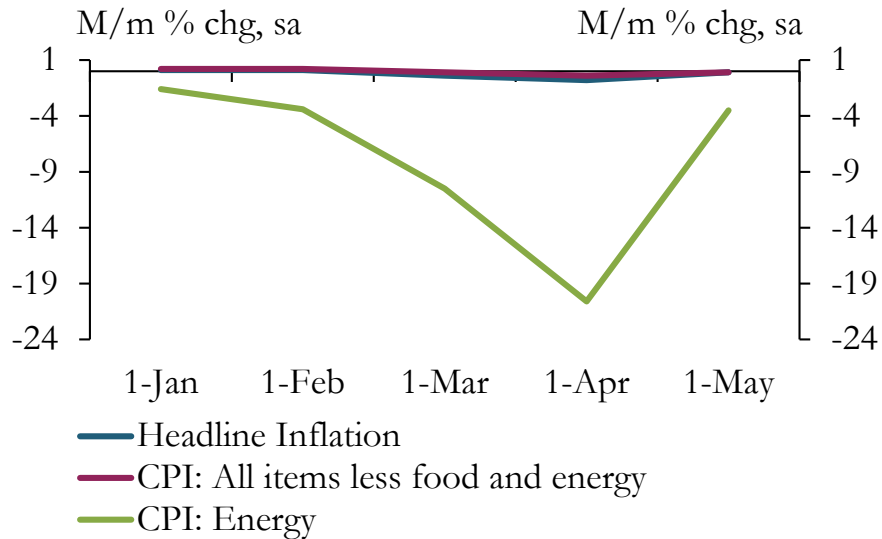
*Beef: negotiated volume of boxed beef cuts delivered within 21 days and on average industry cutting yields. Pork: negotiated volume of pork cuts delivered within 14 days and on average industry cutting yields.

Sources: U.S. Bureau of Labor Statistics, USDA, and staff calculations.

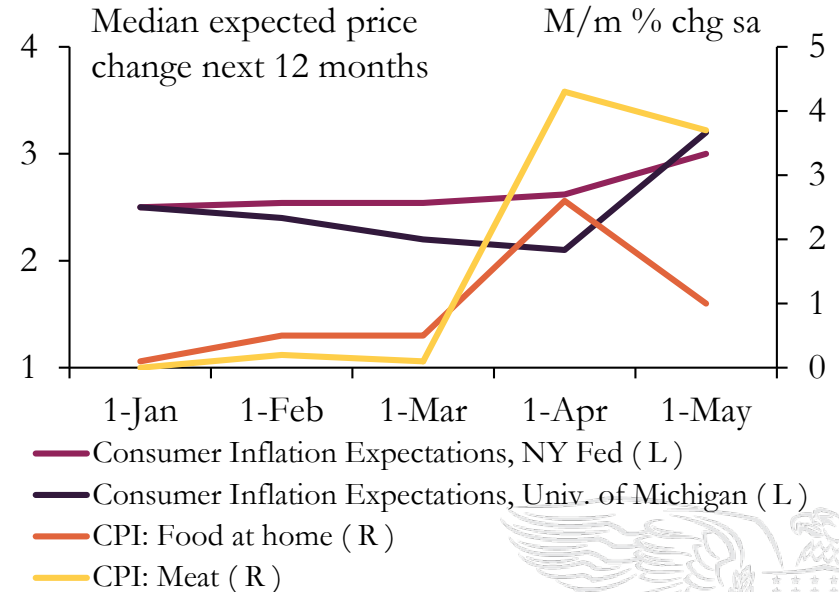


In fact, food prices may have been the most prominent price change driving consumer inflation expectations.

