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Producer price inflation slows in 2019, as price increases for both services and goods decelerate from a year earlier

Using data from the Producer Price Index (PPI) program, this article describes changes in producer prices in 2019. Final-demand producer inflation over the year increased less than it did in 2018, because of smaller advances in the indexes for services, core goods, and foods. Intermediate-demand inflation for energy and core processed and unprocessed goods turned down in 2019, while that for food-based processed and unprocessed goods moved higher, following little change in 2018. In a broad-based shift, each of the major PPI components measuring intermediate-demand inflation for services advanced less in 2019 than in 2018.

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The Producer Price Index (PPI) measures the average change over time in selling prices received by domestic producers for their output. The Final Demand–Intermediate Demand (FD–ID) aggregation system, the structure used to analyze the behavior of producer prices, measures final-demand inflation (price changes for goods, services, and construction sold for personal consumption, as capital investment, to government, and for export) and intermediate-demand inflation (price changes for goods, services, and construction sold to businesses as inputs to production). This article describes PPI price movements in 2019.[1]

Overview

The slowing rate of producer price inflation in 2019 was widespread across the various stages of production.[2] The PPI for final demand rose 1.4 percent after increasing 2.6 percent a year earlier, as price increases slowed for each of

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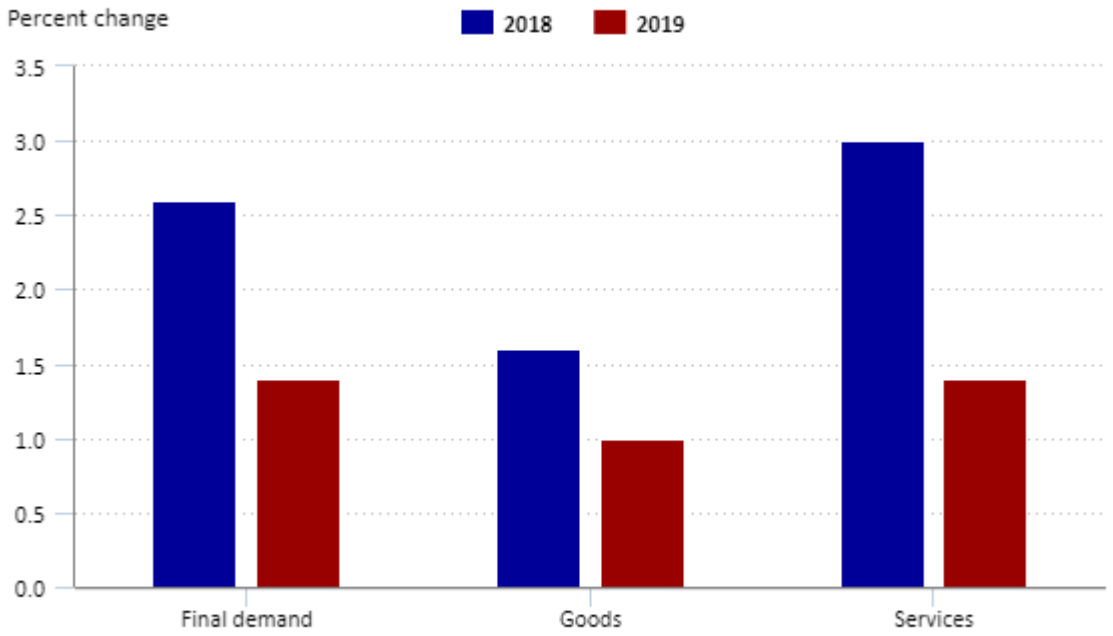
the three major final-demand components—services, goods, and construction.

In 2019, the index for final-demand services advanced 1.4 percent, following a rise of 3.0 percent in 2018. Leading this broad-based deceleration, margins for final-demand trade services moved up 0.8 percent, compared with a 3.1-percent increase a year earlier. (Trade indexes measure changes in margins received by wholesalers and retailers.[3]) Prices for final-demand services less trade, transportation, and warehousing moved up 1.8 percent in 2019, after climbing 2.6 percent in 2018. The rate of advance in the index for final-demand transportation and warehousing services slowed to 2.2 percent, following a 6.5-percent jump in the previous year. (See figure 1 and table 1.)

