January 2002

Competition — It's Not Just "Cost" of Production

Allen Prosch
University of Nebraska-Lincoln

Competition — It's Not Just "Cost" of Production

Allen Prosch[1]

Summary and Implications

Pork producers are faced with numerous competitive challenges. Having a higher cost of production than other pork producers has always been a reason to exit the pork industry. Even when their cost of production is competitive, producers still choose to exit the industry. Hog prices, corn prices and the hog/corn ratio from 1970 to 2000 were examined in relation to the change in the number of pork producers in Nebraska to identify the degree of influence that each had on producer's decisions to enter or exit pork production. The annual average price of market hogs per cwt and the price of corn had little relationship to the number of pork producers in the state. (r^2 <0.1). The hog/corn ratio (the average market price of hogs per annum divided by the average market price of corn per annum) had a slightly stronger relationship (r^2 = 0.16). The data were further divided into five, six-year groups and analyzed. The relationship between hog/corn ratio and number of pork producers in the state was much stronger in the 1970s and early 1980s (r^2 = 0 .63 to 0.68). The relationship weakened dramatically in the late 1980s and the 1990s (r^2 = 0.08 to 0.0005). This suggests factors other than profitability as defined by the hog/corn ratio, are exerting more influence on the decision to remain in pork production now than in the past. New challenges in the industry, such as labor relations, contract negotia-

(Continued on next page)

tions and dealing with regulatory agencies all require a degree of people skills not previously required to be successful in pork production. The new challenges often require different skills and carry different risk. A competitive cost of production is necessary to remain in business, but it has a reduced influence on the decision to continue in production.

Introduction

Pork producers have control over the cost of such inputs as feed, medicines, and facilities. Successful pork producers have exercised control over these items for many years. Traditionally, being a low cost producer has kept them competitive with each other and subsequently kept them in business. In recent years other factors, such as environmental regulations, market access and labor relationships have become prominent in competitiveness. This paper examines the issue of profitability and its impact on the decision to remain in pork production.

Methods

Three relationships were analyzed using a regression analysis. The average annual price per cwt of market hogs, the average annual price per bushel of corn and the ratio of the average annual price per cwt of market hogs divided by the average annual price per bushel of corn (hog/corn ratio) were compared to the change and the percent of change in the number of pork producers in Nebraska. Nebraska Agricultural Statistics Service data from 1970 thru 2000 were used for all analyses. Market hog price, corn price and the hog/corn ratio were independent variables. The change or percent of change in the number of Nebraska pork producers was the dependent variable. The relationships were analyzed on a same year and on a one-year lagged basis. Data for the thirty-year period, beginning in 1970, were aggregated in five periods of six years each.

Results and Discussion

Cost of Production

When comparing cost of production, Midwest producers of all sizes are competitive with domestic and foreign pork producers. While size enables some operations to improve in selected cost of production items where economies of scale apply, this same scale creates activities and costs in other items that, at some point, limits how low cost of production can be driven. Differences in cost of production between producers remain. Minnesota, Iowa and Nebraska data for the year 2000 indicate that, on average, small (250 to 300 sow farrow to finish — or 4,000 to 6,000 annual market hog sales) producers had a cost per cwt of pork produced of $38 to $39. Small producers in the upper range for profitability (top 40%) had costs per cwt of $34 to $36. Similarly, Lawrence and Grimes (2000) surveyed producers and found that with a bushel of corn valued at $2.50 and a market hog price of $39.00 per cwt, 39% of the producers whose annual marketings were less than 10, 000 head annually said they planned to stay in pork production.

Current corn prices are not as high as the $2.50/bushel used in the Lawrence and Grimes survey. Mid-September prices for corn based on the Omaha market ($1.88/bushel) and for market hogs based on the Western Cornbelt carcass market ($61.45/cwt) are giving producers with a $39 per cwt cost of production over $16 profit per hog marketed; producers with $34 per cwt cost would profit over $29 per hog marketed. However, at a market hog price of $39 per cwt, the profit per hog drops to $0 for the average group and $12.50 for the low cost group. A producer may be competitive based on cost of production, but the total dollars returned, due to low margin on low numbers sold, may not be worth the effort, especially in a diversified crop and livestock operation.

