



FOCUS on Prices and Spending



Producer Price Indexes: Fourth Quarter 2010

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Current Price Topics

Producer Price Index Introduces Experimental Aggregation System

Currently, the Bureau of Labor Statistics (BLS) uses the stage-of-processing (SOP) system as the key structure for analyzing producer prices. This system aggregates commodity price indexes for processed and unprocessed goods and is organized into three stages: finished goods, intermediate goods, and crude materials for further processing. Over the past 20 years, the BLS has expanded Producer Price Index (PPI) coverage to include price indexes for many service and construction activities. To expand the scope of coverage for the PPI, BLS recently developed an experimental aggregation system that includes price changes for goods, services, and construction sold to all portions of final demand and intermediate demand, based on information from the Bureau of Economic Analysis' Input/Output accounts.¹

Final demand

The final-demand segment of the PPI experimental aggregation system tracks price change for commodities—goods, services, and construction—sold by producers to all portions of final demand (personal con-

sumption, capital investment, government, and export). The final-demand segment of the experimental aggregation system is composed of six main price indexes: final-demand goods, final-demand construction, final-demand transportation services, final-demand trade services, final-demand traditional services, and overall final demand. The experimental final-demand goods index measures price change for both unprocessed and processed goods sold to final demand. Fresh fruits sold to consumers or computers sold as exports are examples of transactions included in this index. The final-demand construction index tracks price change for new construction as well as maintenance and repair construction sold to final demand. Construction of office buildings is an example of a commodity in this index. The final-demand transportation services index tracks price change for transportation of passengers and cargo sold to final demand and includes prices for warehousing and storage of goods sold to final demand. The final-demand trade services index measures price change for the retailing and wholesaling of merchandise sold to final demand, generally without transformation.² The final-demand traditional services index tracks price change for services other than trade and transportation services sold to final demand. Publishing, banking, lodging, and health care are examples of traditional services in the index.

The overall final-demand index tracks price change for all types of commodities sold to final demand and is constructed by combining the five final-demand indexes described above.

Intermediate demand

The intermediate-demand portion of the PPI experimental aggregation system tracks price change for goods, services, and construction products sold to businesses as inputs to production, excluding capital investment. In order to meet the needs of different data users, the experimental aggregation system includes two separate treatments of intermediate demand. The first treatment organizes intermediate-demand commodities by commodity type and is structurally similar to the final demand portion of the system. The second approach organizes intermediate-demand commodities into stages by production flow with the explicit goal of developing a forward flow model of production and price change.

Intermediate demand by commodity type. The intermediate-demand-by-commodity-type portion of the experimental aggregation system organizes indexes for commodities sold to businesses, where types include goods, services, and maintenance and repair construction. The system is composed of six main price indexes: unprocessed goods for

intermediate demand, processed goods for intermediate demand, intermediate-demand construction, intermediate-demand transportation services, intermediate-demand trade services, and intermediate-demand traditional services. The unprocessed-goods-for-intermediate-demand price index measures price change for goods that have undergone no fabrication and will be sold to businesses as inputs to production. Crude petroleum sold to refineries is an example of an unprocessed good sold to intermediate demand. The processed-goods-for-intermediate-demand index tracks price change for fabricated goods sold as business inputs. Examples include car parts sold to car manufacturers and gasoline sold to trucking companies. The intermediate-demand construction index measures price change for construction purchased by firms as inputs to production. Because new construction is categorized in the final demand portion of the economy, this index tracks price change for maintenance and repair construction purchased by firms. The intermediate-demand transportation services indexes measure price change for business travel as well as transportation and warehousing of cargo sold to intermediate demand. The index for intermediate trade services measures price change in the service of retailing or wholesaling goods purchased by businesses as inputs to production. Finally, the intermediate traditional services price index tracks price change in traditional services

purchased by firms as inputs to production. Legal and accounting services purchased by businesses are examples of intermediate traditional services.

Intermediate demand by production flow. The production flow treatment of intermediate demand within the experimental aggregation system is a stage-based system of price indexes. The stage-based indexes can be used to study price transmission relationships between intermediate demand stages, and to final demand.³ The production flow treatment contains four main indexes: intermediate-demand stages 1 through 4. Indexes for the four stages were developed by assigning each industry in the economy to one of four stages of production, where industries assigned to the fourth stage primarily produce output consumed for final demand, industries in the third stage primarily produce output consumed by stage 4 industries, industries assigned to the second stage primarily produce output consumed by stage 3 industries, and industries assigned to the first stage produce output primarily consumed by stage 2 industries.⁴

The four stage-based intermediate-demand indexes track 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.⁵

Feedback and further information

The aggregation system described here is in its experimental phase, and the PPI program is seeking feedback from its users. To provide feedback, contact Jonathan Weinhagen by email at weinhagen.jonathan@bls.gov or by phone at (202) 691-7709.

