

U.S. Retail Pork Price Inflation

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Table of Contents

Executive Summary

Introduction1

Pork Price Inflation1

Factors Driving the Increase in Retail Pork Prices3

 Demand for Pork 3

 Cost of Production 4

 Labor Shortage 6

 Slower Line Speeds and Reduced Packing Capacity 6

 Transportation Challenges 7

Retail, Wholesale, and Farm Values and Price Spreads8

Food Inflation Outlook10

Executive Summary

Meat prices, including retail pork prices, have increased rapidly in 2021. This appreciation was particularly notable during the fall of this year. This report explores the forces that have contributed to this increase. Wholesale and farm level prices were high during the summer due to strong domestic and international demand, but they have since fallen to more normal levels. Pork production costs also increased during this period such that farm level profitability remained within a normal range. Packer margins are right at their five-year average. The increase in retail prices this fall at a time when wholesale and farm level prices were falling was likely driven by a lagged response to high wholesale prices during the summer, increased transportation costs, supply bottlenecks and delays, and increased labor costs in retail outlets and distribution centers.

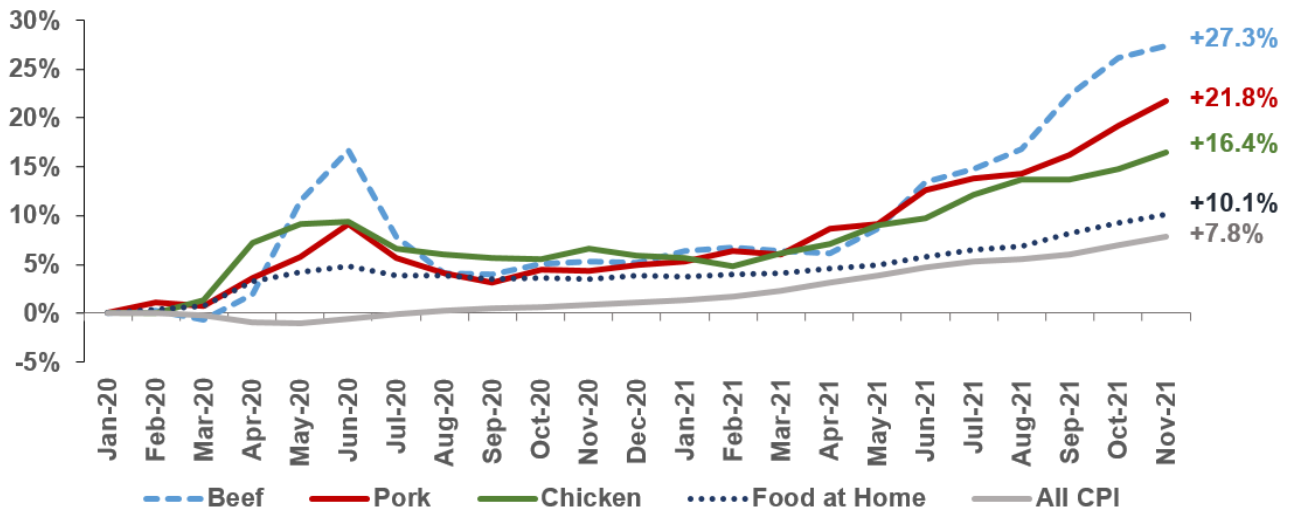
Introduction

The seasonally adjusted consumer price index (CPI) for all goods and services was 6.9 percent higher in November than the 12 months prior, representing the greatest year-over-year increase in 30 years. As prices for all goods continue to rise, recent news headlines have taken a particular interest in the factors impacting food and meat prices. The purpose of this report is to document the size and sources behind the recent increase in pork prices.

Pork Price Inflation

Figure 1 shows the retail price index for beef, pork, and chicken as a percent change since January 2020. Since that time, beef prices have increased 27.3 percent, pork prices have increased 21.8 percent, and the price of chicken is 16.4 percent higher. A sharp increase in prices is observed from March to June of 2020 as many large packing plants shut down or slowed production due to COVID-19 outbreaks. At this time, the price of hogs and cattle saw dramatic movement in the opposite direction. Pork and beef prices then stabilized as the industry regained processing capacity, falling by 4.7 and 10.8 percent respectively from June to August 2020. Prices for all three meat commodities have begun rising more steeply in recent months and have outpaced the rising food-at-home price index (+10.1 percent) and the CPI for all goods (+7.8 percent) over the same period.