Hog Price

Do producers exit the industry in larger numbers during or immediately after years of low prices? When examining the relationship of hog price and the number of producers exiting or entering the industry on same year or one-year lagged basis, the price of hogs does not appear to be the decisive factor for Nebraska producers (Figure 1). Comparing the strength of the relationship on a same year basis the r^2= 0.04. With a one-year lag of the dependent variable, the strength of the relationship decreased, r^2= 0.028. Producers exited the industry despite rising prices from 1971 to 1973, 1974 to 1975, 1980 to 1982, and again from 1983 to 1984. From 1985 to 1991 there was a period of "calm" in the number of Nebraska pork producers entering or exiting the industry, with three years showing modest declines in the number of producers, three years showing no change in the number of producers and one year showing an increase. Since 1992, the number of pork producers remaining in production has decreased every year. This was in spite of the fact that market hog prices from 1992 thru 1997 were similar to prices from 1975 to 1991 with values near or above $42 per cwt.

The percentage change in the number of pork producers each year vs hog market price was plotted (Figure 2). From 1980 thru 1982 and again from 1994 thru 1997 the year-to- year percentage of producers exiting the industry increased. Producers left the industry despite increases in hog prices during these periods.

Corn Price

Hog price is only half the equation. A period with a high cost of production may negate the value of high hog prices. The value of corn, especially for diversified crop and livestock producers who have excess corn to sell, may impact the decision to exit pork production. Comparing corn price to the number of producers in pork production on same year or one-year lagged basis indicates that corn price was not a decisive factor (Figure 3). The strength of this relationship on a same year basis was r^2 = 0.003. With a one-year lag of the dependent variable, the strength of the relationship increased slightly, r^2 = 0.07. From 1974 thru 1977, with steadily declining corn prices, Nebraska producers chose to exit the industry during two of the four years, with a large decline in pork producer numbers in 1975. In the 1980s producers chose to exit and enter pork production during years of both rising and falling corn prices. In the 1990s rising or falling corn price had little impact as producers exited the industry in every year following 1991.