For further information about the new PPI experimental aggregation system, please visit <http://www.bls.gov/ppi/experimentalaggregation.htm>. The experimental aggregation Web page contains information on relative importance figures for categories, various methodological articles from the *Monthly Labor Review* and *PPI Detailed Report*, a table showing the industry stage assignments in intermediate demand by production flow, a list of areas of non-coverage, and instructions for obtaining time series data. This information is also available from the PPI Section of Index Analysis and Public Information by email at ppi-info@bls.gov or by phone at (202) 691-7705. 

Current Price Trends

Producer Price Index Price Highlights for 2010

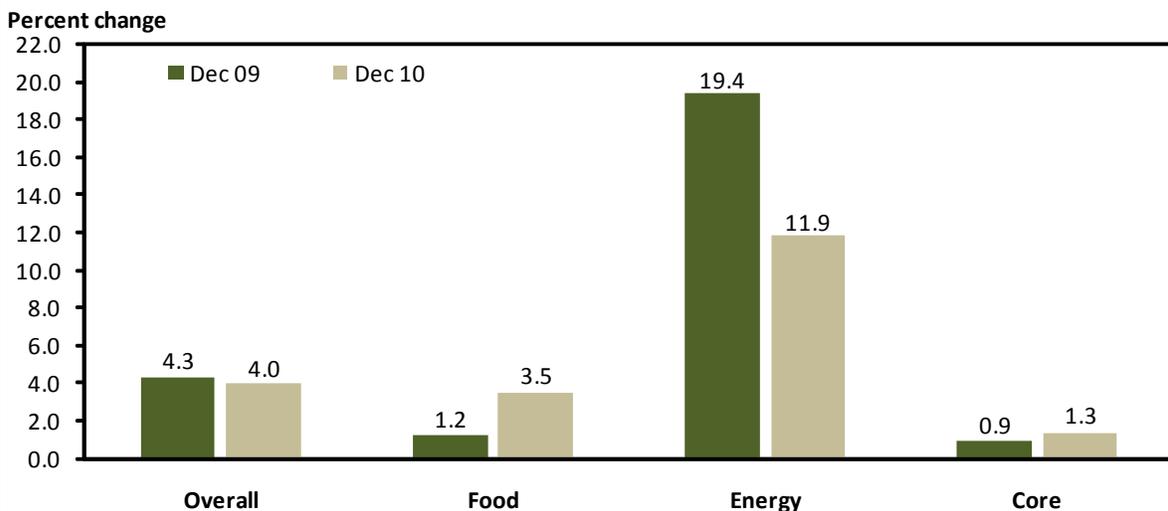
The PPI for finished goods increased 4.0 percent in 2010 after rising 4.3 percent in 2009. This slightly slower rate of advance is attributable to prices for finished energy goods, which moved up 11.9 percent in 2010 following a 19.4-percent jump a year earlier. By contrast, the indexes for finished consumer foods and for finished goods less foods and energy both climbed at faster rates than they had in 2009. (See chart 1.) At the earlier stages of processing, manufacturers of intermediate goods raised prices 6.5 percent in 2010, compared with a 2.9-percent gain in the previous year, as an upturn in the index for intermedi-

ate goods less foods and energy—in combination with a sharp acceleration in prices for foods and feeds—outweighed a slowing advance in the intermediate energy goods index. (See chart 2.) Prices for crude goods increased 15.5 percent in 2010, compared with a 13.3-percent rise in 2009. The index for crude foodstuffs and feedstuffs surged 18.5 percent after moving up just 2.5 percent in 2009, more than offsetting slowing advances in prices for crude energy materials.⁶ (See chart 3.)