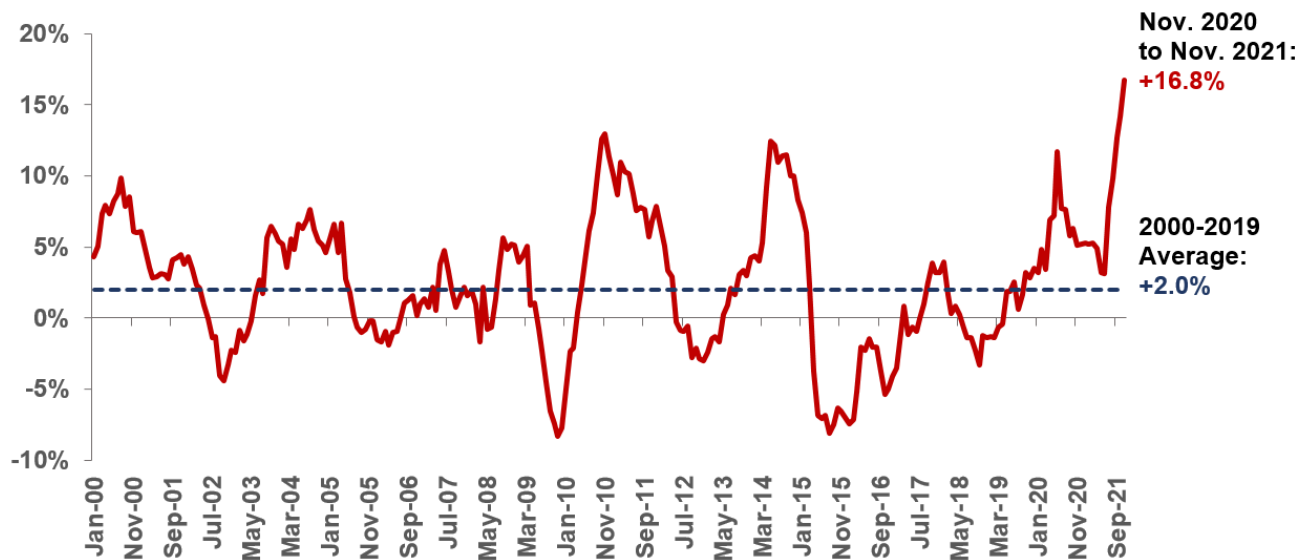
Figure 1: Price Changes since January 2020, Seasonally Adjusted



Source: Bureau of Labor Statistics

Looking specifically at pork, Figure 2 shows the year-over-year change in monthly pork prices. From November 2020 to November 2021, pork prices increased 16.8 percent. Prior to the pandemic, consumers had not seen such a sharp annual increase in prices since 2014 when disease-related death losses from PEDV significantly reduced the supply of hogs, resulting in higher hog and eventually higher pork prices. Given the low food inflation rates in recent memory, it is no wonder that current meat prices have been causing sticker shock across the country.