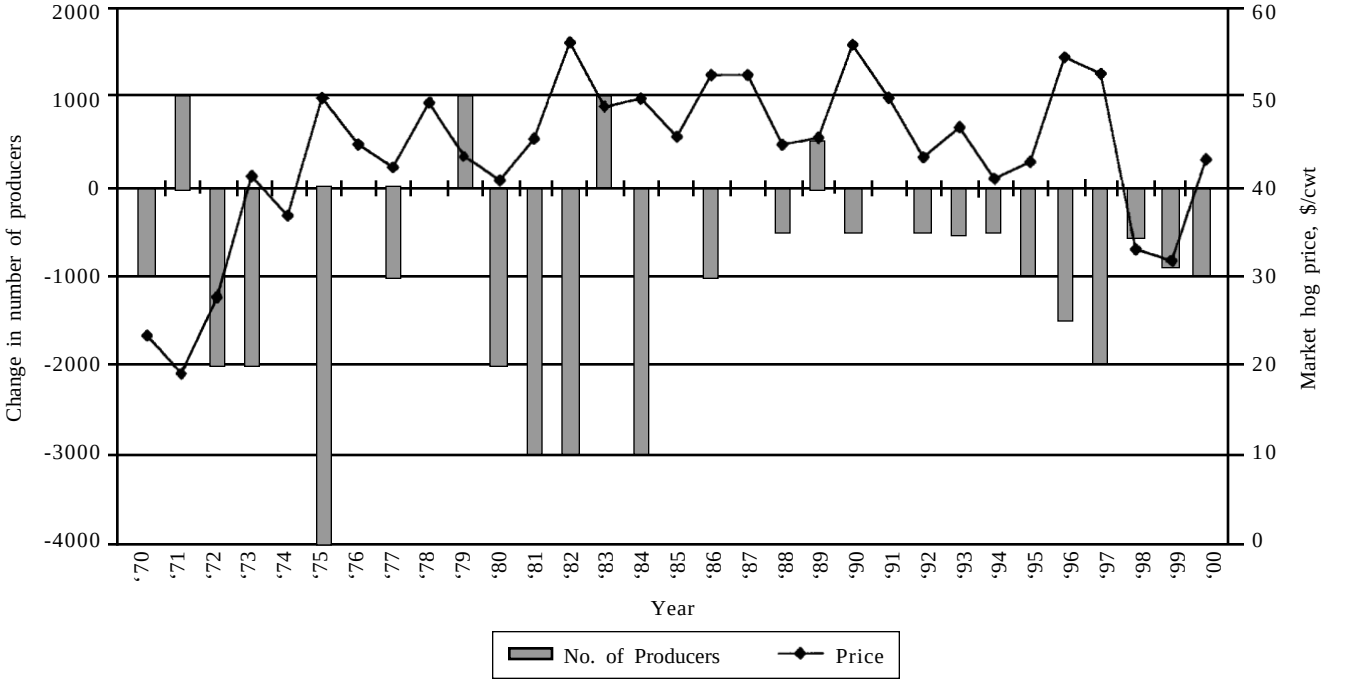

Figure 1. Average annual market hog price/cwt vs the annual change in the number of Nebraska pork producers.

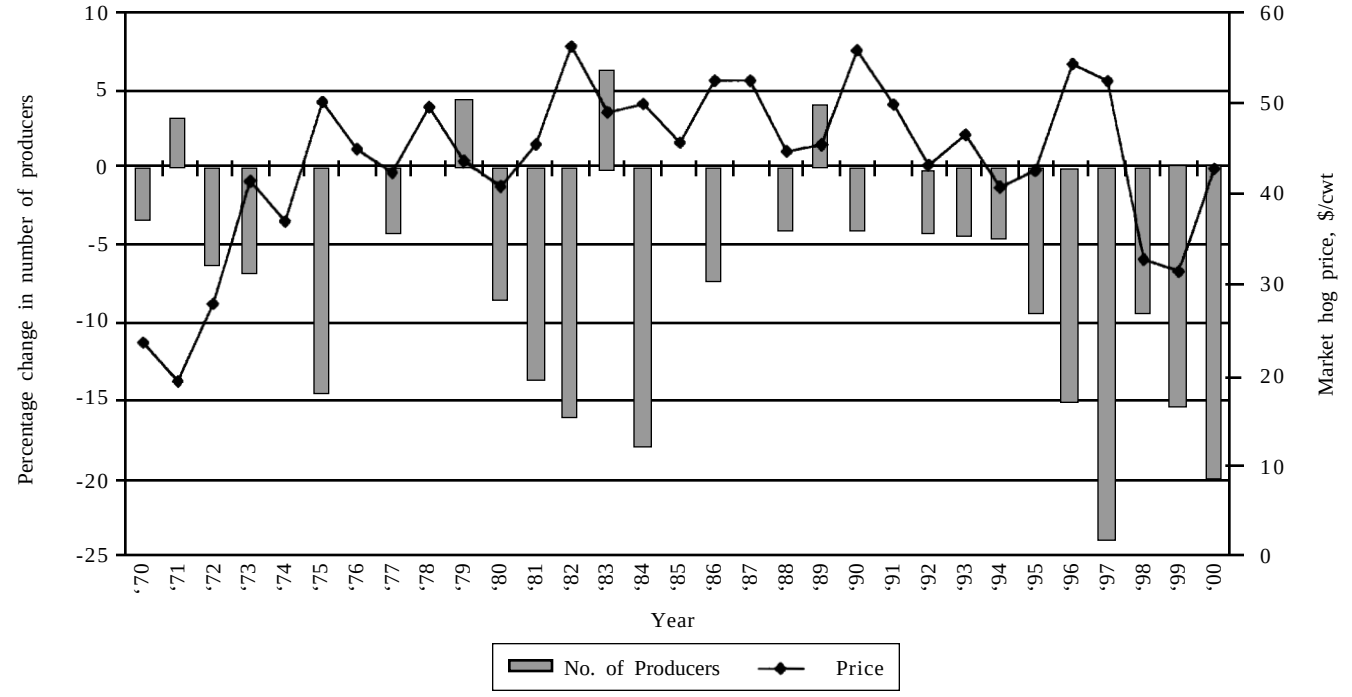

Figure 2. The annual average market hog price/cwt vs the annual percent of change in the number of Nebraska pork producers.

