A MARKOV CHAIN ANALYSIS OF PORK FARM SIZE DISTRIBUTIONS IN THE SOUTH: COMMENT

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In the December 1988 edition of the *Journal*, Disney, Duffy, and Hardy (DDH) projected the distribution of pork farm size in the South Atlantic region. The paper suffers from an apparent lack of knowledge about the industry as reflected in the poor use of data and the use of an entry assumption that is not factual. It also asks reader acceptance of a highly unlikely assumption about the persistence of high hog/corn ratios. Consequently, the analysis seems curiously unrelated to the structure of real-world hog production, which it purports to project.

DDH concluded that the higher the hog/corn ratio, the lower the frequency of exit of hog farmers and the slower the transition to a more concentrated structure of hog production (p. 62). An average hog/corn ratio of 35 is projected to produce a percentage distribution of hog farm size in the South Atlantic region in the year 2000 that is less concentrated than that existing in 1982 (cf. Tables 1 and 7). While it is difficult to imagine the long-term existence—"over the next 15 years" (p. 62)—of an average hog/corn ratio of 35, DDH speculate that high corn price supports might do the trick (p. 63). Certainly the hog/corn ratio has trended upward in recent decades as corn costs have fallen to a fraction of total hog production expenses. However, DDH treat their higher hog/corn ratio not as a redistribution of costs but as an "increase in economic rents" (p. 63).

Their finding that a higher hog/corn ratio (increased economic rents) would reduce exits in the short term is reasonable. However, no attempt is made to explain how pork demand is going to expand to absorb the increased hog output from a sustained period of high hog/corn ratios. Given the acceptance of the self-correcting dynamics of that ratio immortalized in the cobweb theorem, we await with interest DDH's support for their assumption. Their finding that a higher hog/corn ratio would dis-

courage large units relative to smaller ones is also surprising. Why wouldn't large numbers of smaller producers be stimulated by sustained supra-normal returns to expand into the largest size category? Why wouldn't hundreds of investors and contractors make large-scale entry? Van Arsdall and Nelson have established economies of size for units up to 10,000 head in annual marketings.

The most surprising feature of the DDH analysis was the choice of size-groups. Their four groups of small (10–49 hogs marketed per year), medium (50–199), large (200–499), and extra large (500 plus) marketed about 2, 10, 18, and 70 percent of the nation's market hogs in 1982. Why would anyone knowledgeable about the hog industry focus on those two smaller classes? True, DDH were writing about the South Atlantic region, but it has been leading other regions in changes toward larger units. The open-end, largest class not only contains most of the hogs but it is also heterogeneous in terms of (1) size of producers and (2) trends by size. In the first case, the extra-large class contains the 600-head, the 6,000-head, the 60,000-head, and even the 600,000-head producer. In an analysis focused on size and presumably affected by economies of size, why class together units varying by a magnitude of 1,000? A partial defense might be that the largest size group is 1,000 and greater for which published Census data for states are available for 1969 and 1974; data for 5,000 head and above became available only in 1978. Did DDH quietly accept a totally unrealistic and uninformative size-grouping in order to have enough data to use the Markov technique? In the second case, the numbers of units in the two groups, 500–999 and 1,000 or more, have displayed divergent trends in marketings. Nationally, the number of producers in the extra-large group defined by DDH rose from 1959 to 1982 by 349 percent. The component group of 500–999 rose only 200 percent,

while the group of 1,000 or more rose 1340 percent. Consider further that in 1982 the marketings of the 500–999 group were less than half the marketings of the 1,000 or more group.

DDH assert that "there is almost no new entry at the large and extra-large size levels" (p. 58). Recent research indicates 3,500 new producers in the period 1983–1986 that were marketing 1,000 or more head by 1986–1987. In a series of papers published in the past decade, Rhodes et al. and Rhodes and Grimes (1979, 1985) have consistently reported a sizable rate of entry. Perhaps some of these thousands of entrants do not meet the DDH definition. They don't define entrants. They do speak of "firms" in discussing the need for an assumed low rate of entry for effective use of the Markov model. They don't define firms. Nor do they indicate that Agricultural Census data cover "places" rather than firms (business operations). In an age of production contracting and multiple-place operations, the divergence between firms and places is growing rapidly in the hog business. It is surprising to read a projection of hog structure to the year 2000 that never mentions contracting, currently the hottest issue among people knowledgeable about the industry. Moreover, contracting is probably more important in the South Atlantic region than in any other part of the nation.

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