

Food & Marketing



Meat Industry Price Spreads: What Do They Indicate?

In October 1997, the farm-to-retail price spread for pork reached a record \$1.62 per pound, attracting renewed attention to the difference between farm and retail meat prices. Current price spreads for Choice beef and broilers, although not at record levels, are also relatively high.

Over time, nominal price spreads tend to widen as inflation increases the costs of marketing, processing, and retailing. Yet the most compelling feature of meat price spreads for Choice beef, pork, and broilers is that, when adjusted for inflation, they have remained fairly constant or even decreased slightly over the past three decades.

Beef and pork price spreads measure the total costs (including profits or losses) for slaughtering, processing, and performing a multitude of marketing functions for a defined quantity and quality of product. Farm-to-retail price spreads usually widen when retail prices are rising rapidly or farm prices are falling. Consumers become concerned with high prices,

farmers are concerned when prices are low, and both often look to the price spread for evidence of who is profiting. But price spreads alone do not indicate whether an industry is efficient or inefficient, or whether marketing, processing, and distribution costs are reasonable. Nor do they directly measure profitability.

Although the terms “spreads,” “gross margin,” and “profit margin” are often incorrectly regarded as synonymous, spreads by themselves do not indicate whether any segment of the marketing chain (i.e., farm, wholesale, or retail) is enjoying profits or suffering losses. *Price spreads* generally are larger than meat packer or retailer margins since they also include charges by marketing firms for other functions, such as transportation.

Gross margin is generally used by industry to mean the difference between what a retailer or packer pays for a product (per unit bought) versus what is obtained at the time of sale (per equivalent unit sold). Gross margin includes the costs of labor, packaging, overhead, and any profit. *Profit margin* refers to the difference between the gross margin and costs, and is usually expressed as a percentage of sales or of stockholders’ equity. Price spreads reported by USDA are U.S. averages, whereas industry sources often cite gross margins and profit margins of individual firms.

Price spreads simply indicate differences in calculated values for a *consistent* equivalent quantity and quality of product as it is successively measured at the farm, wholesale, and retail levels. Consistent means that the same product (for example, a Choice steer’s specific cuts) is measured each month and at each marketing level. *Consistent* price spreads provide an estimate of the distribution of final retail dollars among the farm, wholesale, and retail segments of the marketing chain and how the distribution changes over time. As such, price spreads provide a breakout of the consumer food dollar into the farmer’s share and the marketing share *for the measured product*.

Congress, researchers, policy makers, industry participants, and the public are all interested in how the consumer’s food dollar is allocated between farmers and

the marketing system. By examining price spreads and their components, the timeliness and completeness of price adjustments among marketing levels, as well as variations in marketing spreads (e.g., transportation, processing, and distribution) can be monitored over time. If the spread is unchanged it implies that a price change at one level of the marketing system is being fully transmitted to another level. But retail prices and price spreads are only one set of information used in analyses of efficiency and performance of the total product marketing system. Additional information on costs and investments are required for an accurate and complete analysis.

However, the calculation and use of price spreads have some limitations. First, because of the difficulty in measuring price equivalencies across marketing stages for different products, not all price spreads are calculated. As a result, the calculated prices and price spreads do not reflect all livestock and meat products. For example, no Select grade or cow beef is included in the Choice beef spread, nor is a price spread computed for lamb. (For beef, this has been partially addressed by development of the “all fresh retail beef” price series.)

Second, the various product prices and spreads are equated to carcass proportions even though retail food stores don’t usually sell Choice beef, pork, or broilers in carcass proportions, so retail price estimates used in the calculation of spreads may not match retail store sales. The “all fresh retail beef” series gives a heavier weight to ground beef, but the Choice and Select portions of the all-beef calculations are still in carcass proportions. USDA’s Economic Research Service (ERS) uses carcass proportions because no comprehensive direct sales volume data are available at the retail level. Therefore retail cuts are assumed to sell in carcass proportions.

Another limitation is that prices, and therefore spread calculations, do not account for any “volume effect” of promotional price specials. The Bureau of Labor Statistics (BLS) prices used to construct the product prices and spreads include promotional sale prices that are in effect at the time the price data are

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What Are Price Spreads & How Are They Calculated?

