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Hog Marketing Practices and Competition Questions

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Hog production and marketing practices in the U.S. pork industry have changed dramatically over the past two decades. In the early 1990s, nearly 90% of hogs were purchased in the spot market through auctions, dealers or directly by packers. By early 2010, the percent of spot market hogs had fallen to 5-7%. Approximately 25% of hogs are owned and processed by packers in their own plants and 70% of hogs are traded between seller and buyer through marketing contracts. The contracts vary in duration and specification but are similar in that the transaction price is derived by a formula based on another market, often the now very thin spot market. The motivations of sellers and buyers to abandon the spot market may still exist, but the thin spot market raises concerns. Prices in these thin markets potentially may become highly volatile, subject to manipulation, and less representative of competitive market equilibrium (Martinez, 1999). Some producers and Congress are looking to reverse the trend by requiring packers to purchase a percentage of their needs in the spot market (Taylor, Muth and Koontz, 2007). Yet, other producers that value contracting are evolving to the next generation of contracts and alternative methods of price discovery.

This paper summarizes recent trends in hog marketing practices using USDA data and explores the motivations for increased reliance on procurement contracts. Next, a description of recent important research results is set out, followed by a brief discussion of the implications of

marketing arrangements. Finally, it identifies some unresolved issues that deserve thoughtful consideration by the industry, researchers and policy makers.

Recent Trends

The pork industry has undergone significant changes in efficiency, structure, and organization over the last two decades. Hog production was once dominated by small enterprises as part of diversified farms. As a point of reference, in 1993 there were over 235,000 farms with hogs and two-thirds of the U.S. hog inventory was on farms with less than 2,000 hogs, the largest category USDA reported at the time (USDA-NASS, 1993). Also, in 1993, 87% of hogs were bought on the spot market (Hayenga et al, 1996). There were approximately 200 locations, either buying stations or packing plants, to sell hogs in Iowa and a representative producer had five or more different bids in a 50-mile radius in each quadrant of the state (Lawrence, et al. 1995). The industry barrow and gilt slaughter was 1.65 million head per week. Carcass-merit pricing—in which each carcass is objectively measured for weight and leanness—was new and the average hog had backfat of 1.07” on a 179 pound hog carcass. In this system, relative to a base price, premiums are paid for leaner carcasses of ideal weight and discounts are paid for fatter carcasses that are either too heavy or too light.

In 2009, 57% of hogs were owned by 130 producers with at least 50,000 head inventory (USDA-NASS, February 2010). Approximately 63,000 farms owned the remaining 43%. In the first quarter of 2010, 5-7% of hogs are bought on the spot market. There are fewer buying stations but independent buyers and commission firms still have a presence and at least seven different packers buy hogs in Iowa each week. Weekly barrow and gilt slaughter has increased 27% to an average of 2.09 million head per week. Virtually all hogs are bought on carcass merit and backfat is 0.75” on a 200 pound carcass. The number of producers is smaller, production is

larger, and hogs are larger and leaner. In addition to carcass merit buying, the move to larger and leaner hogs is closely linked to the use of marketing contracts that more precisely send signals of preferred traits from consumers to producers than do spot market transactions (Martinez and Zering, 2004).

Another change that occurred since the early 1990s which allowed producers to grow was the use of production contracts. The owner of the hogs pays a grower to provide the building, utilities and labor to raise hogs to slaughter weight with the owner retaining ownership of the hogs, providing the feed, veterinary supplies and management decisions and standing price risk in the feed and hog markets. According to USDA, the total number of hogs under production contract owned by operations with over 5,000 head, but raised by contractees, accounted for 44% of the total U.S. hog inventory (USDA-NASS, March 2010). While often confused and used interchangeably, it is important to recognize the difference between production contracts and marketing contacts. Production contracts make provision for payments from the contractor/hog-owner to the grower/contractee for the housing and other costs associated with raising the hogs. Payments under the terms of the contract are relatively stable providing reduced risk for the grower. Marketing contracts are used to transfer ownership of the hogs from the hog owner to the buyer—typically a packer/processor. The focus of this paper is on marketing contracts.