Figure 1. PPIs for total final demand, goods, and services, 12-month percent change, 2018 and 2019



Click legend items to change data display. Hover over chart to view data.
Note: PPI = Producer Price Index.
Source: U.S. Bureau of Labor Statistics.

Table 1. Selected PPIs for final demand and intermediate demand, 12-month percent changes, 2018 and 2019

Index	2018	2019
Final demand		
Total final demand	2.6	1.4
Goods for final demand	1.6	1.0
Foods	2.8	1.2

See footnotes at end of table.

Table 1. Selected PPIs for final demand and intermediate demand, 12-month percent changes, 2018 and 2019

Index	2018	2019
Energy goods	-3.1	2.4
Goods less foods and energy	2.6	0.6
Services for final demand	3.0	1.4
Trade services	3.1	0.8
Transportation and warehousing services	6.5	2.2
Services less trade, transportation, and warehousing	2.6	1.8
Construction for final demand	5.2	3.9
Intermediate demand, by type of commodity		
Processed goods for intermediate demand	2.8	-1.7
Processed foods and feeds	0.1	2.9
Processed energy goods	1.5	-3.5
Processed materials less foods and energy	3.5	-1.8
Unprocessed goods for intermediate demand	3.7	-7.3
Unprocessed foodstuffs and feedstuffs	-0.6	4.1
Unprocessed energy materials	8.8	-18.7
Unprocessed nonfood materials less energy	2.9	-5.0
Services for intermediate demand	3.1	1.7
Trade services for intermediate demand	4.5	4.2
Transportation and warehousing services for intermediate demand	4.1	2.7
Services less trade, transportation, and warehousing for intermediate demand	2.6	0.8
Construction for intermediate demand	2.4	2.2
Intermediate demand, by production flow		
Stage-4 intermediate demand	3.1	1.4
Total goods inputs to stage-4 intermediate demand	2.9	0.4
Total services inputs to stage-4 intermediate demand	3.2	2.3
Stage-3 intermediate demand	2.0	0.8
Total goods inputs to stage-3 intermediate demand	1.0	-0.1
Total services inputs to stage-3 intermediate demand	3.1	1.7
Stage-2 intermediate demand	3.6	-3.2
Total goods inputs to stage-2 intermediate demand	5.4	-9.9
Total services inputs to stage-2 intermediate demand	2.3	2.0
Stage-1 intermediate demand	3.1	-2.2
Total goods inputs to stage-1 intermediate demand	2.6	-4.8
Total services inputs to stage-1 intermediate demand	4.0	1.1

Note: PPI = Producer Price Index.

Source: U.S. Bureau of Labor Statistics.

In the goods-producing sector, the index for final-demand goods moved up 1.0 percent in 2019, after rising 1.6 percent in 2018. Leading this deceleration, price increases for final-demand goods less foods and energy slowed to 0.6 percent, compared with a 2.6-percent advance a year earlier. In addition, the index for final-demand foods moved up 1.2 percent in 2019, after climbing 2.8 percent in the preceding year. In contrast, the index for final-demand energy rose 2.4 percent, reversing a 3.1-percent decline in 2018. This countervailing movement is mostly attributable to gasoline prices, which climbed 11.4 percent in 2019, after falling 12.7 percent in the previous year.

The index for final demand less foods, energy, and trade services (sometimes referred to as the final-demand core PPI) rose 1.5 percent in 2019, after advancing 2.8 percent in 2018.[4] In late 2019, the inflation rate for this index, like that for overall final demand, was the lowest it had been since late 2016. The index for final demand less foods, energy, and trade services aggregates the PPIs for final-demand core goods; final-demand transportation and warehousing services; final-demand services less trade, transportation, and warehousing; and final-demand construction.

Among the PPIs for intermediate demand, which measure business-to-business price movements, the indexes for processed and unprocessed goods turned down in 2019, and the index for services for intermediate demand rose less than it did in 2018. The index for processed goods for intermediate demand fell 1.7 percent, compared with a 2.8-percent increase a year earlier. Leading the downturn, prices for processed goods less foods and energy declined 1.8 percent in 2019, compared with a 3.5-percent rise in the previous year. The index for processed energy goods also reversed course, falling 3.5 percent after advancing 1.5 percent in 2018. In contrast, prices for processed foods and feeds moved up 2.9 percent in 2019, after edging up 0.1 percent a year earlier.

