

Farm-to-Retail Price Spreads for Livestock

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Introduction

I was asked to discuss price spreads generally and from the viewpoint of the production segment of the livestock industry. Many livestock producers have attempted to infer something from price spreads about profitability or economic well-being of the participants in the processing-retailing segments of the industry. We have come to recognize several things from this exercise:

Price spreads are not a good measure, by themselves, of the economic health of any industry segment,

Our concern is – and should be – with the kind and quality of price information available to us for use in marketing our cattle, and,

Our concern is not – and should not be – over undue or excess profits in some other segment of the industry. If the market works, and we believe it does, excess profits will not persist for any significant length of time.

Having stated this, let me turn to a discussion of what the price spread is, how it is determined and how it can be used by the industry. I will be reviewing some of the historical data on price spreads, but will focus primarily on some profound changes in the industry and how these might affect and be reflected in the price spread and in live animal prices over the coming years.

Price Spreads Defined

Price spreads are also referred to as “marketing margins,” and are defined as “. . . the costs of performing marketing functions required to get live animals from the producer to the consumer” (Ikerd and Ward). Alternatively, the price spread is defined as “. . . measure of the gross returns to packers, processors, transportation firms and retailers” (Parham & Duewer).

The first definition seems more complete, since it recognizes that cost must be incurred – and reflected in the final product price – in transforming live animals into consumable products. Note, too, that an implicit cost element in the final product price is some level of profit for each participant in the marketing system. Assuredly, the level of profit may be negative from time to time for some or all participants. This

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depends upon the market-clearing price required to allocate supplies among competing demands.

The price spread captures all the costs of processing a live animal into retail cuts to be marketed to the consumer. Every step in moving the animal from the feedlot or finishing barn to the retail counter will require some expenditure and a profit. In essence, participants at each step must be *rewarded for the value they add* to the basic raw product.

The basic farm-to-retail spread is determined by subtracting the farm-equivalent value from the retail value for the product. The spread will vary by commodity, depending upon the amount of intermediate processing: The more processing required, the wider or higher the spread will be. For example, very little processing is done with a fresh-market fruit. The only marketing costs are primarily transportation and energy (for cooling), hence the farm price tracks very closely with the retail price.

At the other extreme is a product like wheat, which is substantially further processed into a variety of final products. Determining the farm-to-retail spread is extremely cumbersome, because a “market basket” of wheat products at retail must be developed first. Further, because of the large number of intermediate steps, farm-level prices will often have only a low correlation with retail prices.

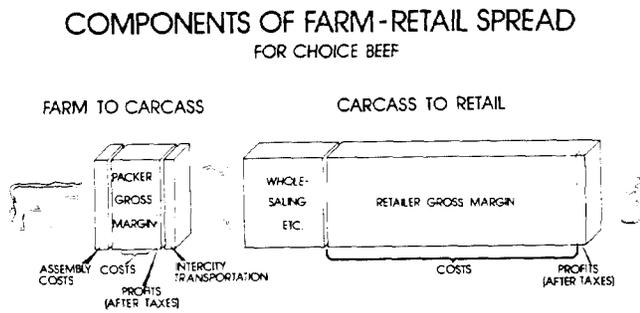
Livestock products fall between these extremes but more closely to the former example than the latter. There are a number of steps in processing meat, but the process is basically one of dis-assembly.

Price Spread vs. Gross Margins

Occasionally, the term “gross margin” is mistakenly substituted for price spread; The two *are* different. A gross margin is the difference between dollars paid and dollars received by a participant (or group of participants) in the marketing system (USDA/ERS). Because it only applies for one specific stage in marketing, e.g., retailing meat, it will not include other costs (such as transportation) that are included in the price spread. The price spread essentially lumps together costs for several segments, while gross margins apply only to costs for specific segments.

Figure 1 illustrates the price spread *and* gross margin for beef. Note that profits of one segment are costs to be borne by subsequent segments. Further, profits are generally a small percentage of total sales dollars. The meat packing and meat retailing segments are generally regarded as high-volume, low-margin industries. Past studies, although not conclusive, indicate that profits in the slaughtering segment account for only about 1% of total costs, and only about 3% in the retail segment.