Headline Inflation and CPIs for Energy and All Other Items



Consumer Inflation Expectations and CPIs for Food and Meat

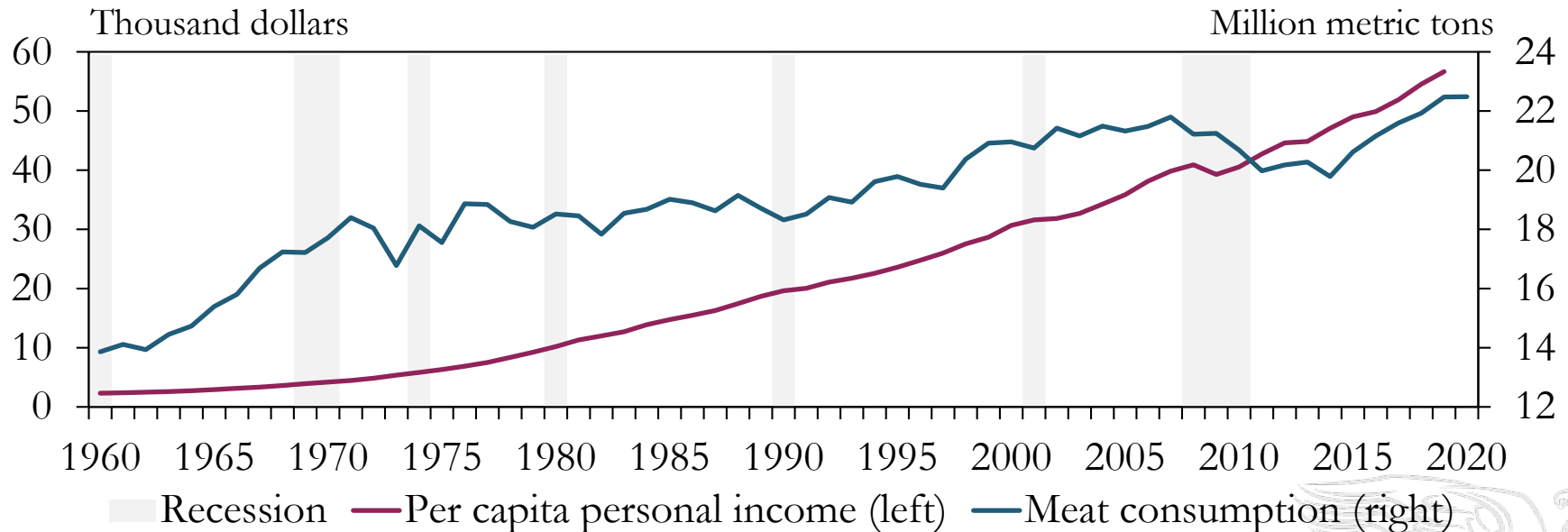


Sources: BLS, NY Fed, and Univ. of Michigan (FRED)



As retail prices increase during an economic downturn, some consumers may buy less meat.