Economic background

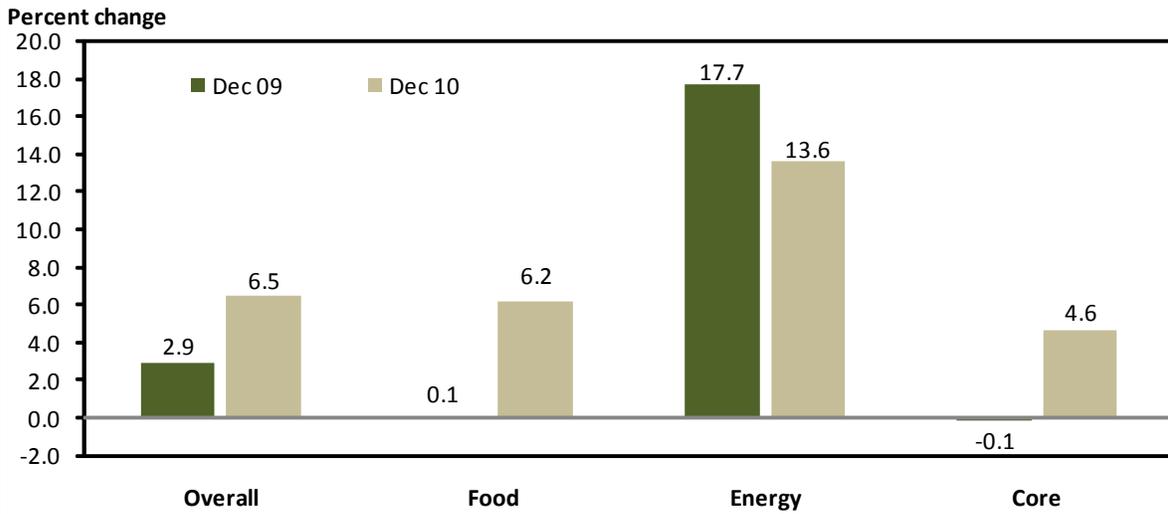
In the foods sector in 2010, multiple events contributed to a broad-based acceleration in food inflation. Starting in late 2009 and continuing into early 2010, relatively weak production led to a run-up in prices for slaughter

Chart 1. Twelve-month percent change in PPI for overall, food, energy, and core finished goods, not seasonally adjusted



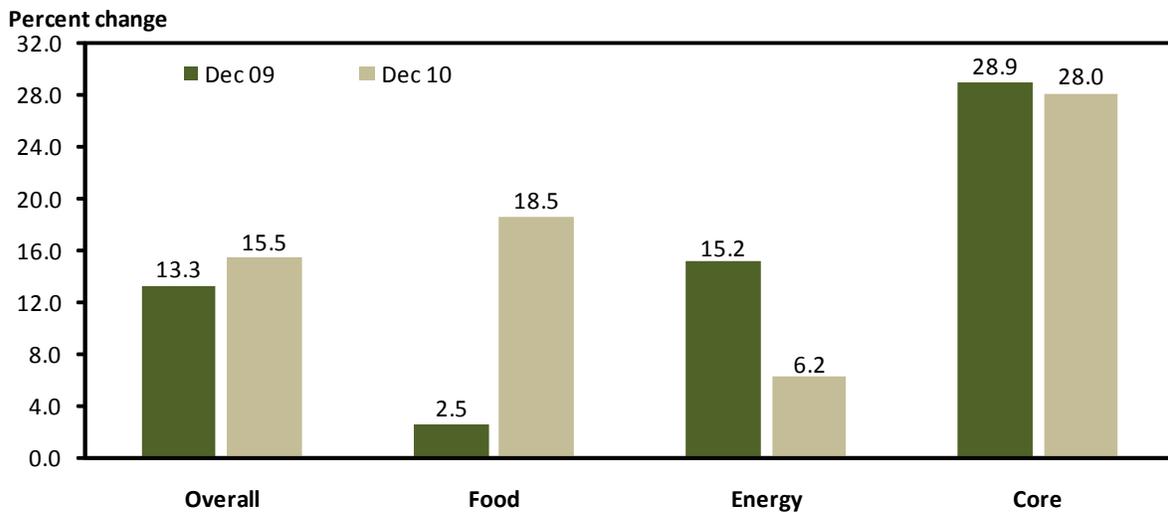
SOURCE: U.S. Bureau of Labor Statistics

Chart 2. Twelve-month percent change in PPI for overall, food, energy, and core intermediate goods, not seasonally adjusted



SOURCE: U.S. Bureau of Labor Statistics

Chart 3. Twelve-month percent change in PPI for overall, food, energy, and core crude goods, not seasonally adjusted