Similarly, the index for unprocessed goods for intermediate demand fell 7.3 percent in 2019, reversing a 3.7-percent rise in 2018. Most of this reversal is attributable to prices for unprocessed energy goods, which dropped 18.7 percent after increasing 8.8 percent in 2018. The index for unprocessed core goods also fell in 2019, by 5.0 percent, following a 2.9-percent advance a year earlier. Conversely, prices for unprocessed foodstuffs and feedstuffs moved up 4.1 percent, compared with a 0.6-percent decline in 2018.

The index for intermediate-demand services decelerated broadly, advancing 1.7 percent in 2019, down from 3.1 percent in the preceding year. Leading the slower rate of advance, the index for services less trade, transportation, and warehousing inched up 0.8 percent, compared with a 2.6-percent rise in 2018. In addition, prices for transportation and warehousing services for intermediate demand increased 2.7 percent in 2019, after climbing 4.1 percent a year earlier, and margins for trade services for intermediate demand rose at a slightly slower rate (4.2 percent) than they did in 2018 (4.5 percent).

Economic background

This section describes the economic events that influenced PPI movements in 2019.

Services

A slower rate of increase in margins for trade services drove the deceleration in overall final-demand inflation. Most of this shift in trade margins is attributable to the index for fuels and lubricants retailing, which fell substantially in 2019 after surging in 2018. In contrast, the PPIs for both crude petroleum and gasoline from refineries increased considerably more in 2019 than in 2018.[5] It should be noted that the relationship between crude petroleum prices and retail fuel margins is often misunderstood. PPI research shows that, generally, this relationship is inverse; that is, rising crude petroleum prices typically correspond to falling retail fuel margins, whereas falling crude petroleum prices typically correspond to higher margins received by gasoline retailers.[6]

Margins for food wholesaling, which turned down in 2019, and margins for food retailing, which rose less that they did in 2018, also contributed considerably to the slower rate of inflation in the trade sector. Prices received by producers of pork, dairy products, and processed poultry moved higher in 2019, after decreasing a year earlier.

The Consumer Price Indexes for pork, poultry, and dairy and related products also turned up in 2019, although the shifts in consumer prices for these products were more moderate.[7]

In the financial sector, the U.S. Federal Reserve reduced the target federal funds interest rate three times in 2019—in August, September, and October. The federal funds rate began the year at 2.25–2.50 percent and closed it at 1.50–1.75 percent. The federal discount rate also was reduced three times in 2019, beginning the year at 3.00 percent and ending it at 2.25 percent.[8] In response to these interest rate reductions, the PPI for consumer loans fell 7.0 percent in 2019, after climbing 5.8 percent a year earlier, and prices for business loans dropped 11.7 percent, reversing a 17.5-percent jump in 2018. In addition, the PPI for services related to securities brokerage and dealing declined 15.0 percent in 2019, after surging 27.9 percent in 2018. This index includes many business-to-business financial activities (e.g., loan repurchase agreements), whose transaction prices are typically affected by changes in interest rates.

The PPI for securities brokerage, dealing, and investment advice also declined in 2019, after rising in 2018. An industrywide trend to reduce or eliminate commissions and transaction fees for retail brokerage services can be traced to aggressive competition among financial services firms, as well as to technological advances that have reduced the business costs of trading securities instruments for clients. Trading firms hope that lower trading fees will expand their client base and profits.[9]

Inflation for transportation services also increased less in 2019 than in 2018. The PPI for truck transportation of freight was unchanged over the year, after rising 6.5 percent in 2018. This slowdown substantially reduced inflation for both intermediate-demand and final-demand transportation and warehousing services. The PPIs for rail transportation of freight, ground courier services, and water transportation of freight advanced at slower rates in 2019. Falling diesel fuel prices affected the fees charged by the freight transportation sector, because contracts for freight transportation services commonly include fuel-adjustment factors that take into account the cost of fuel.[10]

Other factors that reduced the pricing power of freight transportation firms include a slowdown in U.S. manufacturing and stagnant international trade in goods. The Institute for Supply Management reported that, as of December 2019, the U.S. manufacturing sector had been in decline for five consecutive months. New orders, production, and inventories also were trending lower.[11] In a joint release, the U.S. Census Bureau and the U.S. Bureau of Economic Analysis reported that, through the first 11 months of 2019, both total exports and imports of goods were little changed from the same period a year earlier.[12]