Figure 2: Price of Pork, Year Over Year Percent Change, Seasonally Adjusted



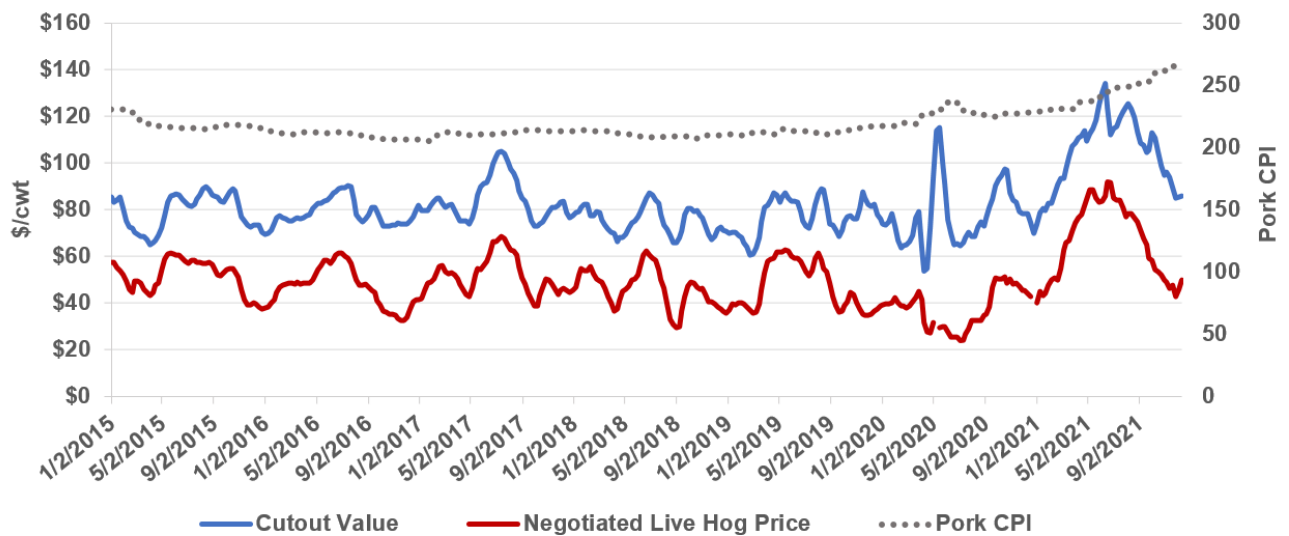
Source: Bureau of Labor Statistics

Factors Driving the Increase in Retail Pork Prices

Retail pork prices are determined by the supply of hogs and demand for pork. The farm-level supply of hogs, though relatively fixed in the short run, is determined by the cost of production and expected returns. While pork producers are not able to directly raise prices and pass their costs along to retail consumers, higher input costs and negative returns will impact the supply of hogs over longer periods of time which can lead to higher prices. In the long run, producers who are not profitable will exit the industry or reduce their breeding herds.

Figure 3 below shows the cutout values (the value of the meat sold by packers) and farm level live hog prices as well as the pork CPI. As supply chain disruptions moderated in early 2021, strong domestic and export demand supported the strengthening of pork and hog commodity prices. Live hog prices and cutout values have fallen from summer highs, but retail prices continue to climb.

Figure 3: Weekly Cutout Values, Weekly Negotiated Hog Prices, and Monthly Pork CPI