Meat price spreads are the differences in prices or imputed values for a specified equivalent quantity and quality of product at identified points in the marketing channel during a specified time period. Thus, a price spread incorporates marketing, processing, and retailing costs. For example, the farm-to-retail price spread for Choice beef is the difference between the average retail price per pound and the farm value of the quantity of live animals equivalent to 1 pound of retail cuts. In other words, price spreads represent total marketing charges for processing and distribution between farmer and grocer. These marketing charges are not measured directly; instead, prices are observed and compared at successive points in the marketing chain.

The price spreads for Choice beef are monthly estimates by USDA's Economic Research Service of the differences among the values of a Choice Yield, Grade 3 steer sold by the feedlot; the value of Choice boxed beef from that steer as delivered to the city where it is consumed; and the value of Choice meat from that steer in the retail food store. Spreads reflect the decrease in weight from diverted hide, fat, bone, and other by-products, and the increase in value owing to assembling, processing, transporting, and retailing charges required to convert a farmer's Choice Yield, Grade 3 steer into retail cuts and hamburger sold to consumers. Values of variety meats and of by-products such as the hide are removed from the calculations through a by-product allowance. Currently 2.4 pounds of live animal is required to produce 1 pound of composite retail Choice beef cuts.

For beef, the farm-to-retail spread has two main components: farm to wholesale and wholesale to retail. The farm-level calculation is called the "net farm value," the wholesale level is the "wholesale value," and the retail level is the "Choice retail price." The farm-to-wholesale figure encompasses approximate charges for slaughtering and cutting cattle to primals and transporting the beef to the city where consumed. The wholesale-to-retail spread, accordingly, includes not only the gross margin for retailing, but also the charges for other intermediate marketing services, such as cutting to retail portions, wholesaling, local delivery to retail stores, and other merchandising.

For pork, the farm-to-retail spread is also made up of the farm-to-wholesale spread and wholesale-to-retail spread. The farm-to-wholesale spread covers approximate costs for slaughtering hogs, curing, smoking, and processing pork products, and shipping to the major consumer centers. The wholesale-to-retail spread represents local delivery cost, wholesaling, and the retailer's gross margin.

For broilers, there are two price spreads. One is called the retailer-to-consumer spread, which reflects the difference between the price retailers pay and the price at which they sell whole birds. It thus represents only the costs and profits or losses of the retailer in merchandising the product. The second spread is the wholesale-to-retail spread which reflects wholesale versus retail prices for a composite of whole-bird and chicken parts prices. This spread represents not only retail merchandising costs but also local delivery costs, warehouse costs, and possibly some broker costs. Because of the broiler industry's vertical integration of growers and processors, no farm-level price is calculated.

collected, but due to lack of pertinent data, no adjustments are made to reflect any increases in sale volumes that often accompany lower promotional prices.

A fourth limitation is that price spreads do not indicate profit levels of marketing firms. Data used for price spreads are based on published prices only and do not include direct estimates of firm or indus-

try costs. A final limitation is that price spreads do not account for time lags in physical movement of product.

Price Spreads— Short & Long Term

Long-term fluctuations. Interpretation of meat price spread data over the long term depends on whether nominal or deflated data are used, and whether long or short time periods are considered. On a nominal basis, meat price spreads have increased dramatically since the early 1970's. But when deflated—i.e., adjusted for inflation—a different picture emerges. Price spread data indicate improvements in cost efficiency in slaughtering and processing for Choice beef and pork over time.

When deflated, the *pork farm-to-retail spread* is essentially flat, or decreases slightly over the past three decades, and the record spread of October 1997 is below many earlier price points. As for the component measures, the deflated *pork farm-to-wholesale spread* decreases over time, offsetting changes in the *pork wholesale-to-retail spread* which increases from 1970 to 1978 before leveling off.

The deflated *farm-to-retail spread for Choice beef* declines slowly over the past three decades, also driven by the strong downward-trending *farm-to-wholesale spread*. The *Choice beef wholesale-to-retail spread*, on the other hand, is fairly level since 1980.

The *broiler wholesale-to-retail spread* is fairly stable on a nominal basis, but decreases when deflated. Because the broiler industry is integrated between broiler growers and processors, no farm-level price or farm-to-wholesale spread is calculated.

The farm-value share of retail Choice beef and pork prices has decreased over time, at least partly because marketing costs have paralleled inflation while cattle and hog prices have lagged behind. Farm-value share has been decreasing for most agricultural commodities. The farm-value share for all U.S. domestically raised foods has declined from 41 percent in 1950 to 23 percent in 1996.