Core goods

In the industrial goods market, global disruptions, including an unsettled tariff climate, have contributed to lower prices for both unprocessed goods (such as iron and steel scrap, aluminum scrap, wastepaper, and raw cotton) and processed goods (such as steel mill products, fabricated metal products, and various chemicals and related products).[13] Prices for many highly processed goods, including general purpose machinery and equipment, machine shop products, heavy motor trucks, and motor vehicle parts, also pulled back after seeing larger advances in 2018.[14] In November 2019, the Organisation for Economic Co-operation and Development (OECD) released a report forecasting worldwide growth of 2.9 percent in 2019, compared with 3.5 percent in 2018.[15] According to the OECD report, global economic activity had been hampered by a slowdown in new orders,

industrial production, and retail sales. The OECD also reported that the rate of global trade growth in 2019 retreated to below 2 percent, down from substantially higher levels in 2016–18.[16]

Energy

The energy sector in 2019 was dominated by diverging price trends in the markets for natural gas and crude petroleum. The PPI for natural gas dropped roughly 50 percent in 2019, after surging more than 40 percent a year earlier, whereas the index for crude petroleum climbed 19.1 percent, reversing a 16.0-percent drop in 2018.

Contributing to the volatility in prices for natural gas, the inventory of working gas in underground storage had, as of January 17, 2020, expanded to 23.2 percent above its year-ago level and to 9.3 percent above its 5-year historical average.[17] This increase in inventory can be traced to a 9.7-percent rise in U.S. natural gas marketed production.[18] Through October 2019, total consumption of natural gas was slightly higher than a year earlier, although well below the increase in marketed production.[19] Henry Hub natural gas spot prices hovered near $2 per million British thermal units (Btu) in late 2019, much lower than their level of $4 per million Btu in December 2018.[20] As a result, the PPIs for utility natural gas, including natural gas for electric power generation, also declined substantially in 2019, after rising in 2018.

In the crude petroleum market, spot prices for West Texas Intermediate (WTI) crude oil rose from $49.52 per barrel in December 2018 to $59.88 per barrel in December 2019. Internationally, the corresponding spot-price dollar figures for Brent (North Sea) crude were $57.36 and $67.31, respectively.[21] However, these year-over-year gains provide an incomplete picture of the crude petroleum spot-price market, which remained volatile. For example, the spot prices for WTI crude oil fell from $70.75 per barrel in October 2018 to $53.96 per barrel in October 2019. Similarly, on an October-to-October basis, spot prices for Brent crude dropped from $81.03 to $59.71 per barrel.[22] This volatility, along with the timing of price transmission through the economy, resulted in mixed movements for the PPIs for refined petroleum products in 2019. On a December-to-December basis, gasoline prices turned up in 2019, whereas prices for diesel fuel and heating oil turned down and the index for jet fuel rose less than it did in 2018.

The U.S. Energy Information Administration reported that, in 2019, U.S. weekly field production of crude petroleum climbed 10.3 percent.[23] In contrast, crude petroleum imports fell 10.8 percent from their 2018 levels.[24] In addition, U.S. net inputs of crude petroleum to refineries declined 3.6 percent over the same period.[25] Similarly, in terms of average monthly production, total U.S. finished petroleum product supplied (a common proxy for demand) was 1.2 percent lower in January–October 2019 than during the same period in 2018,[26] while total gasoline ending stocks were 1.0 percent higher in December 2019 than 12 months earlier.[27]

Outside the United States, crude oil production by the Organization of the Petroleum Exporting Countries inched down in 2019.[28] Russian crude oil production was little changed, edging 0.7 percent higher than its year-earlier level.[29]

Food

In 2019, producer inflation for foods was mixed. For unprocessed foods, the PPIs for slaughter hogs, slaughter cattle, and raw milk rose in 2019, reversing declines in 2018. For processed foods, the PPIs for pork and dairy

products also turned up. In contrast, beef prices turned down in 2019. In the grains market, the PPI for corn rose at a slower rate, while wheat prices fell after rising in 2018.

