

Role of Contracts in Reducing Measuring Costs Associated With Carcass Pricing Grids

Growing consumer preferences for lean meat and advances in lean measuring technology likely contributed to changes in measuring costs associated with price determination. In particular, we explore the likely effects of carcass pricing programs on measuring costs, and how this provided an impetus for reliance on marketing contracts.

Measuring Costs Associated With Carcass Pricing Grids

The pork industry experienced significant growth in carcass pricing programs in the 1990s. As reported by the U.S. Department of Agriculture, the percentage of hogs purchased by packers based on carcass evaluation rose from 17 percent of total hog purchases in 1992 to 72 percent in 2001 (USDA/GIPSA, 1998, 2003). As advances in measurement technology (optical probes and computer) enabled more accurate and less expensive measures of meat quality, packers could offer grids with narrower groupings for leanness and carcass weight.

In addition to added packer costs related to recordkeeping and maintaining producer identity, carcass grading programs with more narrow quality groupings likely increase costs of sorting and pricing hogs (McCoy and Sarhan, 1988; Barzel, 1982). Lack of uniformity in the product to be exchanged exacerbates pricing problems (Hallwood, 1990). To purchase hogs without measuring every one, the packer must be convinced that the hogs are uniform in quality and size and will not vary significantly from sample to sample. However, lack of consistency in market hog supplies was a problem. The 1992 Pork Quality Audit of large pork packers found considerable variation in the live weights, and approximately 30 percent of the pigs purchased lacked uniformity (table 1). Lack of uniformity ranked among the top 10 packer quality concerns (Morgan et al., 1994).

The move to carcass pricing programs also likely raised producer costs associated with evaluating alternative packer bids for several reasons. First, packers have different premium and discount schedules, depending on the type of outlet and products sold, and different measuring tools. For example, packers such as Hormel, who process much of their pork, prefer a lighter

Table 1—Consistency and uniformity of live hogs, 1992

Live weight (pounds) ¹		Uniformity of hogs	
Range	Percent of slaughter	Degree	Percent of slaughter
Below 221	8.87	Extremely uniform	17.57
221-240	32.74	Moderately uniform	21.31
241-260	33.12	Adequately uniform	31.27
261-280	17.45	Moderately inconsistent	20.03
Above 280	7.9	Extremely inconsistent	9.90

¹ Average weight = 247 pounds.

Source: Morgan et al., 1994.

carcass. Others, such as Excel, prefer a heavier carcass for boned or boxed products. Marbery (January 24, 2000) writes that restaurants prefer relatively small loins, which come from 215-230 pound hogs compared to the standard 270-pound hog. A packer that exports to Japan prefers leaner pork. Hogs may not only grade differently across packers; the same hog may grade or yield differently at packing plants owned by the same packer.

Instruments used to measure lean also vary across packers (Meisinger, 2000). In 2000, among the Nation's 32 largest plants owned by 13 packers, 7 of these packers used the Fat-O-Meater, which employs light defraction to measure fat and loin depth. Ultrafom and Animal Ultrasound Systems (AUS) ultrasound, which measure fat depth and loin depth by ultrasound rather than light defraction, are used by three companies. Two packers use a low-technology ruler measurement on midline backfat to estimate lean. A more sophisticated measuring device, AutoFom, also uses ultrasound but scans carcasses at 2,000 points and monitors intramuscular fat, pH, which indicates the acidity of the muscle, and color in the cooler. This device is used by Hatfield and became operational in one of Hormel's plants in 2000.

To illustrate resulting grading program disparities, consider hogs from the Newsham and Danbred genetic lines priced on carcass grids of 10 leading U.S. pork packers (Meisinger, undated). The genetic lines differ in lean composition and other quality and performance factors. For Danbred hogs that are sold in Excel's program, carcass value (price X carcass weight) added by feeding to an end weight of 330 pounds compared to 290 pounds equaled \$8.04, compared to -\$3.26 discount applied by Hormel. In the 290-pound category, Danbreds received a \$4.53 premium over the Newsham line in IBP's program, while sales to Indiana Packers Company brought a -\$1.66 discount.

