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THE CHANGING HOG SECTOR

Considerable attention has been focused on the changing structure of hog production and the rapid growth that has accompanied that change in some non-traditional hog raising areas. The changing structure is most easily portrayed in terms of the continuing decline in the number of hog farmers and the growing concentration of production in the hands of a relatively small number of very large producers. Many of these large units are highly integrated operations that control most activities associated with raising hogs and—in some cases—the plants that butcher the hogs. The changing hog production structure, perhaps more than anything else in recent memory, has rekindled the ever-present question about the survivability of that icon of Midwest agriculture, the so-called family farm. The debate will continue for some time. The following overview of the issues and the trends in the hog market will add some perspective to the debate.

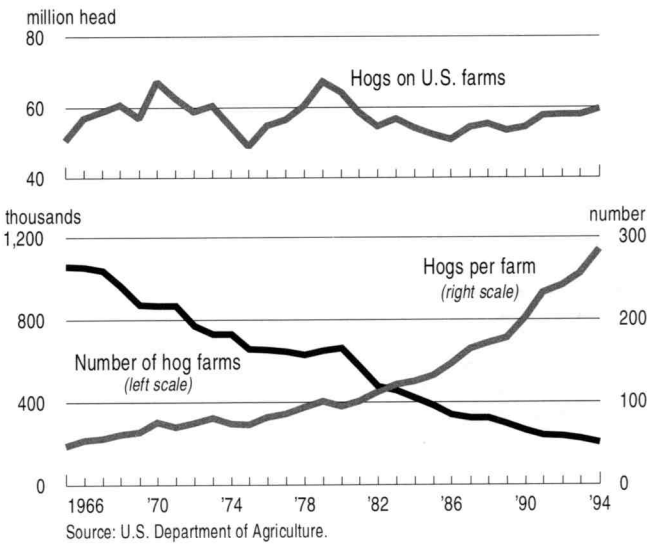
The market for hogs raised in the United States is defined largely by the amount of pork consumed domestically. Recent trends in U.S. livestock and meat trade and the implementation of the NAFTA and GATT agreements raise hopes that hog farmers might increasingly look to world markets. But the U.S. remains a net importer—of nominal proportions—of both hogs and pork. The prevailing trend in domestic per capita pork consumption since the 1960s has been rather flat, especially when compared to the dramatic growth in poultry consumption.

While growth in the hog market has been bounded largely by U.S. population growth, production has been enhanced by steady gains in productivity. These gains are evident in the rising number of pigs weaned per litter and the amount of pork produced annually per head of breeding stock. The number of pigs per litter has averaged 8.12 the last three years, up 13 percent from the 1972-74 average. That increase, coupled with genetic improvements and better feeding practices has boosted annual pork production per sow more than 50 percent over the past 30 years. The productivity gains, in the face of little or no growth in demand, imply that today's pork needs can be accommodated by fewer resources than was the case a few years ago. Reflecting this, the number of sows that produced the record highs in pork production the last three years averaged more than a fourth lower than the inventory that produced the former high in 1980.

With the combination of little or no growth in demand for pork and steady gains in productivity, the real, inflation-adjusted price of pork (and hogs) has trended lower. In current dollar terms, the consumer price index for pork in 1994 was roughly three times the level it was in 1970. But adjusted for inflation, the real price of pork last year was almost a fifth less than in 1970. At the farm level, real inflation-adjusted price of hogs the last two years averaged 40 percent less than in the early 1970s.

Although the productivity gains have helped to cushion the decline in real hog prices, most hog farmers have found it difficult to accept the returns the market was providing to the labor and capital they had invested in hog raising activities. Some elected to expand in hopes of achieving more efficient, or lower cost, operations. But with little or no market growth, the expansion activities

Long-term trends show fewer but larger hog farms with little change in overall U.S. hog numbers



Source: U.S. Department of Agriculture.

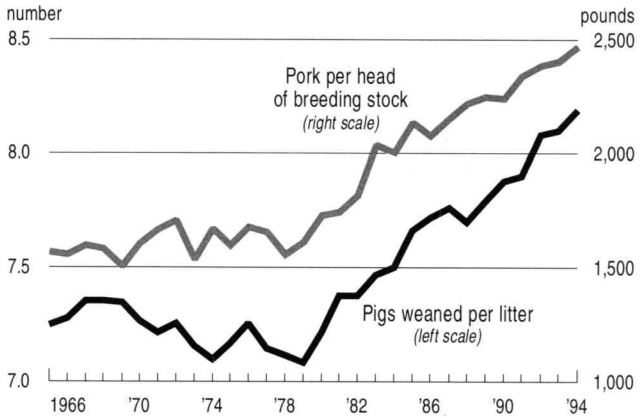
of some operators hastened the exit of others. Perhaps more than anything else, the changing structure in the pork industry has been characterized by the marked decline in the number of hog farms and the corresponding increase in the average size of those that remain. In 1994, there were fewer than 210,000 farms that had one or more hogs or pigs on hand at any time during the year, down 80 percent from the more than 1 million hog farms that existed in 1965. Despite the "mortgage lifter" reputation of raising hogs, the decline in the number of hog farms has significantly exceeded that for farms in general.