U.S. Per Capita Income and Meat Consumption

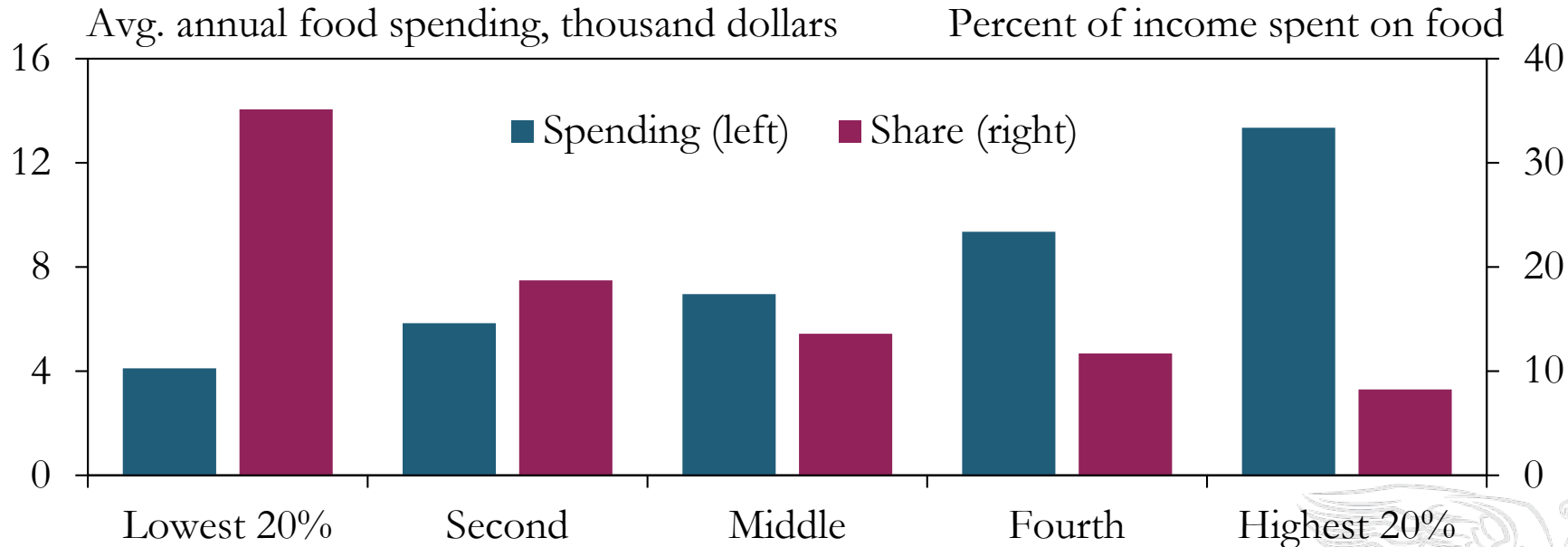


Sources: BEA and USDA.

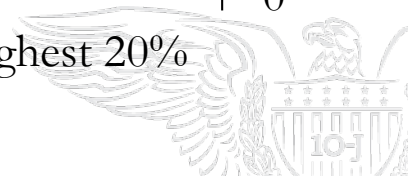


Higher prices may also limit the ability of some households to purchase meat..

Food Spending across U.S. Households by Income Group, 2018



Sources: BLS.