SOURCE: U.S. Bureau of Labor Statistics

cattle⁷ and fluid milk.⁸ By early 2010, the prices for meats and dairy products increased as well. In addition, after falling in the first half of 2010, grains prices reversed course. The grains index increased 46.6 percent in the third quarter and 24.2 percent in the fourth quarter, representing an 82.1-percent surge from its low point in June through the end of the year. Corn production decreased 4.7 percent in 2010 as ending stocks dropped 7.9 percent, and although wheat production remained steady throughout the year, ending stocks for wheat fell 16.2 percent. Both corn and wheat were affected by poor growing seasons outside the United States, which fueled higher export demand and drove the declines in 2010 ending stocks.^{9 10} Similarly, the prices for prepared animal feeds and for cereal and bakery products turned up in the third quarter and exhibited accelerating rates of advance in the fourth quarter.

In contrast to the broad-based acceleration in food and feed prices, PPIs for energy goods moved up less in 2010 than they had in 2009. This deceleration, however, was concentrated in the petroleum sector and occurred over the first 9 months of the year as both production and stocks of crude petroleum remained ample in 2010.¹¹ However, prices for crude petroleum and refined petroleum products showed renewed strength over the final quarter of 2010 as market expectations of a projected improvement in economic growth resulted in ramped up demand through contracting for future deliveries.¹²

Unlike the volatility seen in prices for foods and energy goods, PPIs for goods other than foods and energy exhibited more subtle shifts, though the general trend of faster rates of increase were still common. Prices for basic industrial materials climbed at nearly a 30-percent clip for the second straight year and contributed to a strong upturn in the index for intermediate goods less foods and energy in the form of higher input prices. These intermediate core price increases were driven by improved economic growth, particularly outside the United States.¹³ Price pressures, however, were not as evident at the finished goods stage of processing, as the finished core PPI advanced at only a slightly quicker rate than it had in 2009.¹⁴

Finished goods

Driving the 2010 deceleration in the finished goods index, price increases for finished energy goods slowed to 11.9 percent from 19.4 percent a year earlier. The gasoline index led this smaller advance, climbing 18.4 percent after surging 77.6 percent in 2009. (The 2010 rise in gasoline prices can be traced, in its entirety, to the final quarter of that year. Through September, the gasoline index decreased 3.4 percent, but prices jumped 22.5 percent in the final quarter.) Prices for liquefied petroleum gas and kerosene also increased by smaller amounts in 2010 than in 2009. Conversely, the index for residential natural gas edged down 1.1 percent in 2010 following a 15.6-percent drop in 2009. Prices for residential electric

power, home heating oil, and diesel fuel increased at faster rates than they had in the previous year. The index for finished lubricants turned up after falling a year earlier.

The index for finished consumer foods advanced 3.5 percent in 2010 following a 1.2-percent rise in the preceding year. Leading this acceleration, meat prices climbed 14.9 percent after declining 2.7 percent in 2009. The indexes for cereal and bakery products, dairy products, and shortening and cooking oils also turned up in 2010. Conversely, prices for fresh and dry vegetables fell 5.0 percent following a 16.9-percent jump in 2009. The indexes for processed young chickens and frozen specialties also turned down after rising in the previous year. Prices for fresh fruits and melons advanced by a smaller amount in 2010 than they had a year earlier.

The index for finished goods less foods and energy advanced 1.3 percent in 2010, slightly outpacing a 0.9-percent rise a year earlier. Leading this faster rate of increase, civilian aircraft prices climbed 2.5 percent following a 2.1-percent decrease in 2009. The indexes for consumer plastic products, paper, tires, and cosmetics and other toilet preparations also turned up in 2010. In contrast, the light motor trucks index edged down 0.3 percent after rising 0.9 percent in the preceding year. Passenger car prices fell more than they had in 2009, while the pharmaceutical preparations index increased slightly less than it had a year earlier.

Intermediate goods

The Producer Price Index for Intermediate Materials for Further Processing rose 6.5 percent in 2010 after advancing 2.9 percent in the preceding year. Leading this acceleration, prices for intermediate materials less foods and energy increased in 2010 after decreasing in 2009. The index for intermediate foods and feeds increased more than a year earlier. By contrast, price advances for intermediate energy materials slowed relative to their 2009 gains.

The index for intermediate materials less foods and energy increased 4.6 percent in 2010 after edging down 0.1 percent in 2009. Prices for steel mill products climbed 12.5 percent following a 9.8-percent decline in the previous year. The indexes for fertilizer materials, paperboard, basic inorganic chemicals, paper, and paper boxes and containers also turned up in 2010. In contrast, price increases for primary basic organic chemicals slowed to 17.5 percent from an 87.7-percent surge in 2009. The index for copper and brass mill shapes also advanced less than a year earlier.