As the number of hog farms shrunk, the inventory per farm rose steadily from around 50 head in the mid 1960s to more than 285 head last year. An even more telling comparison is the increased concentration of hogs on very large farms. Well over a third (37 percent) of the nation's hogs are now held on farms with 2,000 or more head in inventory. Another 18 percent are held on farms with 1,000 to 2,000 head in inventory. These two classes of large hog farms account for 55 percent of all hogs but only 6 percent of the farms with hogs. Because of the better production and cost efficiencies more typical of larger units, further consolidation of hog farms seems inevitable.

Consolidation has characterized hog farms of the Midwest as much as elsewhere. But at least until recently, the Midwest has maintained its long-held dominance in hog production. Iowa has ranked as the number one state in hog production for decades, accounting for around a fourth of all hogs on farms since at least the early 1960s. Illinois held the number two ranking until last year while Indiana retains a fifth-place ranking. The five states comprising the Seventh Federal Reserve District together account for just under 45 percent of all hogs on farms, down from the 47 to 51 percent range that characterized their share during most of the last three decades. The longer-term trend in hog numbers has varied considerably among District states. Hog numbers in Michigan have trended up while those in Indiana and Iowa have been relatively flat. In contrast, hog numbers in Illinois are down about 30 percent relative to 30 years ago while those in Wisconsin are down some 40 percent.

Geographically, the most evident expansion in hog numbers in recent years has been in North Carolina. Hog numbers in that state have risen at a rate of more than 22 percent annually over the last five years. That phenomenal growth has pushed North Carolina from a seventh place ranking with less than 5 percent of the hogs on U.S. farms in 1989 to a second place ranking with a 12 percent share in December 1994. A distinguishing feature of the

Productivity gains have added to pork production



Source: U.S. Department of Agriculture.

growth in North Carolina was the appearance of extraordinarily large units of production. Those large units are often components of a highly integrated hog production system whose owners might leverage their own resources with finishing contracts with other local farmers to control virtually all aspects of the hog-raising process, including the genetic pool of the breeding stock, highly formulated feed mixing standards and facilities, and internal veterinary care. In some cases, the control extends all the way to the packer. With the proliferation of the large units of production, the average number of hogs per farm in North Carolina rose by a multiple of 5 between 1989 and 1994, far-surpassing the 50 percent rise elsewhere and the 40 percent rise in such traditional hog-raising states as Iowa, Illinois, and Indiana. With that expansion, some 86 percent of the hogs in North Carolina are now located on farms with 2,000 head or more (versus 30 percent of the hogs in all other states, including District states). On average, these large units have an inventory of almost 7,350 hogs in North Carolina, easily out distancing the 4,250 head average on the large operations in all other states and the 3,700 head average among large operations in District states.

The dramatic expansion in hog production in North Carolina has coincided with marked gains in productivity for that state which have helped to offset the advantages of lower feed costs enjoyed by Midwest hog farmers. As other observers have noted, North Carolina's producers are the leaders in terms of the number of litters generated per head of breeding stock and the number of pigs weaned per litter. In addition, the ability to consistently provide packers with large quantities of hogs yielding leaner, high quality carcasses typically results in sizable price premiums to the large producers. Because of these advantages, the North Carolina model of hog production

has begun to surface in other states. Arkansas registered strong growth in hog numbers for several years before turning down last year. More recently, strong gains have been evident in Missouri as a fully integrated entity began large operations there in 1992. Also, such non-traditional hog raising states as Oklahoma, Arizona, Colorado, Mississippi, and Texas have attracted operations patterned after the North Carolina model, boosting hog numbers in those five states by more than 50 percent the last three years. In comparison, hog numbers in District states at the end of 1994 were 5 percent lower than three years ago.

Other issues besides production and cost efficiencies are increasingly becoming an important part of the debate on the changing structure of hog production. In some areas, including Iowa, restrictions on corporate farming preclude a full scale duplication of the hog production structure evolving elsewhere. Other issues are more environmental in nature and—while applicable to all hog farms—tend to be more relevant for large, high density hog production units. Even with the best management and the best equipment and facilities, the handling of animal wastes on a hog farm can at times result in an odor that is highly obnoxious to those located nearby. Moreover, the handling of wastes from a large hog production facility tends to increase the chances of undue leaching and/or run-off of the undesirable waste components into underground or surface water supplies. Ironically, nitrogen tends to be the undesirable nutrient in animal wastes from the standpoint of leaching or run-off while simultaneously serving as the nutrient of primary value as a fertilizer.