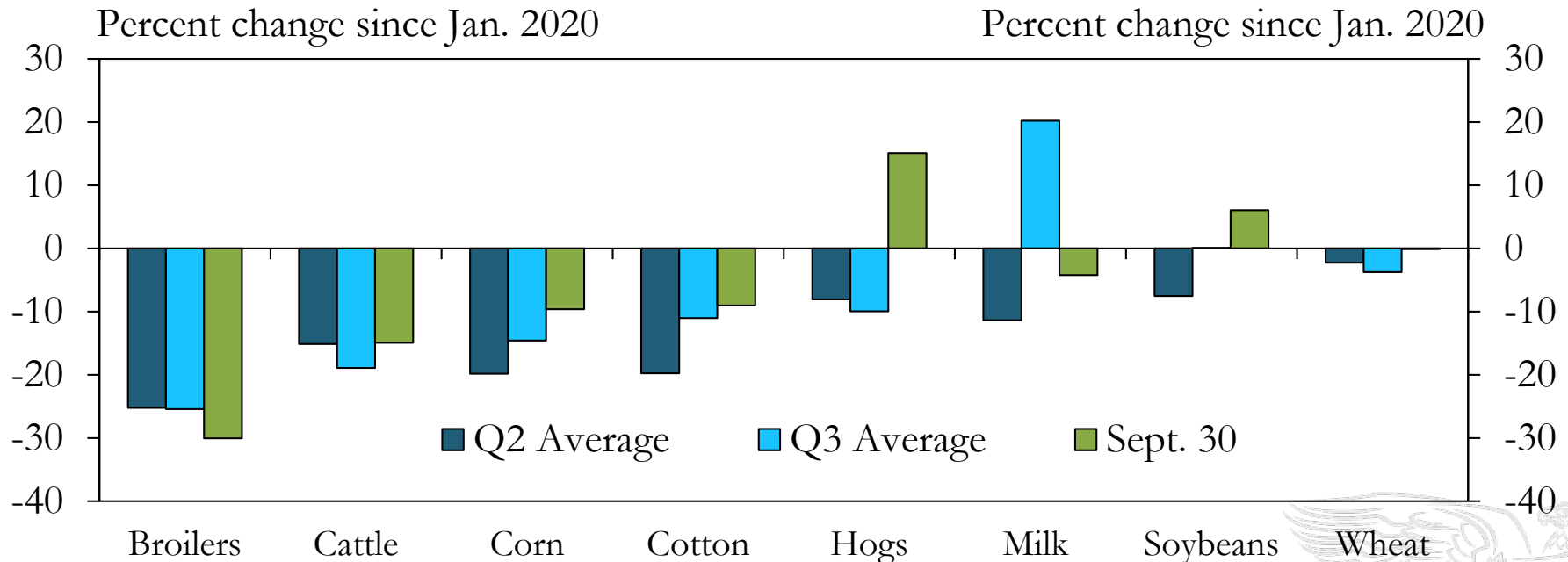


The Outlook for the U.S. Agricultural Economy



The prices of some ag commodities have improved slightly since April, but most remain low.

Agricultural Commodity Prices

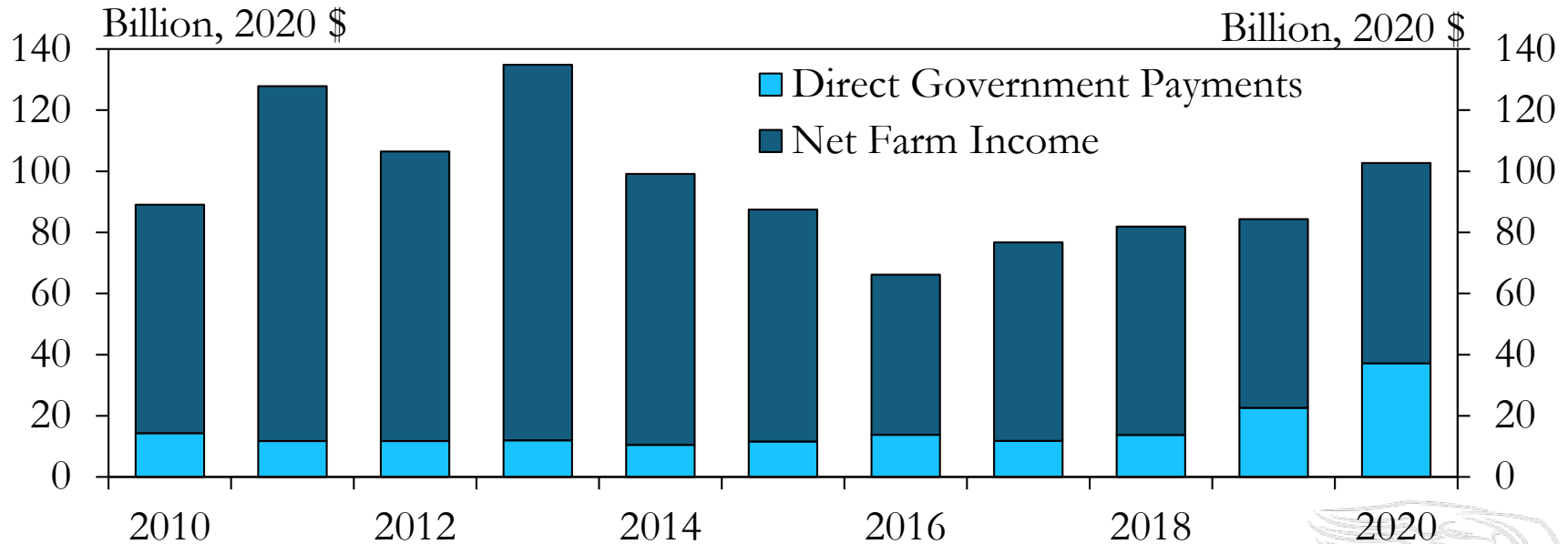


Sources: CME, WSJ and Haver Analytics.



Farm income is expected to be notably higher than a year ago, largely because of government payments.