Beef Prices and Price Spreads*

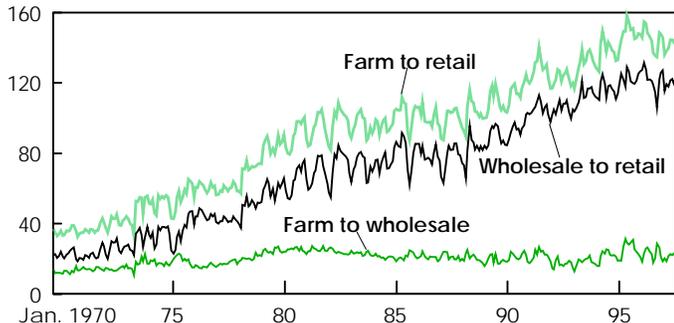
Nominal Prices

Cents per retail lb.



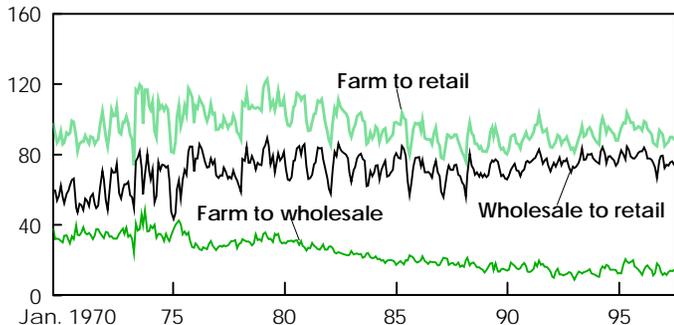
Nominal Price Spreads

Cents per retail lb.



Inflation-Adjusted Price Spreads

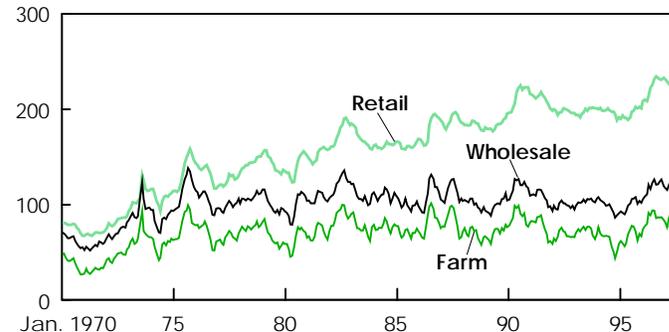
Cents per retail lb.



Pork Prices and Price Spreads

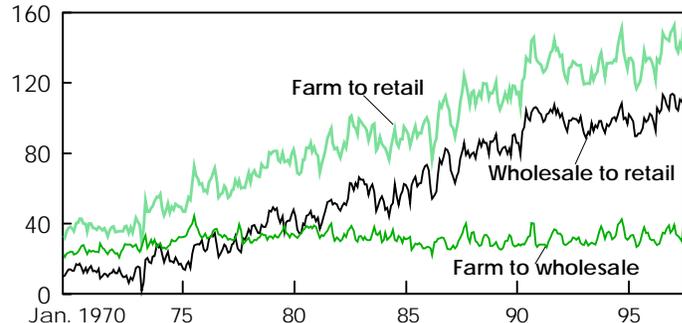
Nominal Prices

Cents per retail lb.



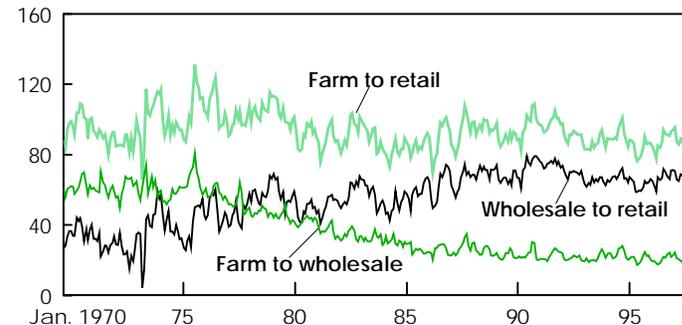
Nominal Price Spreads

Cents per retail lb.



Inflation-Adjusted Price Spreads

Cents per retail lb.



Monthly price and price spread estimates. 1982-84 = 100. Nominal prices are deflated using Bureau of Labor Statistics "all urban" consumer price index for all items.
*Choice, Grade 3.