Hog/Corn Ratio

The hog/corn ratio is the computed ratio of the market hog price per cwt divided by the corn price per bushel. The ratio may be a good proxy for profitability, with higher ratios, 25 to 1, being considered more profitable and lower ratios, 15 to 1, being considered less profitable. In their survey, Lawrence and Grimes (2000) priced corn at $2.50 per bushel which, when combined with a $39 per cwt cash hog price, results in a hog corn/ratio of 15.6 to 1. Since 1970, when comparing the percentage change in the number of Nebraska pork producers compared to the hog/corn ratio, in the same year, we find that producers both exited and entered pork production during periods of both a high and a low ratio (Figure 4).

A low hog/corn ratio, an indicator

(Continued on next page)

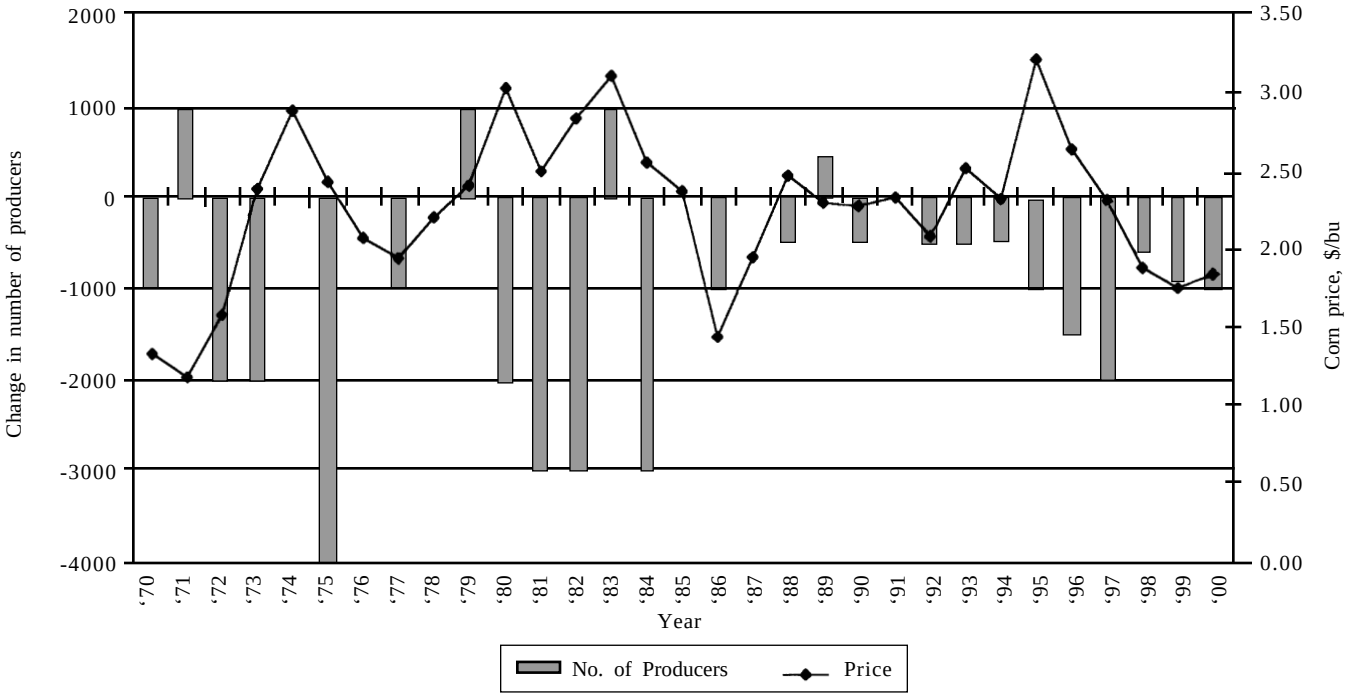

Figure 3. The average annual corn price/bushel vs the annual change in the number of Nebraska pork producers.