Figure 1.



Source: USDA/ERS

The Price Spread for Beef

The farm-to-retail spread for beef is determined by subtracting the farm value of an equivalent amount of beef from the retail value of one pound of beef:

- FF Spread $RV - NFV$, where
- RV average (over all cuts) retail price of one pound of Choice beef
- NFV Net Farm Value Gross Farm Value – By-product Value
- GFV Farm price* live animal equivalent of one retail pound of beef
- BFV Value of beef by-products not sold through the beef marketing system, e.g., hide and offals

The farm-to-retail price spread for beef is usually divided into two distinct components: The farm-to-carass (F-C) spread and the carcass-to-retail (C-R) spread. This is done as a means to better identify where changes are taking place in the system – in the slaughtering sector or in the retail sector. Breaking the spread into these components requires one additional calculation to obtain the equivalent-to-retail carcass price:

- CV Carcass Price* carcass equivalent of one retail pound of beef
- Then: F-C Spread $CV - NF$
- C-R Spread $RV - CV$, and
- F-R Spread $F-C$ Spread $C-R$ Spread

Major factors which influence the two spreads include labor, transportation (of live cattle and beef products) and energy. A recent study suggested that labor accounts for 25% of costs in the slaughter segment, but accounts for 50% of costs in the retailing segment (Parham & Duewer).

The nominal and the deflated F-R spreads and retail prices for both beef and pork are shown in Table 1. Retail beef prices and the price spread both increased about 19%, in real terms, from 1963 to 1979. However, the price spread decreased by 13% and retail prices by 23% between 1979 and 1983. The increase from 1963 to 1969 reflects demand for additional marketing services (primarily packaging and retail merchandising) while the decrease since 1979 can be attributed in large part to changes in consumer demand,

supply considerations and structural changes in the packing and retailing segments (primarily with respect to labor rates).

Table 2 shows the average percent share of the consumer's dollar going to each industry segment for both pork and beef. The 1983 share for the farm and farm-to-carass segments in beef was below the five-year average, while the carcass-to-retail segment gained 2.6 cents of the consumer dollar. This is not to say that the retail segment is unduly earning more. Many new marketing services are being demanded now by consumers. Further, during a beef cattle liquidation, the farm share can be expected to decline as live cattle prices decline.

Table 1. Real and Nominal Price Spreads and Retail Prices for Beef and Pork, 1963 and 1983

	1963	1979	1983
Beef:			
Farm-Retail Spread (cents/lb.)	30.0	85.3	101.9
Deflated (CPI, 1967 100)	33.0	39.2	34.1
Retail Price (cents/lb.)	80.4	226.3	238.1
Deflated (CPI, 1967 100)	87.7	104.1	79.8
Pork:			
Farm-Retail Spread (cents/lb.)	26.4	77.5	93.3
Deflated (CPI, 1976 100)	28.8	35.6	31.3
Retail Price (cents/lb.)	55.9	144.1	169.8
Deflated (CPI, 1967 100)	61.0	66.3	56.9

Source: USDA/ERS

Table 2. Share of the Consumer Dollar, by Industry Segment

	% Share		
	Farm	Farm-Carcass	Carcass-Retail
Beef:			
1979-1983 Avg.	59.2	4.3	36.5
1983	57.0	3.9	39.1
Pork:			
1979-1983 Avg.	46.4	22.0	31.6
1983	45	19.1	35.9

Source: USDA/ERS

The Price Spread for Pork

As with beef, the farm-to-retail price spread for pork is divided into two segments: farm to wholesale (F-W) and wholesale to retail (W-R). The calculation of the total spread is very similar to that for beef. The differences arise in what marketing processes are included in each part of the spread.

There is much more processing of pork at the slaughter stage than with beef, and in many cases slaughter is only a separate function prior to processing within the firm. Many pork products, including cured ham, bacon and sausage, are essentially produced by the slaughterer/processor. Because

there is more processing at the wholesale level, the F-W margin for pork is relatively greater than the F-C margin for beef (Table 2).