These environmental issues are often as much a concern to farm families as they are to other rural residents. In many areas, the concerns are leading to stronger zoning and regulatory controls that seek to protect against the undue environmental risks of large hog production units. At the same time, producer groups are working in many areas to minimize the risks that farmers—and especially hog farmers—face from so-called "nuisance lawsuits" despite following established production practices. At any rate, observers acknowledge that the geographical areas that recorded large gains in hog production in recent years were mostly those that either had less restrictive environmental controls, or those with a widely dispersed population base that might have been more interested in the economic development opportunities than the environmental consequences of large producing units.

The issues regarding the changing structure in hog production have even broader economic implications when the location and structure of the pork packing industry is included in the debate. Iowa's number one ranking in hog production is even more solidly entrenched in its number one ranking in hog slaughter. Final tallies for 1994 show packing plants in Iowa processed some 31.1 million head of hogs in 1994. That represented just under a third of all hogs butchered nationwide. Illinois ranked second, processing nearly a tenth of the total. The production of hogs in Illinois essentially matched the level of hogs slaughtered in that state. But interestingly enough, about one in five of the hogs butchered in Iowa was imported from some other state. In contrast, one of every two hogs raised in Indiana last year was shipped out of state for slaughter.

The pork packing industry is undergoing a consolidation much like that in hog production. Over the last six years, the number of federally-inspected hog slaughtering plants has declined at a rate of 5.3 percent annually, dropping to 830 plants last year. (Federally-inspected plants account for almost 98 percent of total hog slaughter). A large majority (83 percent) of those plants are small, on average butchering fewer than 4 hogs per business day and together accounting for less than 1 percent of all hogs slaughtered last year. At the other extreme, the 11 largest plants handled an average of 15,000 head per business day and as a group accounted for 44 percent of all hogs slaughtered in federally-inspected plants last year. In terms of peak capacity, a report of one plant already in existence and another regarding a proposed new plant imply the potential for a single plant to butcher 30,000 plus hogs per day, the equivalent of about 8 percent of the total.

The location of one or two such large plants, either through expansion and modernization or new construction, will be of key interest to hog farmers, to other pork packing plants, and to the labor pool serving both existing and proposed plants. The combination of rapid growth in hog production in other geographical areas and the surplus hog butchering capacity that already exists in Iowa may hinder the chances of the traditional Hog Belt, especially if regulatory constraints appear to limit future growth in hog production. From the standpoint of labor markets, some localities view the capture of a packing plant as important for economic development. At the same time, however, work in a butcher plant has never been considered a plum and the highly competitive nature of the packing industry tends to hold the line on wages. Some communities therefore prefer to rest their economic development hopes on other endeavors.

Gary L. Benjamin

SELECTED AGRICULTURAL ECONOMIC INDICATORS

	Latest period	Value	Percent change from Prior period	Year ago	Two years ago
Prices received by farmers *(index, 1990-92=100)*	March	98	0.0	–7	–1
Crops *(index, 1990–92=100)*	March	104	2.0	–5	7
Corn *($ per bu.)*	March	2.27	1.8	–17	8
Hay *($ per ton)*	March	86.70	2.0	–4	8
Soybeans *($ per bu.)*	March	5.53	2.4	–18	–2
Wheat *($ per bu.)*	March	3.50	–3.3	–5	6
Livestock and products *(index, 1990-92=100)*	March	93	–1.1	–8	–8
Barrows and gilts *($ per cwt.)*	March	38.70	–2.8	–14	–18
Steers and heifers *($ per cwt.)*	March	70.20	–2.8	–7	–14
Milk *($ per cwt.)*	March	12.60	0.0	–7	3
Eggs *(¢ per doz.)*	March	61.4	–0.3	–7	–12
Consumer prices *(index, 1982-84=100)*	March	147	0.0	0	3
Food	March	151	0.3	6	8
Production or stocks					
Corn stocks *(mil. bu.)*	March 1	5,591	N.A.	40	–2
Soybean stocks *(mil. bu.)*	March 1	1,370	N.A.	34	13
Wheat stocks *(mil. bu.)*	March 1	968	N.A.	–6	–7
Beef production *(bil. lb.)*	February	1.81	–10.0	0	8
Pork production *(bil. lb.)*	February	1.35	–9.7	6	5
Milk production* *(bil. lb.)*	March	11.8	12.9	4	N.A.
Receipts from farm marketings *(mil. dol.)*	December	17,448	–15.6	–5	2
Crops**	December	10,744	–18.7	14	17
Livestock	December	6,232	–15.3	–14	–6
Government payments	December	472	424.4	–73	–61
Agricultural exports *(mil. dol.)*	January	4,469	–11.2	20	22
Corn *(mil. bu.)*	January	190	–8.1	87	24
Soybeans *(mil. bu.)*	January	89	–14.3	26	0
Wheat *(mil. bu.)*	January	97	–11.3	–16	–15
Farm machinery sales *(units)*					
Tractors, over 40 HP	March	6,385	43.6	–3	2
40 to 100 HP	March	3,311	46.1	0	–5
100 HP or more	March	3,074	41.1	–6	12
Combines	March	534	23.0	–6	14

N.A. Not applicable
*22 selected states.
**Includes net CCC loans.

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