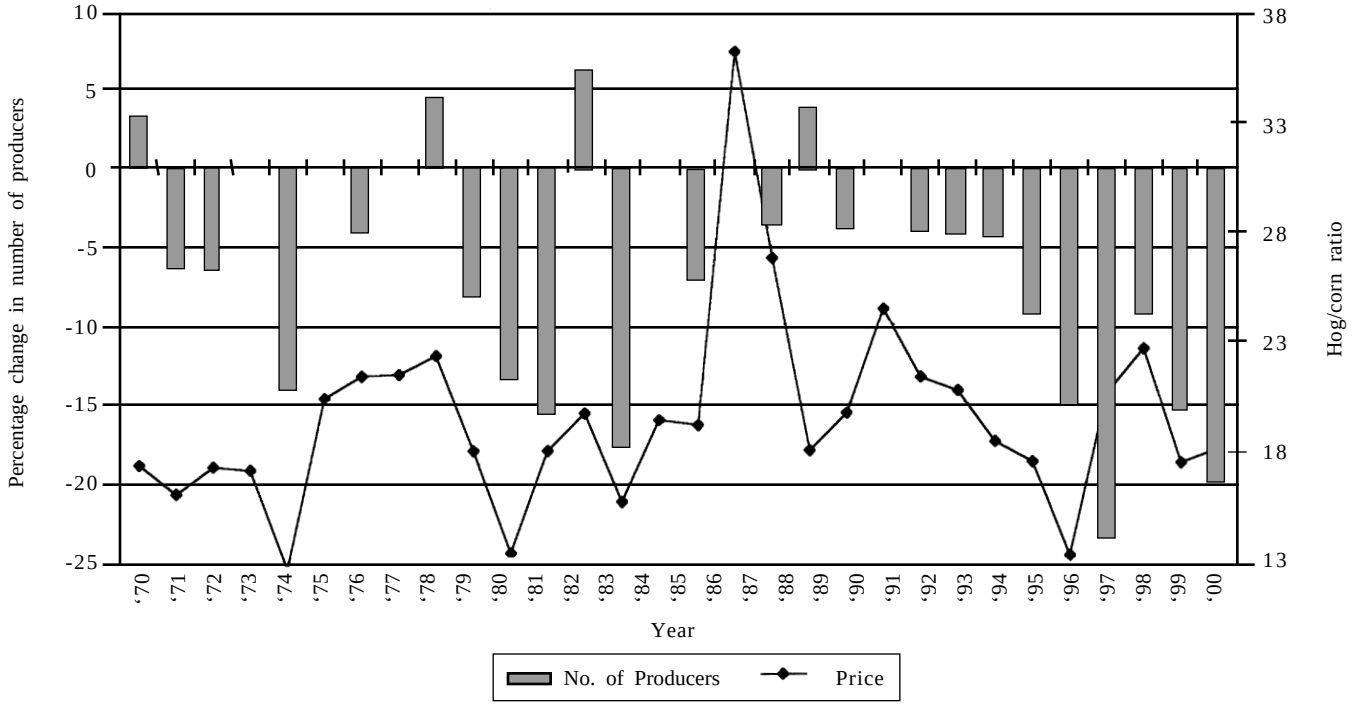

Figure 4. The computed ratio of the Nebraska average annual market hog price per cwt divided by the Nebraska average annual corn price per bushel compared to the percent of change in the number of Nebraska pork producers using a one-year time lag.

of poor profitability, may impact a decision to quit production in years following the low ratio. For the one-year time lag, the results suggest producers do tend to exit the industry one year after an unprofitable period.

Comparing the strength of the relationship between the hog/corn ratio as the independent variable and the percent change in the number of Nebraska producers as the dependent variable, with a one-year time lag, suggests this relationship was much stronger in the 1970s and decreased dramatically in the 80s and 90s (Figure 5). The strength of the relationship (r^2) indicates that 63% of the change in the number of producers during the 1970 to 1975 period is explained by the hog/corn ratio. However, during the 1994 to 1999 period only 0.05% of the change in the number

of producers could be explained by the hog corn ratio. These results suggest influencers other than the hog/corn ratio prompted pork producers to leave the industry — especially from 1982 to 1999 — even if they were profitable and had a competitive cost of production.

Other Influencers

If the hog/corn ratio doesn't have the impact that it had in the past on a producer's decision to remain in pork production, what new factors are influencing producers to exit pork production? In 1997 Lawrence reported on more than 14,000 Iowa pork producers who had decided to exit the industry between December 1992 and December 1996. While 80% of these producers cited issues of profitability, many other items also impacted their decision. A lack of competitive markets, environmental regulation and future labor resources were important to over 50% of producers who answered the survey.