U.S. Net Farm Income

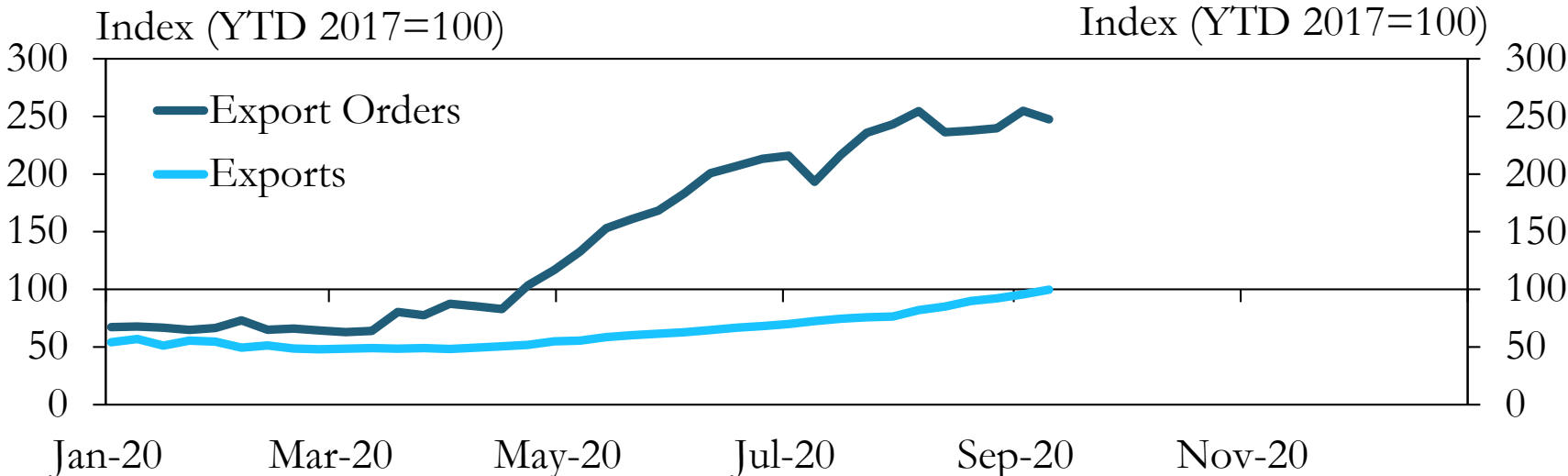


Source: USDA.



Trade prospects picked up this summer and will depend crucially on future shipments to China.

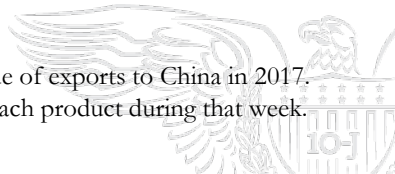
Sales and Exports of Agricultural Products to China



* Includes exports and sales of soybeans, cotton, sorghum, pork, wheat and corn. Listed commodities accounted for approx. 70% of total value of exports to China in 2017.

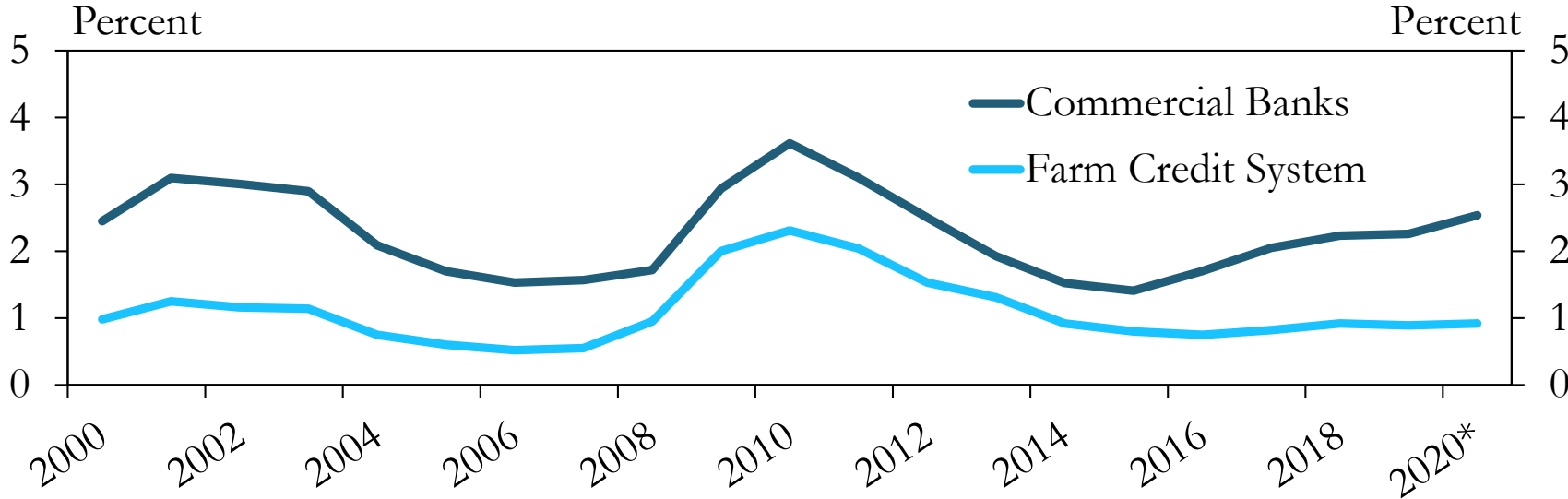
Note: Total quantity of weekly exports and sales of each commodity for current and next marketing year multiplied by average spot price for each product during that week.

