

Kansas Agricultural Experiment Station Research Reports

Volume 0
Issue 10 *Swine Day (1968-2014)*

Article 702

1997

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Recommended Citation

Jones, R and Langemeier, Michael R. (1997) "Historical economic returns to alternative swine enterprises in Kansas," *Kansas Agricultural Experiment Station Research Reports*: Vol. 0: Iss. 10. <https://doi.org/10.4148/2378-5977.6542>

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HISTORICAL ECONOMIC RETURNS TO ALTERNATIVE SWINE ENTERPRISES IN KANSAS



R. Jones and M. R. Langemeier¹



Summary

This study examines historical net returns to average Kansas swine producers over the past 16 years. Swine production has been a profitable enterprise. As expected, average returns per head have been higher for farrow-to-finish producers than for feeder pig finishers, and farrow-to-finish producers have nearly always been able to at least cover variable costs of production.

(Key Words: Net Returns, Variable Costs, Total Costs.)

Introduction

An investigation of the historical economic returns and other measures affecting the profitability of alternative agricultural enterprises is informative for both long- and short-run planning. For example, expansion or contraction decisions should be based on long-term expected profitability. Long-term historical means and distributions of important economic factors provide at least some indication of future results. Using this information, producers are able to compare alternative enterprises and make effective strategic plans.

Procedures

Data regarding average market hog prices, sow prices, feeder pig prices, feed costs, and other variable costs were obtained for 64 calendar quarters from January 1981 through December of 1996. Measures of fixed costs for swine enterprises were calculated for the

same time period. Cash prices for market hogs, sows, milo, soybean meal, and other feed ingredients were obtained from various publications of the Kansas Agricultural Statistics Service and the United States Department of Agriculture, Agricultural Marketing Service (AMS). Feeder pig prices for 45 lb feeder pigs also were collected from AMS. Feeder pig prices from southern Missouri were used early in the sample period, and prices from St. Joseph, Missouri were used later in the sample period. Other variable costs were obtained from representative average Kansas farrow-to-finish and feeder pig finishing budgets developed by Extension Agricultural Economists at Kansas State University for the respective time periods. Variable costs include milo, soybean meal, vitamins and minerals, pig starter, feed processing, labor, veterinary and supply costs, marketing, utilities, repairs, miscellaneous costs, and interest on operating expenses. The labor cost includes an opportunity charge for operator labor. Data from actual Kansas swine enterprises in the Kansas Farm Management Associations were used to obtain cost estimates. These costs vary with the level of production. An additional variable cost incurred by feeder pig finishers is the cost of the feeder pig itself. The fixed costs of swine production include annual charges needed to recover the investment in buildings, equipment, and breeding stock, and the insurance and taxes on buildings and equipment. These costs were calculated based on estimated investments and were converted to per pig measures. The fixed costs are incurred even if no hogs are produced.

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Net returns per head for farrow-to-finish and feeder pig finishing are estimated for each quarter by subtracting costs from gross returns obtained through market hog and cull sow sales. Two measures of net returns are calculated; returns above variable costs and returns above total costs. As long as returns are above variable costs, producers can remain viable in the short run. In the long run, all costs (variable and fixed) need to be covered. Charges for management and risk are not included in either measure, so the estimated return distributions represent the returns to management and risk associated with hog production.

The return distributions calculated here represent traditional swine production systems in Kansas. Historical data for relatively new technologies such as SEW swine production are not yet available. Preliminary cost and return estimates for 1997 suggest that net returns per head are slightly higher for SEW swine producers as a result of improved feed efficiency, especially during periods of high feed costs.

Results and Discussion

The estimated distribution of returns over variable costs for average, traditional, farrow-to-finish, swine producers in Kansas from 1981 through 1996 is presented in Table 1. Returns averaged \$26.27 per head produced and ranged from a low of \$-13.61 per head in the fourth quarter of 1994 to a high of \$69.48 per head in the third quarter of 1987. Revenues failed to cover variable costs only about 3% of the time. The estimated distribution of returns over total costs for average, traditional, farrow-to-finish, swine producers in Kansas also is presented. Even after accounting for fixed costs, producers still averaged a return of \$7.56 per head. Average Kansas farrow-to-finish swine

producers have been able to cover all costs over two thirds of the time in recent years. A comparison of the first half of the data set with the last half reveals that returns per head were on average slightly higher in the early period than in more recent times, as illustrated in Figure 1. This suggests that some increase in enterprise size may be needed over time to maintain a constant level of overall enterprise profits.