In their 2000 study, Lawrence and Grimes reported on the factors that producers said would limit future expansion. Lack of market outlets was important to smaller producers and environmental regulation was important to both small and large producers. Owners of larger units also noted the difficulty in hiring good employees as an issue limiting growth.

Labor

Labor is one of the new influencers of competitiveness in the pork industry. At some point either a facility or labor (or both) becomes a limiting factor in expanding pork production in response to smaller margins. Traditional producers, who have little if any nonfamily labor, find themselves considering the use of hired labor. Smaller producers are then faced with the problem of having a large enough unit to afford full-time help. While row crop farmers may be able to compensate through the use of seasonal help, small swine operations likely do not have that option. The swine unit is managed to produce pork year round, and when justifying full-time help, production needs to improve or increase.

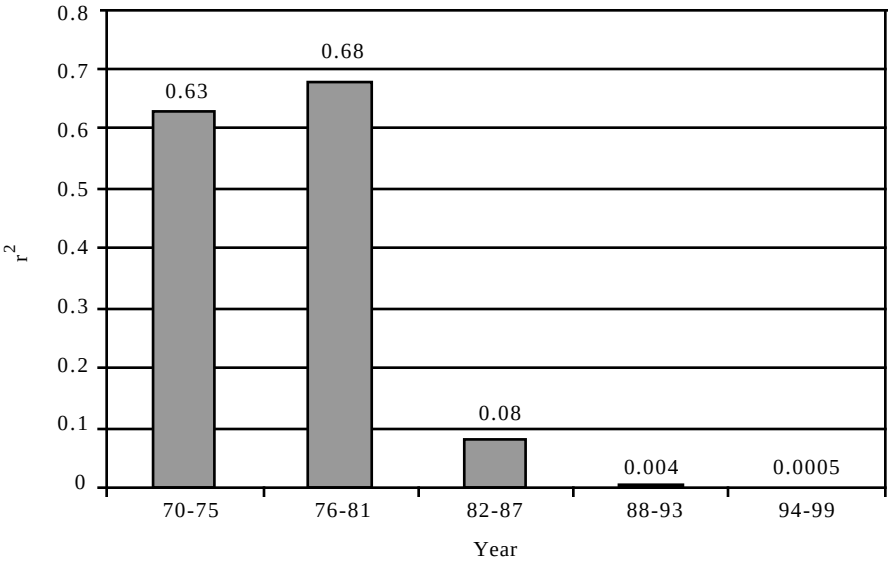

Figure 5. R-square values generated from a regression analysis using the hog/corn ratio as the independent and leading variable and the percentage change in the number of Nebraska pork producers as the lagged dependent variable for each six-year period between 1970 and 1999.

Market Access

Market access is also one of the new influencers in the decision process. In 1997, Lawrence reported that 60% of producers surveyed cited market access as important to very important in their decision to leave production. In 2000, Grimes and Lawrence reported 71% of all hogs were marketed on some form of contract or packer agreement. However, producers marketing less than 2,000 market hogs per year marketed 77% of their production on the cash market. Only 10% of the producers marketing 10,000 to 50,000 market hogs per year used the cash market. Negotiating contract or packer arrangements requires different skills than pork production. It also requires additional time, which many small producers may not have.

Smaller producers may consider a niche or specialty market as an alternate approach to market access issues. However, to reach consumers directly, or to supply retail outlets requires dealing face-to-face with potential customers. Building such relationships may take even more time and skill than negotiating contracts or packer arrangements.

Environmental Regulations

Environmental issues are becoming increasingly important. For any operation, meeting regulatory requirements involving lengthily processes with regulators, consultants and the public, can be an overwhelming task. Also, new regulations being developed at state and federal agencies will require producers to seek additional permits and keep additional records. This creates a great deal of uncertainty for many traditional producers.

Conclusion

Input cost has less impact on Nebraska pork producers' decision to remain in pork production than it had in the past. Producers express items such as labor, environmental regulation, and market access as more important influencers now. The ability to deal with new challenges in pork production may become the critical competitive advantage in the future.

---

[1]Allen Prosch is the Pork Central coordinator at the University of Nebraska. References are available by request from the author.