As with beef, the farm-to-retail spread and retail prices increased, in real terms, from 1963 to 1979 (by 8.7% and 23.6%, respectively). Again, growth in demand for marketing services accounts for much of this increase (Table 1). However, the *real* farm-to-retail spread *decreased* by 12.1% from 1979 to 1983, while *real* retail prices declined 14.2%. Structural changes, particularly in labor utilization and wage rates, account for much of this reduction.

As illustrated in Table 2, the producers and farm-wholesale share of the consumer dollar was below the five-year average while the wholesale-retail segment gained 4.3 cents. Unlike for beef, most of the 4.3 cents gain came at the expense of the farm-to-wholesale segment rather than out of the farm share (2.9 cents vs. 1.4 cents). This may indicate some shift in demand for marketing services at the wholesale-to-retail level, rather than at the farm-to-wholesale level.

The Price Spread for Sheep

It is a little misleading to title this section "Price Spreads for Sheep," since no price spreads are currently calculated. The USDA did, at one time, calculate a spread and the Western Livestock Marketing Information Project also attempted to construct a series. However, the basic data is difficult to collect (farm level prices, wholesale prices and retail prices) and none of the series was very satisfactory.

Although the sheep industry is relatively small, accounting for less than one-half percent of total gross farm income, the data would be useful to have for comparisons across livestock industry segments. The best information currently available is produced by the American Sheep Producers Council, headquartered in Denver. The ASPC is beginning to track farm-level sales, wholesale prices and retail prices, but has not yet generated a farm-to-retail margin.

Lags, Steps and Cycles in Price Spreads

The title of this section is somewhat cryptic: It refers to a criticism of the USDA price spread calculations and to two phenomena that have occurred in the data over the past 20 years. The criticism, which is logically sound, is that comparing today's retail value with today's carcass and farm values does not account for the time required to move product through the marketing system, once the live animal leaves the feedlot or finishing barn.

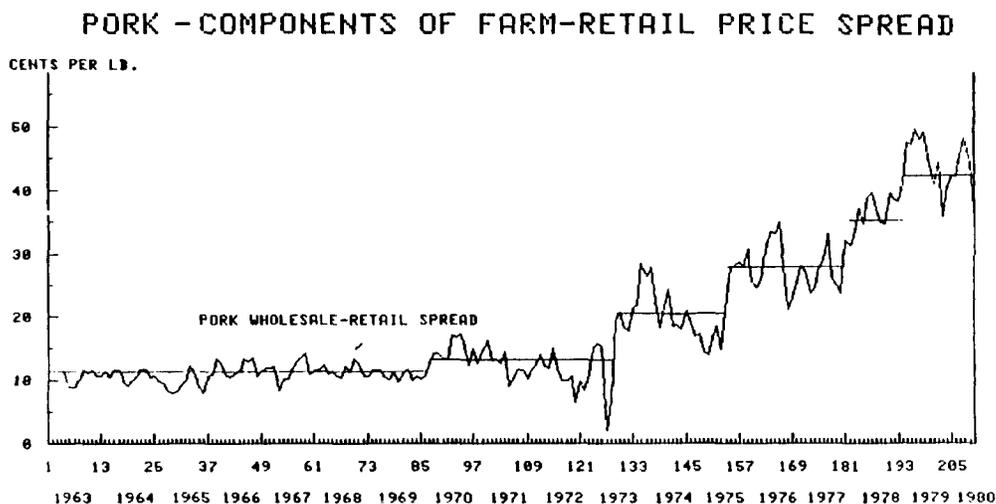
Research by Parham and Duewer suggests that *lagging* beef prices by 2 to 3 weeks and pork prices by 3 to 4 weeks results in a more consistent and stable price spread series. These time periods also correspond quite well to product movement. If the data is not lagged, retail prices based on supplies essentially established 2 to 4 weeks ago are compared to live and carcass prices based on today's supply.

The first phenomenon is the step pattern observable in price spreads over a 20-year period. This is illustrated in Figure 2, where six "steps" or distinctive periods of increase in the wholesale-to-retail price spread for pork can be observed. These steps have generally been attributed to retailer pricing practices.