Although domestic beef production grew 1.0 percent in 2019, late-year increases in worldwide demand for beef, along with expectations for further gains in global trade and consumption in 2020, helped lift prices for slaughter cattle. If it were not for a large over-the-month drop in prices in December 2019, the PPI for beef and veal also would have increased substantially over the year. In the market for pork products, total U.S. production rose 5.2 percent in 2019. For most of the year, trade barriers limited U.S. pork exports to China, and prices for both live hogs and pork products declined. However, an outbreak of African swine fever in East Asia, particularly in China, along with the announcement by the Chinese government that it would scale back tariffs on U.S. farm products, including pork and soybeans, substantially lifted prices for both live hogs and pork products during the final quarter of 2019.[30]

In 2019, the PPI for raw milk rose 26.2 percent, and prices for dairy products climbed 8.3 percent. Domestic milk production increased 0.3 percent in 2019, while total cheese production rose 0.7 percent over 2018 levels.[31] Internationally, the combination of drought and wildfires in Australia (a major global dairy supplier) resulted in higher prices for dairy inputs and lower output.[32] This development strained international supplies, leading to an increase in dairy exports from the United States as global demand for dairy products grew.[33] Dairy demand, in particular that for dry, shelf-stable milk, is projected to expand further in 2020.[34]

In terms of production and supply in the grains market, corn yields per acre fell 5.3 percent in 2019, and total production decreased 5.2 percent. Wheat yields per acre climbed 8.6 percent, and total production rose 1.8 percent.[35] On the demand side, corn utilization for both feed and ethanol fell in 2019, reversing increases in 2018.[36] In the wheat market, domestic and global demand were little changed in 2019, and the same is expected for the 2019–20 marketing year.[37] These market trends coincided with movements in the PPI for corn, which increased at a slower rate in 2019, and the PPI for wheat, which turned down after rising a year earlier.

Final demand

In 2019, the index for final demand rose 1.4 percent, down from 2.6 percent in 2018. This deceleration was due to movements in the indexes for final-demand services and final-demand goods, both of which advanced less in 2019 than in 2018.

Final-demand services

The index for final-demand services rose 1.4 percent in 2019, after advancing 3.0 percent in 2018. Nearly 30 percent of this deceleration can be traced to margins for fuels and lubricants retailing, which turned down 16.0 percent, reversing a 24.6-percent increase in 2018. The indexes for loan services (partial); securities brokerage, dealing, investment advice, and related services; and food wholesaling also declined in 2019, after moving higher in the previous year. Prices for truck transportation of freight were unchanged after rising in 2018, while the index for inpatient care rose less than it did in the preceding year. In contrast, the advance in the index for machinery and equipment parts and supplies wholesaling accelerated to 8.4 percent in 2019, up from 4.3 percent a year earlier. Prices for portfolio management and hospital outpatient care also increased more than they did in 2018.

Final-demand goods

In 2019, the index for final-demand goods rose 1.0 percent, down from 1.6 percent in the previous year. A major reason for this deceleration was a downturn in the index for carbon steel scrap, which fell 27.4 percent, reversing a 16.2-percent increase in 2018. Prices for fresh and dry vegetables, steel mill products, beef and veal, and utility natural gas also decreased in 2019, after increasing in the previous year. The index for pharmaceutical preparations rose less than it did in 2018. Conversely, prices for gasoline increased 11.4 percent in 2019, after falling 12.7 percent in the preceding year. The index for pork also turned up, and prices for communications and related equipment rose more than in 2018.

Intermediate demand by commodity type

This section describes producer price movements associated with business-to-business sales of processed goods, unprocessed goods, and services. These sales, captured in the intermediate-demand portion of the FD–ID aggregation system, exclude sales of capital equipment, sales to government, and exports.

Processed goods for intermediate demand

The index for processed goods for intermediate demand fell 1.7 percent in 2019, after rising 2.8 percent in the previous year. Over one-third of this downturn can be attributed to prices for steel mill products, which dropped 16.0 percent, reversing a 19.3-percent increase in 2018. The indexes for utility natural gas, pulp and paper products, fabricated structural metal products, and plastic resins and materials also turned down in 2019, after rising in the previous year. Prices for industrial chemicals fell more than they did in 2018. In contrast, the index for natural cheese (except cottage cheese) rose 14.9 percent in 2019, after decreasing 5.0 percent in the preceding year. Prices for softwood lumber (not edge worked) and gasoline also turned up after falling in 2018.

