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FACTORS AFFECTING FEEDER PIG AUCTION PRICE DIFFERENTIALS¹

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Summary

A survey of feeder pig sales was conducted at two Kansas feeder pig auctions during the spring and summer of 1988. Several factors were identified that helped explain a large portion of the short-run price differentials observed in feeder pig prices. Physical characteristics of the feeder pigs and changing market fundamentals during the data collection period accounted for 80 percent of the variability in feeder pig prices. The most significant physical characteristics affecting price included weight, lot size, health, structural soundness, lumps, ruptures and lot uniformity. There are clear incentives for producers to attempt to sell feeder pigs in healthy, structurally sound, uniform-sized lots of 40 or more head.

(Key Words: Feeder Pig Pricing, Price Differentials.)

Introduction

Price differentials among lots of feeder pigs should be related to the supply and demand of feeder pigs in various weight and grade categories, since the demand for feeder pigs will be related to the expected profitability of each particular lot of pigs. Thus, feeder pig prices on a particular day should be related to the expected finished hog price and expected costs of finishing the pigs. Price differentials across lots of pigs on a given day should reflect the differences in the characteristics of the feeder pigs that are expected to impact the growing efficiency, costs of production, or revenues from the sale of finished hogs. The objective of this study was to examine the effects of a wide variety of physical characteristics on Kansas, feeder-pig, auction prices.

Procedures

Data on feeder pig characteristics and prices were collected from two weekly Kansas feeder pig auctions over a 10-wk period from May 5, 1988 through July 12, 1988. The time, average weight, lot size, breed, predominant color, muscling, frame size, health, structural soundness, uniformity of the lot, and price were recorded for each lot of feeder pigs sold. It also was noted whether the pigs were castrated, tails docked, vaccinated, sprayed, treated for internal or external parasites, and whether the pigs were ruptured or had lumps. The data set included all feeder pigs sold weighing between 20 and 99 pounds and consisted of 918 lots of feeder pigs containing 21,036 head.

Multiple regression analysis was used to estimate the values of the traits examined. This technique made it possible to evaluate each trait's price impact independently of the other factors. It also enabled us to estimate the price influence of interactions between traits. To

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account for the changes in general, hog-feeding profit expectations over the data collection period, the closing, futures market prices of finished hogs, corn, and soybean meal on the day of the auction were included in the regression.

Results and Discussion

The average price for the 40-59 pound feeder pig category was \$84.27/cwt or approximately \$42.14/head for 50-pound feeder pigs. The average feeder-pig price changed dramatically over the data collection period. The highest average price for 40-59 pound feeder pigs was \$107.67/cwt on May 17, 1988. However, as the severe drought in the cornbelt drove corn and soybean prices higher and the live hog futures prices declined by more than \$3/cwt, the average 40-59 pound feeder pig price at the two auctions dropped to \$50.16/cwt on June 21, 1988.

As expected, health had the largest impact on feeder pig price (Table 1). Stale pigs received approximately \$8.76/cwt discounts relative to healthy pigs. Pigs that were sick, ruptured, had lumps or structural problems received in excess of \$35/cwt discounts, netting prices that were 50% to 60% of the average price of healthy pigs.

Weight, lot size, and weight-lot size interactions had significant impacts on feeder pig price (Tables 2 and 3). Average premiums of greater than \$13/cwt were received for 40 pound feeder pigs sold in lots of approximately 60 head relative to single head lots (Figure 1). Buyers preferred common truckload lot sizes. As the feeder pig weight increased, the largest premiums occurred at smaller lot sizes, reflecting the need for fewer pigs to fill a truck. There are clear price advantages to marketing feeder pigs in lot sizes of 40 or more head.

The health program also had some influence on price. As reported in Table 4, lots of feeder pigs that were announced by the auctioneer as having been vaccinated (typically a "3-way" vaccination for rhinitis, erysipelas, and pneumonia) on average received \$2/cwt premiums over lots where no announcement was made regarding vaccinations. Pigs that had been castrated received \$3/cwt premiums on average relative to boar pigs. The announcement by the auctioneer that the pigs had been sprayed, wormed, or treated with other parasite preventatives had no significant direct influence on price. It is likely that feeder pig finishers perform many of these tasks routinely upon receiving the pigs. However, in no way does this imply that these routine health treatments are not cost effective for the feeder pig producer. The value of a good health management program is reflected in the discounts stale, sick, and crippled pigs receive in addition to any premiums associated with these treatments.