Between 1993 and 2002, spot market share of hog sales decreased from 87% to 17% and fell to 5-7% of barrow and gilt slaughter by 2010. Packer-owned hogs going to their own plant represents 26% of hogs marketed, while some form of marketing contracts accounted for approximately 60% of the market hogs sold. The largest single market contract category is “hog or pork market formula” meaning that the transaction price in the contract is tied to the spot market for hogs or wholesale pork.

The spot market represents 5-7% of the hogs marketed or approximately 20,000-30,000 head on a given day. Prices under USDA-Mandatory Price Reporting (MPR) are reported twice a day, mid-morning and mid-afternoon meaning that the price reported represents an even smaller number of hogs and transactions. With the small number of transactions per reporting period the potential for greater price volatility from one market report to the next increases as does the possibility that individual transactions can unduly impact prices higher or lower. Some hog marketing contracts base the hog price on wholesale pork prices. While in this formula the producer price increases when the packer price increases, the wholesale pork market is also thinly reported and is not covered under the current MPR legislation. The contracts may also include a "quality" adjustment to address the concern that spot market hogs are not representative of all hogs. Parties to the contract often use multi-day or weekly averages to reduce volatility impacts of thin markets. However, there is concern that if packer controlled supplies, owned or contracted, can be used to pressure the spot market lower, then the contract prices are lower as well. The impact on overall price levels resulting from price discovery involving a small number of hogs is discussed later.

Motivation for Marketing Contracts

The trend to increased use of hog marketing contracts to procure hogs was driven by both producers and packers. Consumers were asking for leaner and more consistent pork. New hog production technologies such as artificial insemination, lean genetics, phase and split-sex feeding and age segregated rearing, reduced costs of production and allowed large producers, in particular, to capture scale economies at the farm level. Transportation efficiencies, dedicated feed mills, and management skills generated scale economies at the firm level. Producers capturing the early adopter margins used production contracts to expand proven management and

production systems. However, lenders were reluctant to loan to modernize facilities or expand without assurances of market access and in some cases price risk management. A producer survey conducted in 2000 found that increased price and reduced price risk were identified as the most important relevance of marketing contracts following disastrously low prices in 1998-1999 (Lawrence and Grimes, 2001).

At the same time packers saw changing production practices and investments made in regions distant from the traditional Midwest hog belt and existing packing facilities. In addition to securing a more consistent, uniform supply of higher quality hogs for the life of the contract, packers gained other advantages that the spot market never evolved sufficiently to deliver (Lawrence, Schroeder and Hayenga, 2001). Marketing contracts are a form of nonprice competition for hogs that encourage production facility investment near packing facilities by assuring lenders that hog producers have access guaranteed to packer “shackle-space”. The terms of some contracts also provide for less hog price or margin risk. Packers competed with one another on contract terms that either impacted the base price, carcass-merit premiums or risk-sharing methods. Risk sharing provisions varied by company, but typically involved the producer giving up opportunity for possibly higher spot market prices in return for contract protection from low spot market prices. For a discussion of hog marketing contracts see Lawrence (1999).

USDA-AMS, through Mandatory Price Reporting, reports number of head, carcass characteristics and prices by purchase method. The risk sharing provisions of the contracts are evident in average annual prices (Figure 1). The spot market price is higher than contracts in some years, but lower in others. Marketing contracts typically have specifications that require producers to adopt industry standard best management practices and encourage production of leaner hogs, the primary measure of quality, among other characteristics. The hogs sold through

the spot market on average are not as lean as hogs sold under contract and have lower value in today's buying systems.