Second, carcass merit matrices may be revised by the packer, which suggests that producers must continually reevaluate alternative packer buying programs. As preferred characteristics of market hogs continue to change, packer carcass matrices also must change (Kelley, 2003). Buying programs have been continually adjusted to increase compensation for leaner hogs. Also, packers have been narrowing their ideal carcass weight ranges to provide more consistent products.⁴

A third factor complicating comparisons is that calculation of the base price also varies by packer, which can lead to important differences in carcass values across packers (Meisinger, undated). The live hog price is used to calculate an equivalent carcass price based on a formula that varies by firm (Kenyon and Purcell, 1999). Some packers use a formula pricing mechanism based on USDA current price reports, while others use an internally derived price.

Marketing Contract Adoption

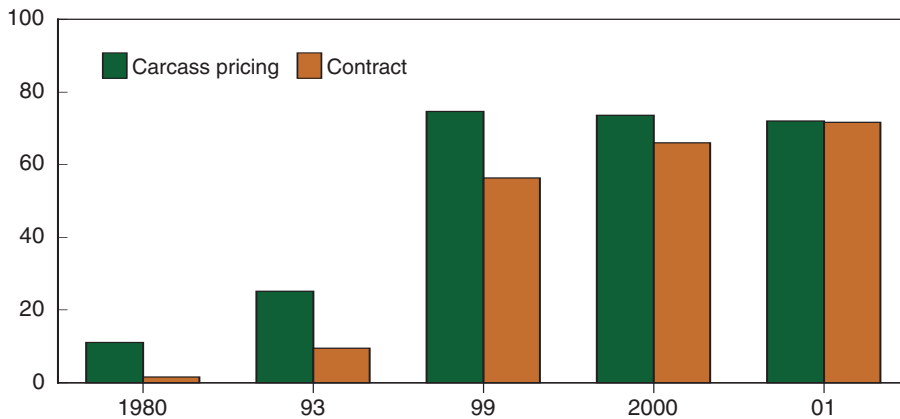
As carcass pricing grids became more important, marketing contracts between packers and producers quickly supplanted much of the spot market trade (fig. 4). The dominant pricing method in these contracts was a formula price adjusted by the packer's carcass pricing grid, with a current live spot market price (e.g., Iowa-Southern Minnesota plant prices) serving as the base price (Lawrence et al., 1997; Hayenga et al., 1996).

⁴ Packer resistance toward making these programs public also complicates producers' ability to evaluate alternative programs. Beginning in April 2001, the U.S. Department of Agriculture implemented the Livestock Mandatory Price Reporting Program to provide all segments of the livestock and meat industries with information on which to base market decisions. USDA now publishes mandatory data on contract arrangements, among other data, while protecting the identity of those reporting and the confidentiality of specific transactions.

Figure 4

U.S. hogs sold under carcass pricing programs and contracts

Percent



Source: USDA/GIPSA, 1998, 2003; Hayenga et al., 1996; Martinez, 2002.

Given changes in the pricing system, two features of marketing contracts could lower packer and producer measuring and sorting costs compared to spot markets. First, long-term agreements may reduce search costs associated with finding suitable trading partners (Hobbs, 1996). The duration of most hog marketing contracts is 4 to 7 years (Hayenga et al., 1996; Kenyon and Purcell, 1999), which can reduce producers’ costs associated with reevaluating packer grids at each sales interval by “stabilizing” the target grid. Similarly, packer costs associated with identifying suitable producers are incurred at long-term intervals.

Second, minimum quantity and quality requirements help to assure packers that hogs are of uniform quality, which allows packers to engage in much less measuring and sorting at the time of exchange. A survey of the largest U.S. pork packers revealed that almost half of the 13 packers involved in formal, written contracts in 1993 had minimum volume requirements, *and* either minimum quality requirements or breeding/genetic stipulations (Hayenga et al., 1996). Feeding programs or approval of facilities were specified by three packers. Large numbers of hogs produced under similar breeding and production conditions would give the packer useful information on the other hogs by measuring a few. Also, because much of the difference in the typical versus ideal hog is related to genetics, stipulations regarding genetics provide further assurances of uniform quality (Kenyon et al., 1995).

According to DiPietre, packing plants that contract for a large number of hogs from uniform supplies have stopped measuring every hog. Quality characteristics are sampled periodically to understand value differences, and producers are paid based on the distribution of quality.⁵

⁵ Packers are expected to offer a higher average price when they are spared some of the costs of measurement (Barzel, 1982). This may explain, in part, premiums paid in some marketing contracts on all hogs sold. Packers justify the premium based on reduced purchasing costs, and reduced hog supply variability that reduces operating costs (Kenyon and Purcell, 1999).