Unprocessed goods for intermediate demand

The index for unprocessed goods for intermediate demand fell 7.3 percent in 2019, after rising 3.7 percent a year earlier. This downturn was primarily driven by the index for natural gas, which dropped 50.9 percent, reversing a 41.8-percent jump in 2018. Prices for iron and steel scrap, fresh vegetables (except potatoes), and hay and hayseeds also fell after rising in 2018. The index for corn rose less in 2019 than in the previous year, while prices for wastepaper fell more than in 2018. Conversely, prices for raw milk jumped 26.2 percent in 2019, reversing a 4.6-percent decrease a year earlier. The indexes for crude petroleum and nonferrous metal ores also rose after declining in 2018.

Services for intermediate demand

The index for services for intermediate demand advanced 1.7 percent in 2019, down from 3.1 percent in the previous year. A major reason for this deceleration was a downturn in the index for loan services (partial), which decreased 9.1 percent after jumping 11.0 percent in 2018. The indexes for securities brokerage, dealing, investment advice, and related services and for food wholesaling also turned down after rising in 2018. The indexes for metals, minerals, and ores wholesaling and for nonresidential real estate rents increased less in 2019 than in the previous year, and prices for truck transportation of freight were unchanged after rising a year earlier. In contrast, margins for machinery and equipment parts and supplies wholesaling advanced 8.4 percent, up from 4.3 percent in 2018. The indexes for staffing services and U.S. postal services also rose more in 2019 than in the previous year.

Intermediate demand by production flow

The production-flow treatment of intermediate demand is a stage-based system of price indexes. These stage-based indexes can be used to study price-transmission relationships between the sequential intermediate-demand stages, and between the last stage of intermediate demand and final demand. The production-flow system contains four main indexes, each corresponding to one of four stages of intermediate demand (stages 1 through 4). The system tracks price change for the *net inputs consumed by industries assigned to each of the four stages*. The stage-4 intermediate-demand index, for example, tracks price change for inputs consumed, not produced, by industries included in the fourth stage. Hence, this index measures price change in the inputs to production for industries that primarily produce final-demand goods, services, and construction.

Stage-4 intermediate demand

The index for stage-4 intermediate demand rose 1.4 percent in 2019, down from 3.1 percent in the previous year. The index for total goods inputs to stage-4 intermediate demand moved up 0.4 percent, compared with a 2.9-percent rise in 2018. Prices for total services inputs climbed 2.3 percent in 2019, after advancing 3.2 percent a year earlier. A major reason for the deceleration in the overall index for stage-4 intermediate demand was a downturn in the index for fabricated structural metal, which fell 1.5 percent after advancing 8.9 percent in 2018. The indexes for loans services (partial); steel mill products; securities brokerage, dealing, investment advice, and related services; plastic products; and food wholesaling also decreased after increasing in 2018. Prices for nonresidential real estate rents increased less in 2019 than a year earlier. In contrast, the index for machinery and equipment parts and supplies wholesaling jumped 8.4 percent, up from 4.3 percent in 2018. Prices for portfolio management also rose more in 2019, and the index for gasoline increased after falling in 2018.

Stage-3 intermediate demand

The index for stage-3 intermediate demand advanced 0.8 percent in 2019, down from 2.0 percent in 2018. Prices for total services inputs to stage-3 intermediate demand rose 1.7 percent in 2019, after moving up 3.1 percent in the previous year. The index for total goods inputs turned down 0.1 percent, reversing a 1.0-percent increase in 2018. A major reason for the slowdown in prices for overall stage-3 intermediate demand was a decline in the index for securities brokerage, dealing, investment advice, and related services, which turned down 9.8 percent in 2019, after increasing 8.8 percent a year earlier. The indexes for steel mill products, loan services (partial), agricultural chemicals and chemical products, and food wholesaling also declined after advancing in 2018. Prices for industrial chemicals fell more in 2019 than in the previous year. Conversely, the index for gasoline jumped 11.4 percent, reversing a 12.7-percent drop in 2018. Prices for raw milk also turned up in 2019, and the index for machinery and equipment parts and supplies wholesaling rose more than it did a year earlier.