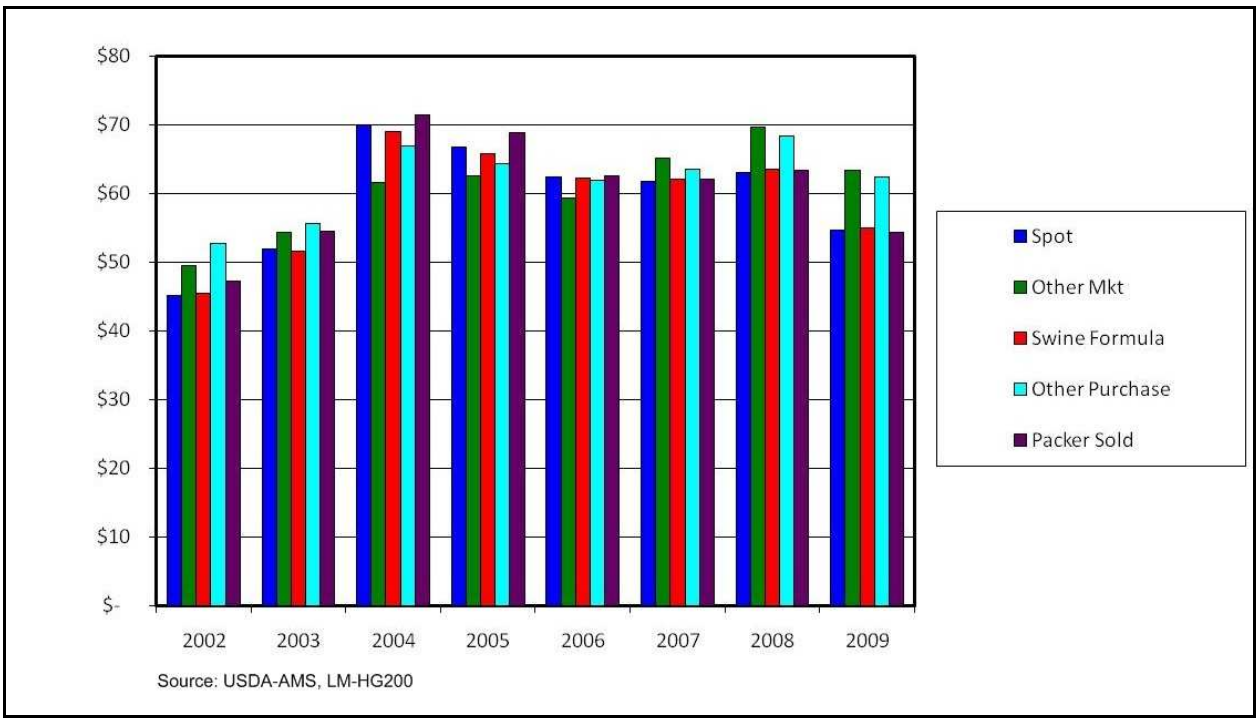

Figure 1. Lean Hog Prices ($/cwt), by Marketing Method

Relevant Research

Compared to the fed cattle market, there have been relatively few studies on the implications of market power—the ability of a firm or firms to influence price that is not possible in a perfectly competitive market—in the hog market. In a simulation model, Wang and Jaenicke (2006) found that for formula-price contracts increased contract supplies are negatively related to the expected spot market price when participating producers contract high proportions—greater than 0.8—of their hogs. However, they are positively related when producers contract lower proportions—between 0.6 and 0.8. Moreover, increased contract supplies reduce the variance of spot market price under formula-price contracts. They also found that formula-price contracts offer the highest expected profit to processors and highest expected utility to producers. The results imply that as long as a producer has a sufficient number of hogs in the spot market for negotiation that

contracting the remainder can be beneficial. Too few in the spot market and they lose their leverage. However, in today's market many producers contract all of their production and other producers do not contract any and thus the simulation results may not fit with today's market reality. Finally, the authors conclude that important linkage between the contract market and the cash market could disappear if cash markets become too thin and disappear altogether. With spot market volume near 5%, the sector may be at that point.