The estimated distribution of returns over variable costs for traditional feeder pig finishers in Kansas is presented in Table 1 as well. Producers have averaged \$11.79 per head over variable costs, ranging from a minimum of \$-12.52 in the fourth quarter of 1994 to a maximum of \$42.76 per head in the fourth quarter of 1986. Returns failed to cover variable costs about 16% of the time. The estimated distribution of returns over total costs for traditional feeder pig finishers in Kansas reveals that even after accounting for fixed costs, an average net return per head of \$3.33 has been realized. Returns per head were below the breakeven needed to cover total costs about 37.5% of the time. A comparison of the first half of the data set with the last half reveals no difference in average returns over variable costs between the two periods, as illustrated in Figure 2.

These results suggest that Kansas swine production has been profitable for average producers in recent years. As expected, potential returns per head are higher for farrow-to-finish producers than for feeder pig finishers. However, farrow-to-finish production is more capital intensive and requires a different set of management skills. Preliminary estimates suggest that the same relative relationships between farrow-to-finish and feeder pig finishing continue to hold for SEW swine production, though the absolute returns to each enterprise may be slightly higher.

Table 1. Estimated Distribution of Quarterly Hog Production Returns in Kansas from 1981-1996

Item	Farrow-to-Finish Production		Feeder Pig Finishing	
	Returns over Variable Costs	Returns over Total Costs	Returns over Variable Costs	Returns over Total Costs
Average, \$/head	\$26.27	7.56	11.79	3.33
Maximum, \$/head	69.48	51.36	42.76	34.25
Minimum, \$/head	-13.61	-29.83	-12.52	-20.14
Quarters less than 0	2 (3%)	20 (31%)	10 (16%)	24 (38%)

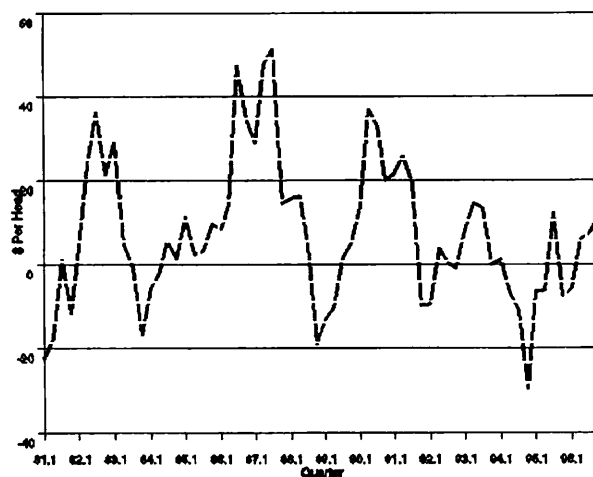


Figure 1. Estimated Quarterly per Head Returns over Total Cost for Farrow-to-Finish Hog Production in Kansas

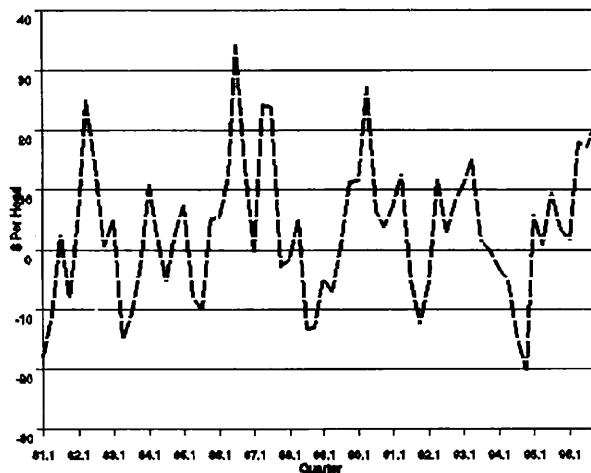


Figure 2. Estimated Quarterly per Head Returns over Total Cost for Feeder Pig Finishing Hog Production in Kansas