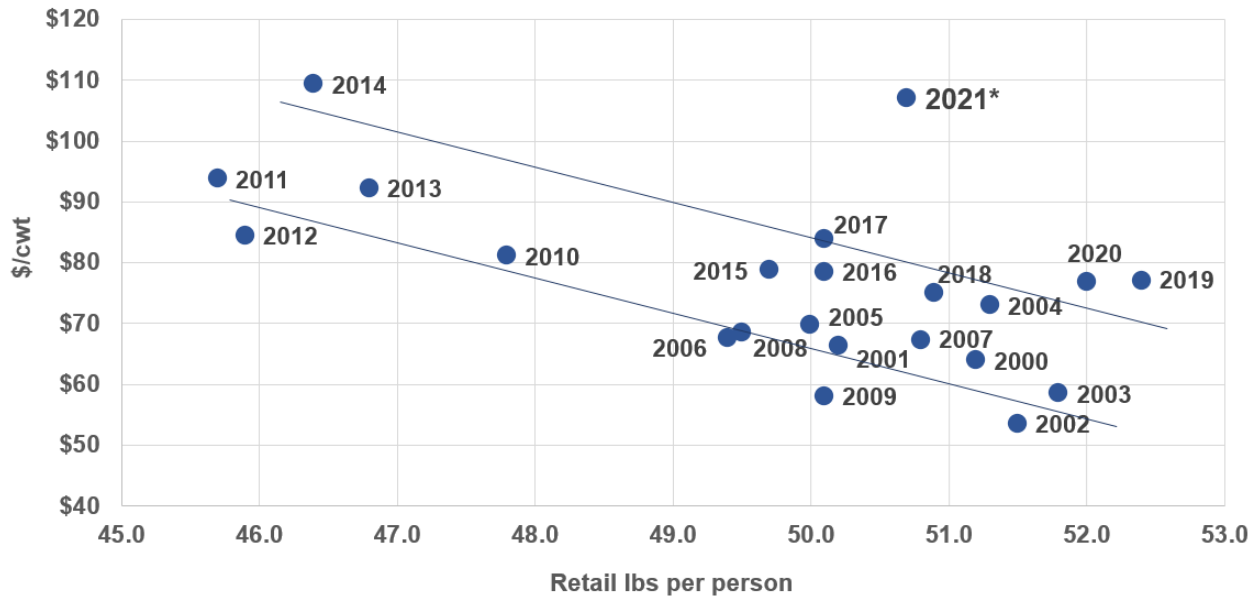


Source: AMS, LMIC, BLS

Demand for Pork

Strong pork demand is best depicted by Figure 4, which shows negotiated cutout values relative to per capita pork availability. In most years, when the quantity of pork supplied to the market increases or decreases, the price adjusts and there is movement up and down the demand curve. In 2014, the pork demand curve shifted as consumers showed they were willing to pay higher prices for pork after PEDV. In 2021, consumers again showed that they were willing to purchase greater quantities of pork at alternative prices and income levels. Not shown in Figure 4 is the fact that U.S. pork exports also reached record levels of volume and value in 2020 and 2021.

Figure 4: Per Capita Pork Consumption vs. Negotiated Carcass Cutout Values

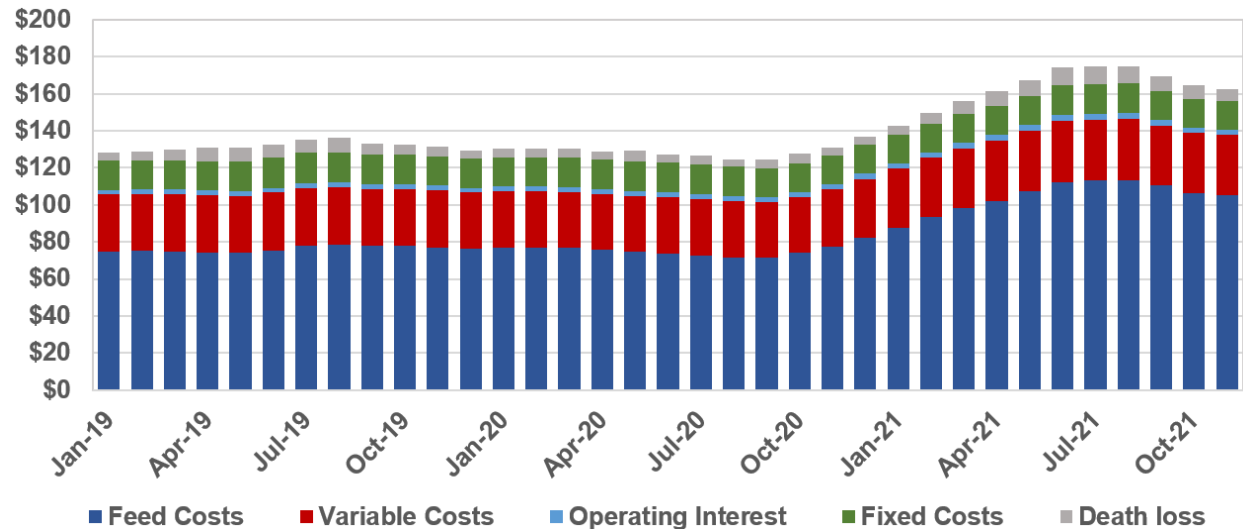


Source: AMS, LMC, Dr. Steve Meyer

Cost of Production

Figure 5 shows farm level production costs for hogs. From January 2020 to November 2021, the estimated cost of farrow-to-finish hog production increased 24.6 percent, led primarily by an increase in feed prices. Over the past 12 months, total costs have increased 23.9 percent and feed costs have risen by 35.5 percent.

