

Other Drivers of Structural Change

This report has focused on technological economies of scale as a major factor in structural change, and has therefore presented data on the links between the size of an operation and costs. But other factors may also matter. We first focus on complementarities among stages—the possibility that large processing plants may give rise to large livestock farms, independent of any scale economies. We next discuss the argument that Federal commodity payments for feed grains implicitly subsidize large livestock operations, thereby causing structural change. Finally, many small farms continue to survive and prosper despite the cost advantages accruing to large farms, and we evaluate some factors behind their survival.

Complementarities Among Stages

The shift to larger livestock farms has occurred at the same time that livestock and poultry slaughter plants became much larger so as to realize scale economies and lower processing costs (MacDonald et al., 2000; Ollinger et al., 2000). Larger, more automated processing plants must obtain large and steady flows of uniform animal and bird types if they are to realize any potential scale economies (RTI, 2007a). Different strategies have been devised to manage those flows, but they all rely on tighter coordination of the production process. They may also encourage larger farms.

Hog and broiler integrators achieved steady flows of uniform animals to their plants by directly controlling the production process. They time chick and pig placement on grow-out farms so as to optimize flows to processing plants 6 weeks (small broilers) to 6 months (hogs) later. They can also realize uniformity by controlling the genetics of their pigs and chicks and by controlling the length of the feeding period.

Large cattle slaughter plants and large feedlots emerged during the 1970s and 1980s in the same geographic areas of the Great Plains. Beefpackers do not use the tight system of integration and production contracts that broiler and hog firms use. Instead packers use a combination of packer ownership and financing, long-term marketing agreements, and cash market purchases to manage cattle flows to plants.¹⁶

The coincident timing of structural changes to large processing plants and large production facilities suggests a complementary relationship between them. Each needed an opposite party willing to provide or receive large flows of uniform animals, shipped on a regular basis, so that they could reduce the risks of large-scale investment. And each needed some mechanism, such as contracts or other long-term commitments, to make the process work. In that sense, the emergence of large, capital-intensive processing plants may have encouraged a shift to larger and more specialized farms, aside from any internal scale economies in those operations.

Input Prices

Large and small farms use different combinations of inputs. For example, large dairy farms use more purchased feed and less homegrown feed and pasture forage than small farms. These differences imply that input price

¹⁶ Large packers and feedlots maintain long-term relationships even for cash market sales, conducted weekly.

changes can affect farms differently. For example, increases in purchased feed prices or wage rates for hired labor would raise costs more at large farms than at small farms, because those inputs typically account for higher shares of large farm costs.

Two recent reports argue that Federal commodity programs reduce prices for a particular input, purchased feeds, and that those reductions drive structural change (Pew Commission on Industrial Farm Animal Production, 2008; Union of Concerned Scientists, 2008). Specifically, they assert, drawing on Starmer and Wise (2007), that policy encourages increased production of feedgrains, that the increased production substantially reduces feedgrain prices, and that the buyers of purchased feed benefit from lower feed prices. While producers of homegrown feed have been the direct recipients of commodity payments, the reports argue that the payments have not been large enough to offset lower commodity prices, so that commodity programs have largely benefited large-scale animal feeding operations at the expense of smaller diversified crop and livestock farms.

However, the size-related differences in production costs that are summarized in figures 6-8 cannot be attributed to the effects of commodity programs. In developing cost-of-production estimates, ERS prices homegrown feed at its market value—that is, the price that homegrown feed would have drawn as feed in regional feed markets—and does not attempt to estimate the actual cost of producing the feed. To the extent that larger operations realize lower feed costs in ERS estimates, it is because they use less feed per cwt of production and not because purchased feed costs them less.

But even if commodity policies reduce purchased feed prices, there's no reason why that should alter the size structure of livestock farms. No technological barrier prevents small farms from replacing homegrown feed with purchased feed: if purchased feed prices are lower than the costs of growing feed, then small livestock operations can simply buy feed and realize the same savings as large farms.¹⁷ A difference between the price of purchased feed and the cost of homegrown feed does not explain why feeders build large rather than small operations.

Many Small Operations Survive

Even as cattle feeding has shifted to large commercial feedlots, small feedlots of less than 1,000 head capacity still feed nearly 4 million cattle a year, and their share of the fed-cattle market has stabilized or even grown lately (fig. 5). Similarly, while large dairy farms hold substantial cost advantages over smaller farms, and production continues to shift to larger operations, many small farms remain in business and some are profitable (fig. 7).

Some of the size-specific variation in farm financial performance reflects unexpected events—related to weather, disease, accidents, or market changes—that temporarily affect revenues or costs. But other factors may be more systematic. Farms may persist in spite of poor financial performance because operators are willing to accept lower earnings than they could earn elsewhere. Others may have underutilized assets, in capital or the farm operator's time, that would not otherwise be used except in the livestock operation (this is a traditional reason for feeding small lots of cattle outside of busy

¹⁷ While large hog and dairy operations are more likely to purchase all of their feed, most small hog operations also purchase all feed, as do many small dairy farms.

growing seasons). In this case, ERS estimates may overstate the true opportunity cost to the enterprise of using the inputs.

Some farms can realize substantially higher revenues than others because they are in a favorable location, or because they produce a niche product. For example, large hog operations usually produce hogs bred and fed to gain weight quickly and efficiently. The low-cost pork derived from those animals may not have the flavor or texture that some buyers seek. Smaller operations that specialize in specific breeds may have higher production costs, but can still prosper if they find enough buyers willing to pay a premium for a differentiated pork product.

Substantial differences in managerial and technical skills may also affect farm financial performance. Better farmers likely maintain lower costs and perform better financially. Some small operations remain profitable simply because their operators are unusually good at their jobs.¹⁸

¹⁸ Tauer (2001) and Tauer and Mishra (2006) argue that most of the observed difference in cost among dairy farms reflects differences in managerial quality, not technological scale economies. They argue that operators of larger farms tend to be better dairy farmers, able to achieve systematically lower average costs. However, dairy production is shifting to larger farms, and the largest are much bigger than in the past. In order for differences in managerial skills to account for these shifts, there has to be a large increase in the number of highly capable dairy farm managers, or a new technological development that allows capable managers to handle much larger farms. While these possibilities may have occurred, there is no systematic evidence that they have.