Consumers resist price changes and retailers are sensitive to this resistance. Even though supplies may be tightening and costs increasing, retailers may tend to hold prices at a level until losses become overwhelming. Then they "step up" the margin to a level sufficient to recoup at least part of their losses, as well as assure a profit at current levels. That is, they delay – for relatively long periods – passing increasing costs on to consumers out of concern over what may happen to volume if prices either fluctuate too greatly or increase steadily.

The second phenomenon – short term cycles – is similar to the "step" question. Because of seasonal supply factors and retailer pricing methods, the price spread follows a 10 to 11 month (for beef) cycle. That is, as retailers attempt to hold

Figure 2.



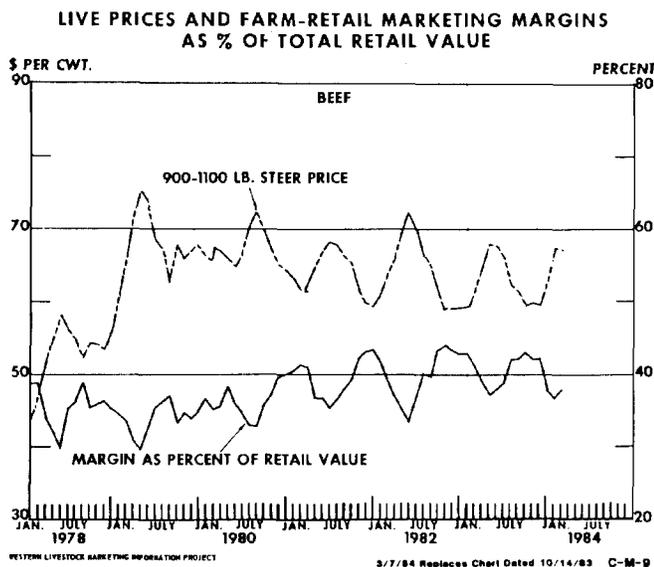
Source: Parham & Duewer/USDA

the line on retail prices to maintain volume, short supply may increase the farm value of the product and reduce the farm-to-retail margin. At other times, large supplies will lead to lower farm prices and the spread will widen.

The cyclical nature of the data is clearly illustrated for beef in Figure 3. When beef prices are at seasonal highs, the farm-to-retail margin is at a seasonal low (In Figure 3, this is expressed as the share of the consumer dollar going to the post-farm marketing segment).

A second aspect in Figure 3 is that the share of the consumer's dollar going to the post-farm sector is increasing over time, suggesting that intermediaries are getting an increasing share, albeit of an increasing pie. This can be attributed to the structural changes we have seen over the past several years.

Figure 3.



Some of the factors raised in this section will be discussed again in the final section. In particular, the structural and technological changes in the industry will impact the price spread and consequently the producers' share of the consumer's dollar.

Uses of Price Spread Data

Having noted earlier that our concern is not with whether or not some particular segment is earning "more than its share," one might legitimately ask why we are interested in price spreads at all, as producers. The answer is straightforward: Price spreads serve as one of several indices of changes in industry structure, and if we can use the information to anticipate these changes and structure our operations accordingly, we stand a much better chance of staying in business.

Agriculture, particularly the livestock segments, is facing a very difficult period: We are seeing changes in banking, government programs, the general economy, international trade, technology, etc., which all have an impact upon us. The survivor in this decade will be the producer who anticipates change and changes to meet that challenge.

One must remember that the price spread is essentially a reflection of the *demand for marketing services* on the final product. Given changes in packaging, processing and consumption patterns, a convincing argument can be made that the real increases (discussed earlier) in the price spread are attributable to increased consumer demand for some service associated with processing the live animal into a consumable product.

Industry Changes Affecting the Price Spread

As noted above, many changes are occurring in the beef, pork and sheep production and processing industries. Several of these have significant implications for how farm level prices will relate to prices at retail. The major changes are reviewed below. This section is based exclusively on how these industry changes will affect beef and live cattle markets over the next 10 years. Further, some concerns on price and price spread information are covered.

Market segmentation. There are really two kinds of segmentation confronting the livestock industry now: (1) Segmentation by type of consumer, and (2) Segmentation by type of product, e.g., steaks vs. hamburger.