Prices for intermediate foods and feeds rose 6.2 percent in 2010 following a 0.1-percent gain a year earlier. The meats index turned up 14.9 percent subsequent to a 2.7-percent decrease in 2009. Similarly, prices for fats and oils, flour and flour base mixes and doughs, processed cheese and related products, and fluid milk products also advanced in 2010

after declining in 2009. The prepared animal feeds index increased more than in the prior year. In contrast, prices for confectionery materials fell 7.8 percent in 2010 compared with a 5.0-percent advance a year earlier. The index for young chickens also turned down after increasing in 2009.

The rise in the index for intermediate energy materials slowed to 13.6 percent in 2010 from 17.7 percent in 2009. Prices for liquefied petroleum gas advanced 16.5 percent following a 119.1-percent surge in 2009. Increases in the indexes for gasoline and residual fuels also slowed compared with the prior year. By contrast, prices for natural gas to electric utilities turned up 4.9 percent after declining 11.9 percent in 2009. Prices for commercial natural gas decreased less in 2010 than a year earlier. The indexes for electric power and diesel fuel advanced more than in the preceding year. Prices for finished lubricants turned up after falling in 2009.

Crude goods

The Producer Price Index for Crude Materials for Further Processing rose 15.5 percent in 2010 compared with a 13.3-percent increase in the previous year. The 2010 acceleration was the result of a faster rate of increase in the index for crude foodstuffs and feedstuffs. By contrast, price advances for crude energy materials and crude nonfood materials less energy slowed from their 2009 rates.

In 2010, prices for crude foodstuffs and feedstuffs moved up 18.5 percent, following a 2.5-percent advance in 2009. About half of this acceleration can be traced to the index for slaughter cattle, which turned up 25.3 percent after a 2.9-percent decline in 2009. Prices for slaughter chickens, alfalfa hay, and Irish potatoes for processing also advanced following decreases in the previous year. The index for grains rose more in 2010 than in 2009. By contrast, the index for fresh vegetables, except potatoes turned down 11.3 percent after jumping up by 35.0 percent in 2009. Prices for slaughter barrows and gilts and for fluid milk advanced less in 2010 than they had a year earlier.

The index for crude energy materials increased 6.2 percent in 2010 following a 15.2-percent climb in the prior year. Crude petroleum prices accounted for most of this deceleration, rising 23.8 percent subsequent to an 87.0-percent surge in 2009. The index for coal also increased less than a year earlier. Conversely, natural gas prices declined at a slower rate in 2010, 12.2 percent, compared with a 19.4-percent drop in 2009.

The advance in the index for crude nonfood materials less energy slowed to 28.0 percent from 28.9 percent a year earlier. In 2010, increasing prices for iron and steel scrap, nonferrous metal ores, nonferrous scrap, wastepaper, corn, and raw cotton outweighed decreases in the indexes for pulpwood, table grapes, and rough rice.

Trade industries

In 2010, the increase in the Producer Price Index for the Net Output of Total Trade Industries accelerated to 1.1 percent in 2010 from 0.3 percent in 2009. (Trade indexes measure changes in margins received by wholesalers and retailers.) Most of this faster rate of advance can be traced to the margin index for grocery stores, which climbed 4.0 percent after declining 6.0 percent in the previous year. Margins received by radio, television, and other electronics stores and by merchant wholesalers of durable goods also turned up in 2010. In addition, the margin index for discount department stores advanced more than it had a year earlier. In contrast, margins received by gasoline stations dropped 18.9 percent subsequent to a 6.7-percent rise in 2009. The margin index for pharmacies and drug stores also turned down after advancing in the prior year. The index for department stores (except discount stores) declined more in 2010 than a year earlier, while margins received by new car dealers rose less than in 2009.

Transportation and warehousing industries

The Producer Price Index for the Net Output of Transportation and Warehousing Industries climbed 3.8 percent in 2010 compared with a 0.5-percent decline in 2009. Leading this upturn, prices received by the long distance

general freight trucking industry group rose 5.1 percent after falling 2.0 percent in the previous year. The industry indexes for scheduled air transportation, line-haul railroads, deep sea freight transportation, specialized freight trucking, and freight transportation arrangement also turned up after declining in 2009. In addition, the index for pipeline transportation of crude oil advanced more than it had in the previous year. Conversely, the rise in the index for the postal service industry slowed to 0.5 percent from 3.5 percent in 2009.