Stage-2 intermediate demand

Prices for stage-2 intermediate demand decreased 3.2 percent in 2019, after rising 3.6 percent in the previous year. The index for total goods inputs to stage-2 intermediate demand turned down 9.9 percent, reversing a 5.4-percent advance in 2018. Prices for total services inputs climbed 2.0 percent in 2019, compared with a 2.3-percent increase a year earlier. Leading the downturn in the overall stage-2 index was the index for gas fuels, which dropped 46.5 percent after increasing 29.7 percent in 2018. Prices for steel mill products; securities brokerage, dealing, investment advice, and related services; plastic resins and materials; and paperboard also moved down in 2019, after rising in the previous year. The index for industrial chemicals fell more than in 2018. In contrast, the

index for crude petroleum jumped 19.1 percent in 2019, reversing a 16.0-percent drop in the prior year. Prices for staffing services and portfolio management rose more than in 2018.

Stage-1 intermediate demand

The index for stage-1 intermediate demand fell 2.2 percent in 2019, after climbing 3.1 percent a year earlier. Prices for total goods inputs to stage-1 intermediate demand turned down 4.8 percent, reversing a 2.6-percent advance in 2018. The increase in the index for total services inputs slowed to 1.1 percent in 2019, down from 4.0 percent in 2018. Nearly 40 percent of the reversal in prices for overall stage-1 intermediate demand can be traced to the index for carbon steel scrap, which dropped 27.4 percent after rising 16.1 percent in 2018. The indexes for gas fuels; loan services (partial); steel mill products; and securities brokerage, dealing, investment advice, and related services also turned down in 2019, after rising in the preceding year. Conversely, prices for crude petroleum rose 19.1 percent, reversing a 16.0-percent decline in 2018. The index for gasoline also turned up in 2019, and that for machinery and equipment parts and supplies wholesaling rose more than it did in 2018.

Conclusion

In 2019, final-demand producer inflation advanced at a slower pace than it did a year earlier. This slowdown was due to smaller advances in the indexes for services, core goods, and foods. Within intermediate demand, producer inflation for energy goods and core goods turned down in 2019, while prices for foods advanced after seeing little change in 2018. Producer inflation for services sold to other businesses advanced less in 2019 than a year earlier.

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NOTES

1 Producer Price Index (PPI) data for September–December 2019 were preliminary through May 13, 2020. All PPI values presented in this article are recalculated values that reflect late reporting by survey respondents.

2 The Final Demand–Intermediate Demand (FD–ID) system was first introduced in January 2011 as a set of experimental indexes. With the release of data for January 2014, the FD–ID system replaced the Stage of Processing (SOP) system. Nearly all FD–ID services and construction indexes provide historical data back to either November 2009 or April 2010. The FD–ID indexes for goods that correspond to the historical SOP indexes go back to the 1970s or earlier. For more information about the FD–ID system, see Jonathan C. Weinhagen, “A new, experimental system of indexes from the PPI program,” *Monthly Labor Review*, February 2011, https://www.bls.gov/opub/mlr/2011/02/art1full.pdf, or visit the PPI FD–ID system webpage at https://www.bls.gov/ppi/fdidaggregation.htm.

3 PPIs for trade services measure changes in margins received by wholesalers and retailers. For more information on these PPIs, see Producer Price Index program staff, “Wholesale and retail producer price indexes: margin prices,” *Beyond the Numbers: Prices and Spending*, vol. 1, no. 8 (U.S. Bureau of Labor Statistics, August 2012), https://www.bls.gov/opub/btn/volume-1/pdf/wholesale-and-retail-producer-price-indexes-margin-prices.pdf.

4 Historically, the PPIs for food and energy goods have exhibited greater short-term volatility than the PPIs for goods less foods and energy. For this reason, the PPI program long ago introduced a number of goods indexes that exclude one or both of these potentially volatile components. With the transition from the SOP to the FD–ID system, PPI continues to produce these indexes. In addition, with

the FD–ID expansion to include prices for many services, it has been observed that the indexes for wholesale and retail trade, which measure changes in margins, also are subject to short-term volatility. Consequently, PPI calculates a number of indexes that exclude prices for trade services. These indexes include those for final-demand services less trade services and final demand less trade services. In addition, PPI calculates an index for final demand less foods, energy, and trade services, removing all three potentially volatile components.