Economic Research Service, USDA

The fall in the farm-value share reflects the increase in services provided by marketing firms over time, and in the cost of those services. The index of food marketing costs, which measures price changes in marketing inputs such as labor, packag-

ing, transportation, and energy, rose 336 percent between 1968 and 1996.

Short-term fluctuations. Given the longrun trend toward higher marketing costs, one might expect price spreads to

grow more or less steadily over time. But instead, substantial short-term variation occurs.

Short-term fluctuations in meat price spreads reflect the tendency for retail

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Price Spreads: A Brief History

Price spreads for meat have been computed since the early 1920's when Congress asked USDA to undertake special studies of marketing margins for livestock. In 1934, at the request of livestock producers, USDA developed a statistical series to measure changes in marketing costs for a number of agricultural commodities. Farm-to-retail price spreads have been published regularly since 1942.

Enactment of the Research and Marketing Act of 1946 increased the attention given to measurement and analysis of marketing spreads and costs. The 1946 Act directed USDA "to determine costs of marketing agricultural products in their various forms and through the various channels..."

Within USDA, the Economic Research Service (ERS) has been responsible for calculating Choice beef price spreads since 1962. Meat is one of nine product groups of U.S. farm-originated foods included in USDA's market basket. Red meat accounts for about one-third of the total market basket.

Between 1978 and 1981, ERS used data exclusively from its weekly retail meat price survey for computing retail prices and price spreads. Since 1981, ERS retail meat price series have relied on Bureau of Labor Statistics (BLS) retail price data for basic information. Currently price spreads for Choice beef, pork, and broilers are calculated. An "all fresh beef" retail price series began in 1987 which increased the share of ground beef included in carcass-weighted Choice and Select prices. No live price or price spread is calculated for the "all fresh beef" price because weighting the many types of live beef animals represented would require data not currently available.

Pork retail price weights were changed in 1978 to reflect changes in carcass proportions. The Choice beef retail price series weights were changed in 1990 to reflect use of 50/50 trim in the ground beef calculation, more boneless cuts, and closer trimming of fat. Broiler prices used only "fresh whole bird" retail prices until 1992, when a composite of whole and

parts prices was added at retail. Whole-bird prices continue to be published. Turkey prices are for a frozen whole bird.

ERS is interested in improving the accuracy and availability of data and information on retail prices and price spreads for meats. Suggestions for improving price spreads were obtained at a USDA conference on price spreads held in Kansas City in December 1996. Future improvements under consideration include:

- updating and revising the pork spreads using new price series developed by USDA's Agricultural Marketing Service and other sources;
- developing a volume-weighted all-pork retail price to represent, as nearly as possible, the average price that retailers receive for pork;
- improving the volume-weighted all-beef retail price reflecting the average price retailers receive for fresh beef;
- developing an all-grades-for-beef price spread series and an all-grades-for-pork price spread series by calculating all grade price series at the live and wholesale levels;
- adding more BLS retail prices if they become available for beef, pork, and broilers; and
- monitoring scanning technology and data, and incorporating these data as they become available.

In January 1998, BLS will make changes in the number and composition of the retail meat cuts for which BLS will publish average prices. Meat retail prices and price spreads will be adjusted to reflect these developments.

Farm-to-retail price spreads are currently published in Agricultural Outlook; Livestock, Dairy, and Poultry Situation and Outlook; and the Food Cost Review, and are released by ERS AutoFAX and on the Internet.

price changes to lag behind farm price changes. If there is no lag—i.e., changes in the farm price are immediately reflected in retail prices—the price spread would rise only with inflation and other costs. But with a lag in price transmission, the price spread is nonconstant, and at times quite variable.

Two reasons are cited by the industry for the lag in price transmission. First, the delay in changes between farm and retail prices is often attributed to the time it takes to move products from farms to retail outlets, so that the prices of products currently in stores reflect earlier farm prices. In addition, retailers set

prices for advertising purposes a week or more ahead, thus limiting rapid adjustment to sudden price changes. As a result, farm-to-retail price spreads frequently narrow while farm prices are increasing, and widen while farm prices decrease. The lag tends to be shorter when farm prices are rising.

The second reason for the lag in price transmission is fear of negative consumer reaction to frequent price changes (especially price increases) which motivates stores to "smooth out" such changes. In the long run, however, the marketing system cannot keep the retail price of meat constant and still balance production and

consumption, so retail prices must eventually adjust.