Lot uniformity had a significant impact on price (Table 5). A \$2.19/cwt discount was received on average for feeder pigs sold in lots containing individuals that were not uniform in size. Sorting pigs from the lot following entry into the sales arena had no significant influence on price.

Time of sale had a significant impact on the price received for feeder pigs (Table 6). Pigs sold during the 3rd and 4th quarters of the sale received \$3/cwt and \$5.37/cwt discounts, respectively, relative to lots sold during the first quarter of the sale. In the later part of the sale, it is likely that fewer buyers are actively bidding on the pigs, resulting in a price decline.

Several characteristics were found to have little impact on price. Breed type did not impact price significantly. The only recorded breed receiving a discount ($P < .10$) relative to crossbred pigs were Landrace feeder pigs. Skin pigment also had little influence on price. Lots containing predominantly brown/red colored pigs, however, did receive premiums relative to predominantly white colored pigs. Frame size and degree of muscling were not

found to have a significant impact on feeder pig price. Less than 8% of the lots had frame sizes that differed from average, which may have contributed to the lack of statistical significance. Heavy muscled pigs received a \$1.72/cwt premium relative to medium muscled pigs, though it was only statistically significant ($P < .11$).

Feeder pig prices during the period studied responded to changes in hog futures prices, corn futures prices, and soybean meal futures prices. The feeder pig prices increased on average by \$2.57/cwt to \$2.86/cwt, depending upon feeder pig weight, for each \$1/cwt increase in the live hog futures price. As feedstuff costs (corn and soybean meal) increased, feeder pig prices declined.