5 The PPI data series used for this comparison include crude petroleum (series ID: wpu056), gasoline (series ID: wpu0571), and fuels and lubricants retailing (series ID: wpu58F).

6 Jonathan C. Weinhagen, "Crude petroleum prices and retail fuel margins: an empirical examination," *Monthly Labor Review*, January 2018, https://doi.org/10.21916/mlr.2018.2.

7 The PPI data series used for this comparison include pork (series ID: wpu022104), processed poultry (series ID: wpu0222), and dairy products (series ID: wpu023). The Consumer Price Index data series include pork (series ID: CUUR0000SEFD), poultry (series ID: CUUR0000SEFF), and dairy and related products (series ID: CUUR0000SEFJ).

8 See "Open market operations," *Policy Tools* (Board of Governors of the Federal Reserve System), https://www.federalreserve.gov/monetarypolicy/openmarket.htm; and "Primary and secondary credit," *Historical Discount Rates* (Federal Reserve), https://www.frbdiscountwindow.org/pages/discount-rates/historical-discount-rates.

9 Ben Winck, "Fund giant Vanguard is the latest brokerage to slash trading fees to zero," *Markets Insider*, January 2, 2020, https://markets.businessinsider.com/news/stocks/vanguard-cuts-trading-fees-commission-zero-following-other-brokerage-firms-2020-1-1028791802. See also Rebecca Ungarino, "Wells Fargo just eliminated online commissions. Here's everything we know about brokerages' latest moves in the race to zero," *Business Insider*, December 10, 2019, https://www.businessinsider.com/charles-schwab-td-ameritrade-interactive-brokers-e-trade-cut-fees-2019-10?utm_source=markets&utm_medium=ingest.

10 For a discussion of fuel surcharges and their effect on transportation prices, see "Current price topics: the impact of fuel surcharges on the PPI," *Focus on Prices and Spending*, vol. 2, no. 6 (U.S. Bureau of Labor Statistics, August 2011), https://www.bls.gov/opub/btn/archive/producer-price-indexes-the-impact-of-fuel-surcharges-on-the-ppi.pdf.

11 *December 2019 Manufacturing ISM® Report On Business®* (Tempe, AZ: Institute for Supply Management, January 3, 2020).

12 *U.S. International Trade in Goods and Services: November 2019*, CB20-03, BEA 20-01 (U.S. Census Bureau and U.S. Bureau of Economic Analysis, January 7, 2020), exhibit 1, p. 14, https://www.bea.gov/system/files/2020-01/trad1119.pdf.

13 The PPI measures the average change in prices U.S. producers receive for the sale of their products. Since tariffs and taxes are not retained by producers as revenue, they are explicitly excluded from the PPI. However, the pricing decisions producers make in reaction to tariffs are included in the PPI. For example, if a domestic producer is manufacturing a product that faces import competition and if that competition is subject to tariffs, the domestic producer may increase its prices in order to maximize revenue. In this case, the domestic producer's price increase would be included in the PPI. Similarly, if a domestic producer is exporting a product to a foreign country and if that country has placed tariffs on U.S. products, the domestic producer may lower its prices either to better compete in the export market or to sell excess inventory (resulting from the tariffs) in the domestic market. Here, the domestic producer's price decrease would also be reflected in the PPI. For information on U.S. trade enforcement actions, see "Trade enforcement" (U.S. Department of Commerce), https://www.commerce.gov/issues/trade-enforcement.

14 For a detailed discussion of price transmission across stages of processing, see Jonathan Weinhagen, "An empirical analysis of price transmission by stage of processing," *Monthly Labor Review*, November 2002, https://www.bls.gov/opub/mlr/2002/11/art1full.pdf; and Weinhagen, "Price transmission within the PPI for intermediate goods," *Monthly Labor Review*, May 2005, https://www.bls.gov/opub/mlr/2005/05/art4full.pdf. In general, more highly processed goods exhibit price movements that are somewhat different from those of less processed goods. Basic material costs tend to be a smaller portion of total costs for producers of more highly processed goods than for manufacturers of less processed goods. Contracts and escalation agreements also can delay or mitigate the pass-through effect of early stage price volatility on successive stages of processing.

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