ERS research using monthly price data shows that price adjustments at farm and wholesale are nearly concurrent. The retail price, however, follows price changes at the farm and wholesale levels with a lag distributed over nearly a year. Research also reveals a distinct asymmetry in retail response to farm-level price changes. Upward movements in farm prices are followed by retail price adjustments about 24 percent more quickly than downward farm-level price movements. A partial explanation may be that retailers expect downward movements to be

temporary and wish to avoid marking prices down and then back up again.

A recent example of the lag in price transmission occurred during the July-to-August period of 1997 when the net farm value for pork dropped 8 cents per retail pound, the wholesale price remained about the same, and the retail price went up 3 cents. The farm price fell another 7 cents from August to September, the wholesale price fell 6 cents, and the retail price decreased only 1 cent. Then in October, the farm price decreased another 5 cents, while the retail price was flat. As a result, the October farm-to-retail pork price spread expanded an additional 5 cents.

Variation Evident in Wholesale-Retail Spreads

The absolute levels of spreads between wholesale and retail prices of beef and pork have increased irregularly over time. ERS based its recent research on the factors driving wholesale-to-retail price spreads for beef and pork on the concept that the retail price is essentially the wholesale price plus a markup that reflects grocery stores' costs of preparing and marketing meat. As such, inflation would tend to make costs, and consequently the wholesale-retail spreads for beef and pork, rise over time.

One explanation advanced for the widening of spreads over time is that, in addition to rising costs, increasing levels of service are provided with meat sold at retail outlets. Among the factors driving demand for service is increasing consumer income. However, ERS research has found no relationship between price

spreads and consumer income. Another set of factors that could drive service demand are the societal trends that have decreased the amount of time available for food preparation. However, simple trend measurements—albeit an imperfect proxy for this phenomenon—also failed to show any relationship with meat price spreads. The conclusion emerged that longrun price spreads appear to follow inflation.

It is obvious, however, that in the short run, price spreads do not track inflation closely. Price spreads for beef and pork fluctuate quite a bit from month to month. Even after correcting for inflation, wholesale-to-retail price spreads fluctuate, on average, about 5 percent per month (in absolute terms). One factor in this volatility is that retail prices seem to lag behind wholesale prices.

ERS research showed that increased volumes of meat consumption are associated with slight shortrun increases in the wholesale-to-retail spread. However, the effect of higher sales volume is only temporary, increasing nominal price spreads for only about 3 months. In the typical month, the sales-volume effects cause beef and pork spreads to vary by about 1 percent. In the longer term, sales volume has little impact on wholesale-to-retail spreads.

While wholesale-to-retail nominal price spreads have widened over time, long-run price spreads, when adjusted for inflation, have remained fairly constant.

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January Releases—USDA's Agricultural Statistics Board

The following reports are issued electronically at 3 p.m. (ET) unless otherwise indicated.

January

- 2 *Cheddar Cheese Prices (8:30 am)*
Dairy Products
- 6 *Poultry Slaughter*
- 7 *Broiler Hatchery*
- 9 *Cheddar Cheese Prices (8:30 am)*
Cotton Ginnings (8:30 am)
Crop Production (8:30 am)
- 12 *Egg Products*
- 13 *Crop Production, Annual (12 noon)*
Grain Stocks (8:30 am)
Rice Stocks (8:30 am)
Winter Wheat & Rye Seedings (8:30 am)
Potato Stocks
- 14 *Broiler Hatchery*
Turkey Hatchery
- 15 *Milk Production*
- 16 *Cheddar Cheese Prices (8:30 am)*
Turkeys
Vegetables
Vegetables, Annual
- 21 *Broiler Hatchery*
Cold Storage
- 22 *Catfish Processing*
Noncitrus Fruits & Nuts, Preliminary
- 23 *Cheddar Cheese Prices (8:30 am)*
Cattle on Feed
Livestock Slaughter
- 26 *Cotton Ginnings (8:30 am)*
- 27 *Peanut Stocks & Processing*
- 28 *Broiler Hatchery*
- 29 *Layers & Egg Production, Annual*
- 30 *Cheddar Cheese Prices (8:30 am)*
Agricultural Prices
Cattle
Capacity of Refrigerated Warehouses
Chickens & Eggs
Sheep & Goats