Sources: USDA and staff calculations.



Delinquency rates on farm loans have trended higher, but the increases have been modest.

Farm Loan Delinquency Rates



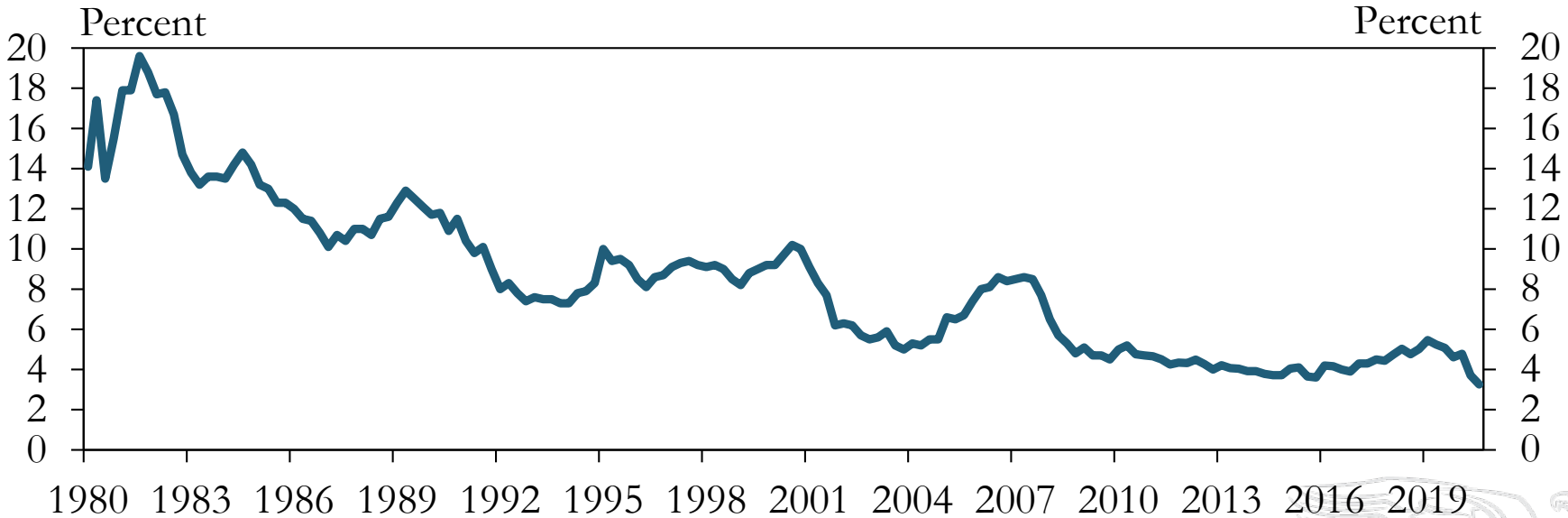
*As of Q2 2020

Sources: Board of Governors and Farm Credit Administration.