Perhaps the most comprehensive analysis of alternative marketing arrangements (AMA) in recent years is the Livestock and Meat Marketing Study (RTI International, 2007). AMAs are defined as an alternative to the spot market and include packer ownership and marketing contracts. Analyzing transaction data for October 2002 through March 2005 the authors found that on average packers that use a combination of marketing arrangements pay lower prices than slaughter facilities that use the spot market only. The RTI analysis found a statistically significant presence of market power by buyers to influence prices in live hog procurement. However, the results regarding the significance of AMA use for procurement of live hogs in explaining the sources of that market power are inconclusive; i.e., packers might have market power, but that power does not derive from AMA's. Thus, restricting AMAs is no assurance that market power will diminish.

There has been legislation proposed to restrict packer ownership and the use of marketing contracts. Some proponents of restrictions mistakenly cite the relationship between the change in AMAs and the change in hog prices reported in the RTI report as proof that hog prices would be higher with a larger spot market. The authors found that during the time period of the study, contracts had a bigger impact on price than did packer ownership. A 1% increase in contract hog quantities causes the spot market price to decrease by 0.88% and a 1% increase in packer-owned

hog quantities causes the spot market price to decrease by 0.28%. What is often ignored is that if the same hogs are put on the spot market that price will decrease 0.27% with each 1% increase in the supply of spot market hogs. In recent years U.S. hog slaughter has been slightly more than 100 million hogs, 32 million packer-owned hogs and 5 million spot-market hogs. Thus, a 1% decrease in contract marketings (630,000 annually) will increase the spot market price 0.88%. But, if the hogs are shifted to the spot market, they will increase that supply by 12.6% depressing prices by 3.4%. The math is similar, but not as dramatic for packer ownership. The point is that unless restricting contracts and packer ownership also restricts production, the hogs will simply be sold through the spot market increasing its supply and, at least in this analysis, offsetting the price increase associated with restricting AMAs. If, in fact, some producers are dependent on procurement contracts to secure financing as they were in the 1990s, then restrictions on contracts could force some operations out of business and thereby reducing pork supplies.

The RTI authors also modeled the vertical chain from hog farms to consumers. They factored in the cost advantages that packers have in operating their plants more efficiently when using AMAs and the impact on consumer demand from producing higher quality pork through AMAs—improved ability to deliver consumer preferred traits, such as uniformity, leanness, color, etc. They concluded that restrictions on the use of AMAs in the hog and pork industries would result in a net loss to both producers and consumers. Hog producers would lose because of the offsetting effects of hogs diverted from AMAs to the spot market, some increased costs of plant operations shifted back to producers and the decrease of consumer demand due to declining quality. Consumers would lose as wholesale and retail pork prices rose due to smaller supplies and some of the higher packer costs were passed downstream. Packers would gain in the short

run, but neither gain nor lose in the long run as they operate a margin business between producers and consumers.

Remaining Questions

Hog marketing practices have changed with the evolution of the industry and have provided motivation to both producers and packers to use marketing contracts rather than the spot market. Yet many hog marketing contracts rely on the spot market for price discovery leaving important questions worthy of consideration. For example, what are the necessary conditions for a viable spot market and what criteria define "viable"? What is the source of market power and what is the cost of controlling it? What are the effects of restricting marketing contracts? If producer loans are contingent upon marketing contracts, what is that impact on asset values if there are forced liquidations because marketing contracts are restricted? Likewise, what happens to the value of facilities if packers have put their production operations on the market at a time when other producers are selling farms and lenders are reluctant to loan without marketing contact assurances?

While the previous questions focused on implications of the spot market disappearing or of restrictions to force hogs back into the spot market, there are equally challenging questions regarding an alternative to the spot market. What will be the characteristics of the next generation of hog marketing contracts? Is market-based price discovery relevant in an industry that integrates producers more closely with consumers? What are the competition implications if the market trades contracts rather than hogs?

Whether trading hogs or contracts, issues of market performance and conduct remain. The USDA, Grain Inspection, Packers and Stockyards Administration (GIPSA) is proposing to add several new sections to the regulations under the Packers and Stockyards Act, 1921. The

new regulations that GIPSA is proposing would describe and clarify conduct that violates the P&S Act and allow for more effective and efficient enforcement by GIPSA. Additional research and development are called for to find workable solutions to industry questions particularly in the context of the proposed regulatory changes.

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