

Structural Change in U.S. Chicken and Turkey Slaughter. By Michael Ollinger, James MacDonald, and Milton Madison. Economic Research Service, U.S. Department of Agriculture. Agricultural Economic Report No. 787.

Abstract

Cost function analyses using data from the U.S. Bureau of the Census reveal substantial scale economies in chicken and turkey slaughter. These economies show no evidence of diminishing as plant size increases, are much greater than those realized in cattle and hog slaughter, and have resulted in a huge increase in plant size over the 1972-92 period. The findings also suggest that consolidation in the chicken and turkey slaughter industry is likely to continue, particularly if the growth in the demand for poultry diminishes.

Keywords: chicken slaughter, turkey slaughter, production costs, structural change

The research reported here is based on work performed as research associates at the Center for Economic Studies, U.S. Census Bureau.

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Summary

Substantial unexploited scale economies—the ability to reduce production costs by becoming larger—exist for both chicken and turkey slaughter manufacturing establishments. This could mean lower poultry prices, but it could also result in fewer plants and fewer firms in the future. Over the past 30 years, a doubling of U.S. chicken consumption and a huge increase in exports have helped limit consolidation pressure. However, if growth in demand were to stall, the industry would likely feel market pressure to consolidate. These results are based on cost function analysis using the Longitudinal Research Database from the Bureau of the Census. We examined changes in the structure of the poultry slaughter industry over the 1967-92 period. A unique feature of this analysis was our ability to account for changes in product mix. By including product mix in the model, very strong scale economies became evident that otherwise would have been masked.

The existence of scale economies has important public policy implications. Scale economies force relatively smaller plants to reduce costs by tightening worker and contractor performance standards, reducing wages, and/or increasing plant size. Stricter performance standards or lower wages may lead to disputes between management and workers and contractors; larger plant size means that greater volumes of poultry litter must be disposed of over the same confined area, increasing concerns about water quality and other types of environmental impacts. If smaller plants choose not to take steps to reduce costs, then they will likely be forced to exit the industry. Fewer and larger firms may prompt concerns about anticompetitive behavior.

Poultry manufacturers have responded to the existence of scale economies by becoming larger. Even though industry output tripled, the number of poultry slaughter and processing plants in 1992 was about the same as in 1967 and, by 1992, more than 80 percent of all chicken and turkey products were produced in large plants employing more than 400 workers. Less than a third of chicken and turkey production came from such large plants in 1967.

Larger plant size has not led to excessively high four-firm concentration ratios (the share of industry output held by the largest four firms). The chicken slaughter industry, but not the turkey slaughter industry, was slightly more concentrated in 1992 than in 1967, and most of the increase in concentration took place between 1977 and 1987. The top four chicken-slaughtering firms controlled only about 45 percent of total U.S. output in 1992. Economists generally believe that only when the four-firm concentration ratio exceeds 80 can firms raise prices with reduced fear of being underpriced by competitors.

Because large plants can produce poultry at a much lower cost than small plants, the magnitude of the cost savings gained by large plants is impressive. An average size plant producing mainly whole birds in 1992 had costs 13 percent lower than an average size plant in 1972. This cost savings partially explains why the retail price of whole chickens has dropped by about a third, in real dollars, over the last 20 years.