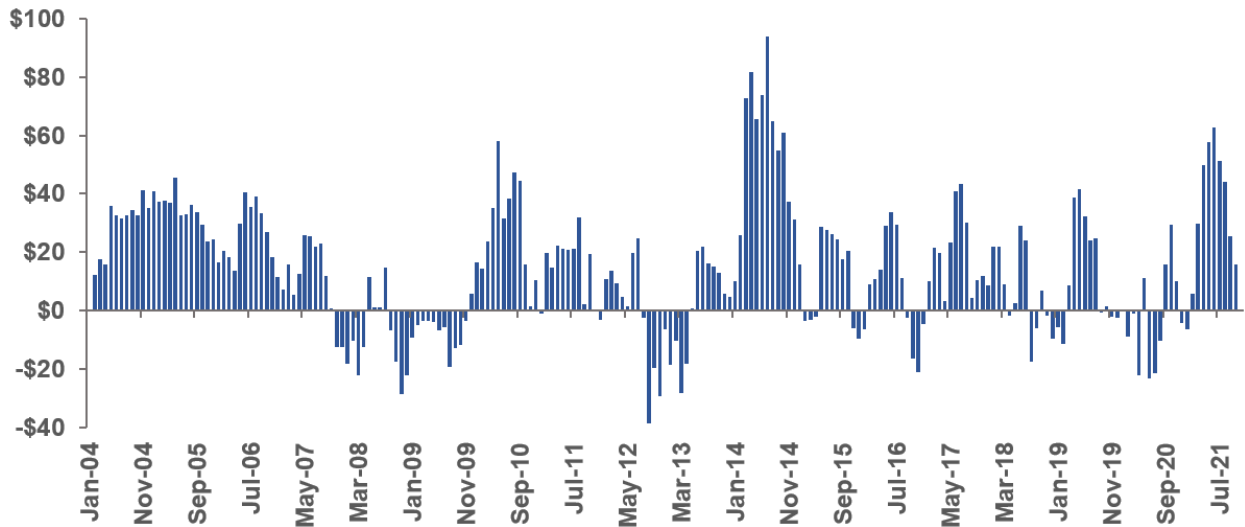
Figure 5: Total Farrow-to-Finish Production Costs, Measured in Dollars per Head



Source: ISU Extension Estimated Livestock Returns

Figure 6 shows the returns to pork production. After a disastrous year in 2020, pork production was profitable in the summer of 2021 and continued to be mildly profitable through the fall of 2021 even as live hog prices fell. The most recent estimates for November 2021 show estimated returns settling around the breakeven level.

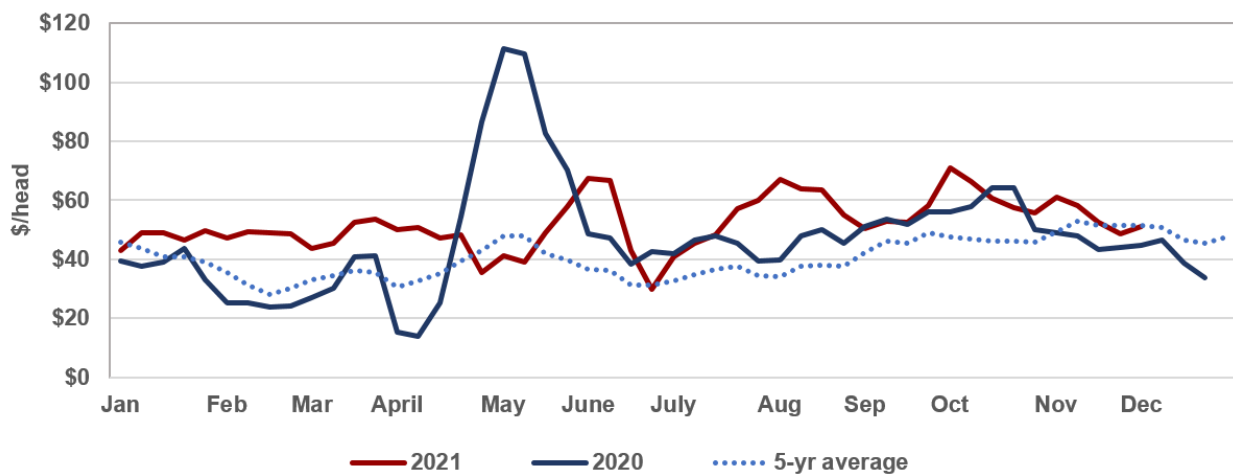
Figure 6: Pork Producer Returns, Measured in Dollars per Head



Source: ISU Extension Estimated Livestock Returns

If pork producers are not benefiting from the surge in retail prices, who is? Figure 7 shows the gross margins that packers are earning and compares current margins to the five-year average. As was true for pork producers, pork packers are making near normal margins.

Figure 7: Estimated Packer Gross Margins



Source: LMIC, AMS

Labor Shortage

Perhaps the greatest current challenge to all food supply chains is a lack of available labor. Despite rising wages, all industries are currently struggling to fill open positions. As of October 2021, there were more than 11 million job openings in the U.S. While recently released employment measures show signs of improvement, the civilian labor force is still about 2.4 million people less than it was in January 2020, indicating a smaller pool of potential workers now than before the start of the pandemic.