Traditional service industries

In 2010, the increase in the Producer Price Index for the Net Output of Total Traditional Service Industries accelerated to 2.1 percent from 1.7 percent in 2009. The index for the investment banking and securities dealing industry jumped 17.1 percent after falling 9.5 percent in the previous year. The industry index for hotels and motels (except casino hotels) also turned up in 2010 after declining in 2009. Prices received by the depository credit intermediation industry group rose more in 2010 than a year earlier, and the index for software publishers declined less than it had in 2009. By contrast, price increases received by hospitals slowed to 2.2 percent from 3.8 percent in the previous year. The index for the insurance carriers industry group also advanced less in 2010, and prices received by securities brokerages turned down after advancing in 2009. 

Notes

¹ Despite the broad expansion of PPI coverage into the services and construction sectors, coverage of the United States economy is still incomplete. For a list of areas not covered by PPI and therefore not included in either the current SOP system or experimental aggregation system, see <http://www.bls.gov/ppi/ppinoncoverage.htm>.

² PPIs for retail and wholesale trade measure the difference between the price received by the trade establishment for selling a good and the price paid by the trade establishment to acquire the good.

³ 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, pp. 3–11, as well as Jonathan Weinhagen, “Price transmission within the PPI for intermediate goods,” *Monthly Labor Review*, May 2005, pp 41–49.

⁴ For a list of industries assigned to each stage of production, see <http://www.bls.gov/ppi/industryflowstage.htm>.

⁵ In practice, due to the complex nature of the economy, the PPI program made industry assignments by attempting to maximize net forward flow within the system. Net forward flow is defined as follows:

(forward shipments of the industry stage + inputs received from prior stages of process) – (backward shipments of the industry stage + inputs received from forward stages of process).

Bureau of Economic Analysis Input/Output data were used to calculate net forward flow and to make industry assignments.

⁶ Price movements for PPIs described in this text include preliminary data for the months of September 2010 through December 2010. All PPI data are recalculated 4 months after original publication to reflect late data received by survey respondents. In addition, seasonally adjusted PPIs are recalculated, on an annual basis, for 5 years, to reflect more recent seasonal patterns.

⁷ “*Livestock Slaughter*,” Mt An 1-2 (1-10), Jan. 22, 2010, United States Department of Agriculture, available on the Internet at <http://usda.mannlib.cornell.edu/usda/nass/LiveSlau//2010s/2010/LiveSlau-01-22-2010.pdf> (visited Jan. 14, 2011).

⁸ “*Milk Production*,” Da 1-1 (1-10), Jan. 19, 2010, United States Department of Agriculture, on the Internet at <http://usda.mannlib.cornell.edu/usda/nass/MilkProd//2010s/2010/MilkProd-01-19-2010.pdf> (visited Jan. 14, 2011).

⁹ “*Feed Outlook*,” FDS-11a, Jan. 14, 2011, United States Department of Agriculture, available on the Internet at <http://usda.mannlib.cornell.edu/usda/ers/FDS//2010s/2011/FDS-01-14-2011.pdf> (visited Jan. 14, 2011).

¹⁰ “*Wheat Outlook*,” WHS-at, Jan. 14, 2011, United States Department of Agriculture, available on the Internet at <http://usda.mannlib.cornell.edu/usda/ers/WHS//2010s/2011/WHS-01-14-2011.pdf> (visited Jan. 14, 2011).

¹¹ Energy Information Administration, Petroleum Statistics, available on the Internet at http://www.eia.gov/oil_gas/petroleum/info_glance/petroleum.html (visited Jan. 14, 2011).

¹² “*This Week in Petroleum*,” Energy Information Administration, available on the Internet at <http://www.eia.gov/oog/info/twip/twiparch/110112/twipprint.html> (visited Jan. 14, 2011).

¹³ “*Global Economic Prospects, Navigating Strong Currents*,” volume 2, January 2011, (p. 4), The World Bank, available on the Internet at <http://siteresources.worldbank.org/INTGEP/Resources/335315-1294842452675/GEPJanuary2011FullReport.pdf> (visited Jan. 14, 2011).

¹⁴ More highly processed intermediate and finished goods commonly exhibit price movements that are somewhat different from price movements for less processed goods, because 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 at successive stages of processing.