The consumer market segmentation is having a substantial impact on the level and kind of marketing services demanded. For example, the "active lifestyle" consumer seeks convenience of preparation and quality of product. Both convenience and quality imply further processing prior to the retail counter and perhaps different packaging. Further, these consumers will demand new products to fit their lifestyles and schedules – and will be willing and able to pay for the products.

Because of the increased demand for marketing services, it is likely that the farm-to-retail spread and particularly the carcass-to-retail spread will increase over time. As demand for more processing grows (e.g., portion control processing) the cost of these services will increase. However, economies of scale will minimize the increase in the price spread.

The second kind of segmentation – by kind of product – has already been a significant factor in price determination, and is likely to grow. We have clearly had two markets for beef – table beef and hamburger – in the past. It is increasingly clear that we may see another segment in that market – intermediate products, using chucks and rounds. This would give us a three-segment market: Middle meats (ribs and loins), intermediate-value products (chucks and rounds), and the traditional hamburger market. Part of this will result from the changes in consumer tastes and preferences noted above.

This product segmentation will likely also cause the price spread to widen. Middle meats will be processed into portions at the fabrication plant rather than at the retail level; intermediate products will be refined into more retail-ready cuts or even into new ready-to-serve products. Again, efficiencies gained by centralization will limit the price-spread increase, but the tendency will be for the spread to increase. However, new product development will help maintain or improve live cattle prices.

Boxed beef. A valid criticism of the current price spread is that it relates carcass beef prices to farm and retail prices,

rather than boxed beef prices, which are more appropriate for the current industry merchandising practice. A 1982 study by W.R. Grace Co. indicated that approximately 80% of the beef is now sold "in the box," rather than in carcass form (Grace). The study went on to forecast that the percentage would exceed 85% before 1990.

Cattlemen are not comfortable with the current pricing and price reporting system. Our members view it as being too dominated by the most visible price, the carcass price. Estimates of boxed beef price are not viewed as a sound enough base for marketing decisions.

We would like to see better boxed beef price information made available to the industry. A farm-to-carcass and carcass-to-retail spread is not as meaningful as a farm-to-"box" and "box"-to-retail spread. The latter spread would give us more information about structural changes in the industry.

UPC scanning. Probably the most significant factor to impact the market over the next 10 years will be the increasing use of scanning technology in merchandising beef. This technology should have a greater impact upon marketing and pricing methods than any past development, because it allows for substantially greater and more accurate information than is presently available.

Scanning offers an opportunity for great improvement in merchandising beef. The benefits start with improved product management efficiency in the retail store and extend to improved price information to the producer level. The ability to better manage the logistics of meat distribution, not to mention improved pricing capability, is tremendous.

In the most "blue sky" or idealistic sense, scanning potentially offers the ability to track a cut in the retail counter from the consumer to the producer. With demographic data on customers, we can evaluate the types and quality of meat they *actually buy*, then track those cuts back through the store to the processor or purveyor. We can even go beyond that to the packer and the feeder. At every point we can evaluate how the product was handled, what processing methods were used, etc.

This, in turn, will allow us to better target consumer markets by type of product desired. The logistical information should improve distribution system efficiency. Finally, the information from scanning should help retailers identify profit opportunities and price meat accordingly. These gains in efficiency should benefit every segment of the industry.

Because of improved efficiency, the price spread is expected to become narrower with the advent of scanning.

However, a narrowing of the spread is less significant than the opportunity for targeting products to market segments; for developing new products to appeal to specific consumer segments and for identifying production and processing practices which consistently provide the type of product desired at the retail level.

Summary

Price spreads are an indicator of the demand for marketing services, including processing, transportation and packaging. Changes in the spread indicate changes in live cattle and retail prices as well as the cost of converting a live animal into a consumable product. They are of use to industry participants to anticipate change in the industry. They are not measures of economic well-being for any industry segment.

There are a number of changes occurring in the livestock and meat industry, including increased market segmentation, changing consumer demand and technological developments, such as UPC scanning. Some of these changes are already reflected in the price spread and live cattle and retail beef prices. However, they will continue to affect the price spread.

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