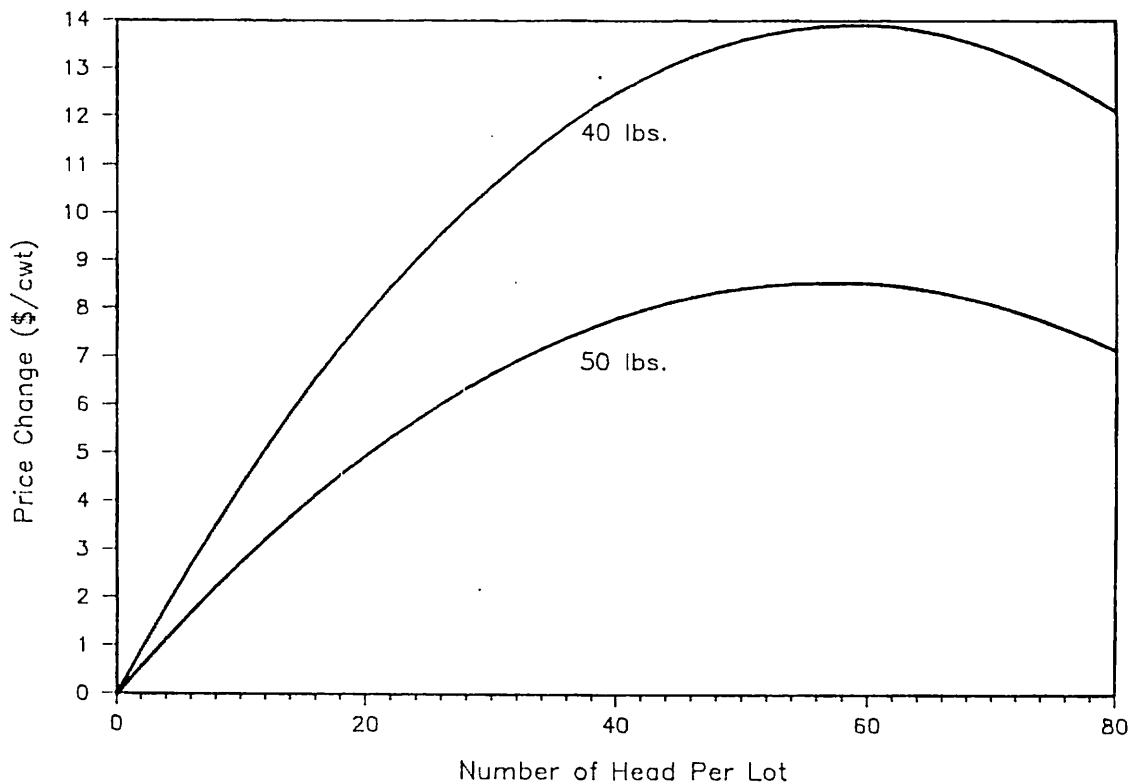


Figure 1. Effect of Lot Size on 40 and 50 Pound Feeder Pig Prices

Table 1. Effects of Health on Feeder Pig Price

Characteristic	Percentage of Pigs	Price Differential, \$/cwt
Healty	84.4	Base
Stale	1.2	-8.76 ^a
Sick	2.9	-35.55 ^a
Ruptured	4.0	-36.26 ^a
Lumps	4.0	-36.26 ^a
Structrual Problems	6.5	-41.64 ^a

^aIndicates price differential is statistically significatnly different from zero at the 95% confidence level.

Table 2. Effects of Weights on Feeder Pig Price^a

Weight, lb	Percentage of Pigs	Price Differentials, \$/cwt
20	3.1 ^b	Base
30	10.7	-0.18
40	31.1	-1.98 ^c
50	39.7	-5.41 ^c
60	12.7	-10.47 ^c
70	2.3	-17.15 ^c
80	0.4	-25.46 ^c

^a20 hd lot size.

^bPercentages include all pigs, regardless of lot size, weighing from 20 to 29 lb for the 20 pound weight category, 30 to 39 lb for the 30 pounds weight category, etc.

^cIndicates price differential is statistically significantly different from zero at the 95% confidence level.

Table 3. Effects of Lot Size on Feeder Pig Price^a

Lot Size (head)	Percentage of Pigs	Percentage of Lots	Price Differential, \$/cwt
1	1.9 ^b	21.2	-7.52 ^c
5	4.3	12.4	-6.37 ^c
10	14.4	21.4	-5.06 ^c
20	17.9	15.7	-2.84 ^c
30	23.3	14.3	-1.16 ^c
40	15.5	7.3	Base
50	10.8	4.1	0.62
60	7.2	2.3	0.71
70	4.7	1.3	0.27

^a50 lb feeder pigs.^bPercentages include all pigs, regardless of weight, sold in lots of 1 to 4 head for the 1 head lot size, 5 to 9 head for the 5 head lot size, 10 to 19 head for the 10 head lot size, etc.^cIndicates price differential is statistically significantly different from zero at the 95% confidence level.

Table 4. Effects of Pre-Conditioning Health Program on Feeder Pig Price

Pre-conditioning Treatment	Percentage of Pigs	Price Differential, \$/cwt
Parasite Treatment (internal & external)	33.3	1.09
Wormed	43.6	0.24
Vaccinated	65.1	2.02 ^a
Sprayed	30.9	1.68
Castrated	93.5	3.01 ^a
Tails docked	87.7	0.49

^aIndicates price differential is statistically significantly different from zero at the 95% confidence level.

Table 5. Effects of Lot Uniformity on Feeder Pig Price

Uniformity of Lot	Percentage of Pigs	Price Differential, \$/cwt
Uniform	67.9	Base
Nonuniform	32.1	-2.19 ^a

^aIndicates price differential is statistically significantly different from zero at the 95% confidence level.

Table 6. Effects of Time of Sale on Feeder Pig Price

Quarter of Sale	Percentage of Pigs	Price Differential, \$/cwt
1st quarter	20.7	Base
2nd quarter	30.1	-1.46
3rd quarter	25.1	-3.01 ^a
4th quarter	23.4	-5.37 ^a

^aIndicates price differential is statistically significantly different from zero at the 95% confidence level.



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