Historically low interest rates have also eased some pressure on farm finances.

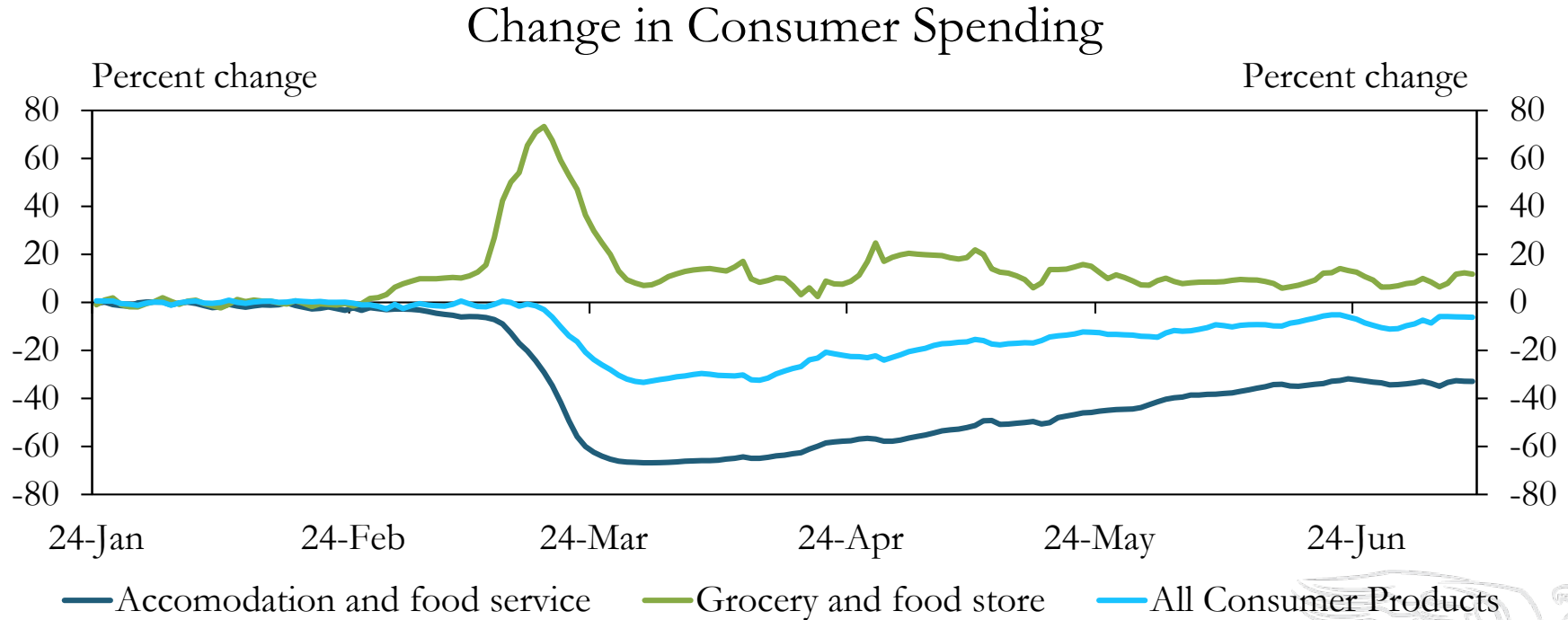
Interest Rates on Non-Real Estate Farm Loans



Sources: Agricultural Finance Databook and Federal Reserve Bank of Kansas City.



Consumer spending patterns are slowly going back to pre-pandemic levels.



Sources: Affinity Solutions, Track the Recovery

Note: Change is relative to January 4-31.



Concluding Thoughts

- The U.S. meat supply chain has been resilient, and the potential for severe difficulties in agriculture associated with the pandemic has lessened, for now.
- Concerns appear likely to reemerge, however, in early 2021 as government support fades, and the outlook depends on underlying market conditions.



Questions?

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For more information:

<https://www.kansascityfed.org/research/agriculture>