A lack of available workers throughout the pork industry has been long-standing issue that was made worse by the pandemic and is one of the reasons packing plants have had capacity issues. Anecdotally, producers report worker shortages ranging from 10 to 20 percent for sectors with well-established visa pipelines for skilled-workers and up to 30 percent for those, including packing plants, that require less-skilled labor. Though larger plants have been able to implement more advanced levels of automation over the years, packers still report that labor shortages restrict their ability to add value through downstream tasks, such as boning or offal recovery, which in turn lowers packer margins and, ultimately, the value of hogs.¹

The tight and competitive labor market is impacting every aspect of the pork supply chain, including the transportation of hogs and pork. The American Trucking Association reports that the trucking industry is currently short about 80,000 drivers which could worsen to 160,000 by 2030.² Employers in the food service and retail industries have also struggled to rebuild their workforce back to pre-pandemic levels.

Many industries hit hardest by labor shortages have significantly increased wages to attract more workers. Through October, average weekly wages for truck drivers were up 4.3 percent year-over-year and up 10.0 percent since January 2020. Average weekly earnings for production and non-supervisory workers in the animal slaughter and processing industry were up 10.1 percent this year and up 19 percent since January 2020. As of October, average weekly earnings were up 17.2 percent for full-service restaurant workers, 18.3 percent for quick service restaurant workers, and up 9.1 percent for grocery store workers since January 2020.³ In some sectors, wage growth has outpaced the current inflation rates, but labor market recovery remains slow.

Slower Line Speeds and Reduced Packing Capacity

One key issue specific to the pork industry is the slowing of pork production lines at six major packing plants. On July 1, 2021, a federal court order went into effect, eliminating a provision of

¹ <https://www.nationalhogfarmer.com/marketing/us-slaughter-capacity-settles-even-keel>

² https://www.trucking.org/sites/default/files/2021-10/ATA%20Driver%20Shortage%20Report%202021%20Executive%20Summary.FINAL_.pdf

³ <https://beta.bls.gov/dataQuery/find?st=0&r=100&fq=survey:%5bce%5d&fq=mg:%5bMeasure+Category%5d&fq=mc:%5bPay+and+Benefits%5d&fq=mcd:%5bEarnings%5d&fq=cg:%5bOccupation%5d&more=0&q=animal>

USDA's New Swine Inspection System (NSIS) that had allowed pork packing plants to run faster processing line speeds.⁴

Although implemented in 2019, the NSIS was more than 20 years in the making, with five pork plants operating faster line speeds through the HACCP-Based Inspection Models Project (HIMP) – a pilot program started in 1997 during the Clinton administration. A sixth plant joined the original five in operating faster lines on implementation of the NSIS. At all six plants, the faster line speeds led to an increase in capacity. According to Iowa State University economist Dr. Dermot Hayes, slowing line speeds to the pre-1997 level reduced the capacity at these six plants by up to 25 percent, equating to a nationwide capacity loss of 3 percent, or 2.5 percent after impacted facilities adjusted operating hours.⁵

This loss of capacity not only reduced the volume of pork that could be produced, but it also led to lower hog prices and increased transportation costs for producers near the impacted plants. Additionally, reduced line speeds exacerbated an already tenuous labor situation. Many plants, and especially those that relied on overtime and Saturday shifts to help make up for slower line speeds, saw an increase in resignations and absenteeism for Monday and Friday shifts.

USDA recently announced a time-limited trial program that would allow NSIS plants to operate at higher line speeds as worker safety data is collected. Allowing plants to increase line speeds under this program will help add pork packing capacity after months of slower line speeds.

Transportation Challenges

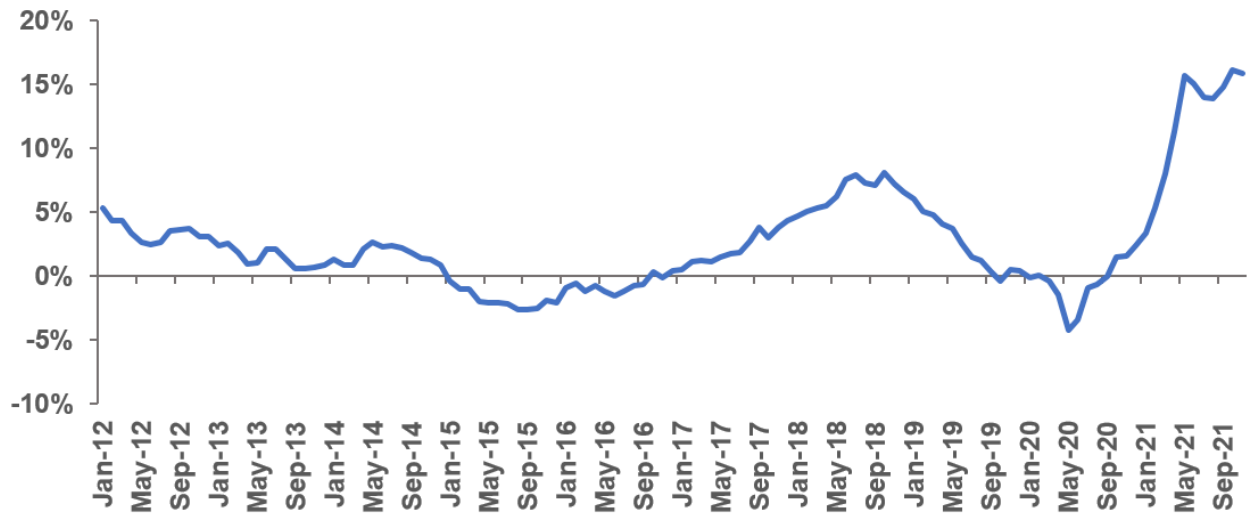
In addition to widespread labor shortages and reduced packing capacity, the pork industry is also dealing with transportation bottlenecks and higher prices for fuel, energy, and packaging materials. Figure 8 below shows the producer price index (PPI) for truck transportation, which was 16.1 percent higher year-over-year through October. High diesel fuel costs and a shortage of truck drivers have also made it more costly to transport not only animals, but pork products from top-pork-producing regions to stores and restaurants across the country. Data from the Energy Information Administration shows highway diesel prices up more than 50 percent over the last 12 months.⁶

⁴ <https://www.porkbusiness.com/news/ag-policy/pork-industry-seeks-waivers-plants-impacted-line-speed-ruling>

⁵ <https://nppc.org/wp-content/uploads/2021/05/Impacts-of-NSIS-Decision-on-Pork-Producers-Dr.-Hayes.pdf>

⁶ <https://www.eia.gov/petroleum/gasdiesel/>

Figure 8: Producer Price Index for Truck Transportation



Source: BLS, FRED

Retail, Wholesale, and Farm Values and Price Spreads

Figure 9 shows monthly retail, wholesale, and net farm prices from 2000 to 2021 using the ERS measure of retail price, which includes only composite meat products and excludes boneless or value-added products. As mentioned earlier, farm and wholesale prices were strong in the summer of this year and have since fallen. Retail prices continue to increase rapidly.

Figure 9: Monthly Retail, Wholesale, and Net Farm Prices



Source: ERS, CARD

Price spreads represent the difference in prices at various stages of the supply-chain. USDA ERS produces monthly reports on the per pound value of pork at the farm, wholesale, and retail level, as well as the farm-to-wholesale and wholesale-to-retail price spreads.

The farm-to-wholesale spread is the difference between the wholesale price (received by packers) and the net farm price (gross farm price received by producers minus the value of byproducts). This spread contains the processing and operating costs of the packer as well as the packer's profit margins. The wholesale-to-retail price spread is the difference between the wholesale price (received by packers) and the retail price (paid by consumers). This spread includes the retailer's costs and profit margins.

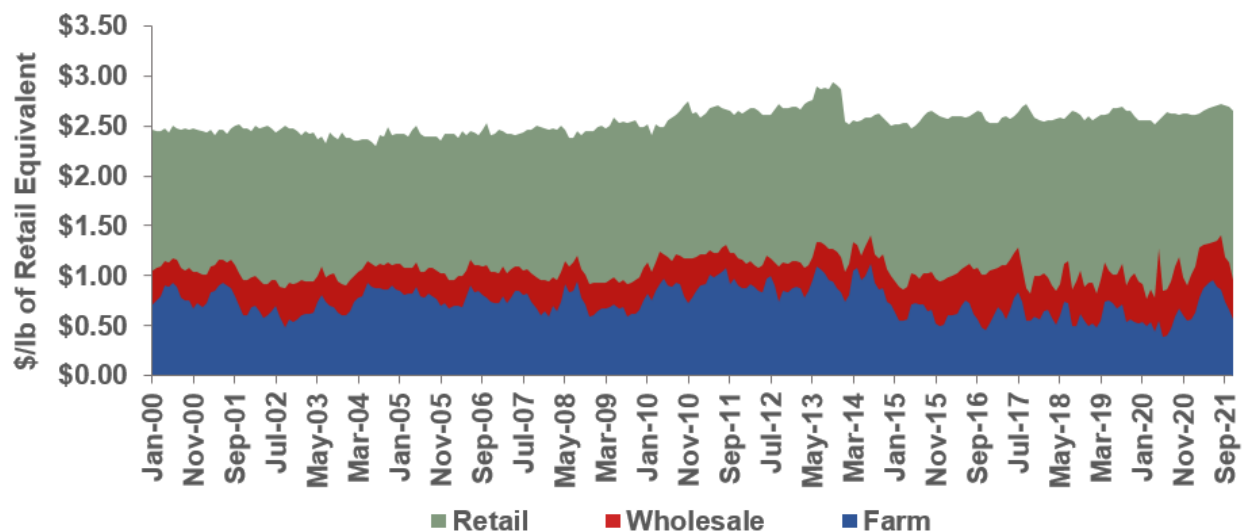
Questions about increasing spreads arise because it is impossible to infer from the ERS statistics whether price spreads are widening to cover higher costs or to extract greater profits. For the clearest picture of price spread movements, it is helpful to adjust all values for inflation.⁷ If adjusted price spreads remain constant over time, then any additional margin can be attributed to general inflation. If spreads widen over time, then either more profits are being extracted or prices are rising to offset higher costs.

Figure 10 shows inflation adjusted prices and spreads for pork from 2000 to 2021. From 2000 to 2013, pork price spreads were relatively constant. The farm-to-wholesale price spread became thinner for parts of 2013 and 2014 when PEDV losses supported higher hog prices, but this widened out as production recovered in 2015 and 2016 and at times challenged packing capacity. Although temporary, the widest farm-to-wholesale margins can be observed in early 2020 when COVID-19 shutdowns limited processing capacity, causing a backup of hogs on farms at a time when retail meat demand was ramping up.

Consistent with the price data in Figure 9, the retail price spread has recently widened. This price spread has to compensate for transporting pork to retail outlets, labor in retail stores and distribution centers, and any costs associated with delays and bottlenecks. It appears likely that retailers are passing extra costs of these inputs on to consumers. Retailers are typically slow to adjust prices to reflect changes in their input costs. It is also possible that some of the recent increases in retail prices are a one-time response to high wholesale prices this summer.

⁷ https://www.card.iastate.edu/ag_policy_review/article/?a=48

Figure 10: Retail, Wholesale, and Farm Prices and Spreads for Pork in 2000 Constant Dollars



Source: ERS, CARD

Food Inflation Outlook

While it is clear that there are many factors contributing to food price inflation, it is still difficult to predict how long these challenges will persist. There is also much debate about whether current inflation and price trends are structural, meaning they are caused by permanent changes, or cyclical, meaning higher prices are being caused by short-term problems that will be resolved once supply-chain bottlenecks subside and businesses resume “normal” production levels.

The answer likely lies somewhere in the middle. Food and commodity prices are historically cyclical and have experienced periods of high inflation in the past, though consumers have not been faced with this in quite some time. Though there are significant production, processing, and distribution challenges, there are likely no permanent, structural barriers in the way of getting back to cheaper food. It is unclear whether the same can be said about energy prices, wage inflation, and other current challenges.

Labor is one of, if not the most, critical factor in easing supply-chain challenges and high prices. Despite higher wage offerings and bonuses, the civilian labor force is still down 2.4 million workers since the start of the pandemic. Some labor challenges will be partially solved as disaster assistance and personal savings run out and rising wage levels draw workers back into the labor force. However, with slowing domestic population and labor force growth, the long-term outlook on labor is highly dependent on future immigration policy and ag labor reform. If not addressed, labor will continue to be a limiting factor in food and pork production for the foreseeable future even as other sectors see improvement.