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South Dakota's Changing Agricultural Structure

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Agriculture in South Dakota has changed greatly in the second half of the 20th century and many more changes will occur in the next 20 to 50 years. After the release of the latest U.S. Census of Agriculture, several economists at South Dakota State University set out to assess changes in South Dakota's farm structure. Farm structure is the control and organization of resources needed for agricultural production. It includes the number and size of farms; ownership and control of resources; the managerial, technological and capital requirements of farming; farm-household interactions; and the social, economic, and political situations of farmers.

The result of the inquiry into farm structure was a research report[1], titled *The Structure of South Dakota Agriculture: Changes and Projections*, available from the Economics Department or online at **agecon.lib.umn.edu/sdsu.html**. The report sought to: (1) examine key changes in the organization and structure of South Dakota's farm sector, (2) profile farm business characteristics, and (3) suggest where structural changes may lead in the future. This is the first in a series of *Economics Commentator* articles that summarizes portions of the larger report. This article examines major forces of change affecting farm structure in recent years. It also examines the most visible aspect of farm structure - farm numbers and physical farm size.

Prosperity Driving Change

Many forces influence South Dakota agriculture and either cause changes in market structure or are a result of past changes. For over a decade the U.S. has enjoyed robust economic growth and prosperity. In recent years income has risen, employment has risen, and inflation has remained low. South Dakota's economy has also prospered during recent years with per-capita income reaching $21,076 in 1997. After a modest increase in per capita income from 1978 to 1987 in both nominal and real terms, 1987 to 1997 saw more pronounced growth with real income increasing 27%. South Dakota's employment situation has remained stable relative to the U.S. Over the last two decades, the unemployment rate has fluctuated moderately in South Dakota, peaking at 5.5% during 1982 when the U.S. economy was in a recession. The unemployment rate of 3% in 1997 was about the same as it was in 1978.

General prosperity in the economy has mixed effects on farm structure. To keep pace with rising incomes throughout the economy, farm operations must generate more revenue from a given operation, reduce costs, or expand. Hence, changes in farm enterprises and farm size could be expected. Prosperity also brings opportunities that compete with farming as a source of income and as a way of life. If non-farming sectors are more profitable than farming sectors, then resources such as labor and capital will switch to those sectors.

External Forces Driving Change

The most notable policy change in recent years was the 1996 farm bill – the Freedom to Farm legislation. The farm bill was expected to impact farm structure in a variety of ways. Foremost, farmers were given greater freedom to choose what to produce and when to price their production. Thus, a change in the relative importance of different enterprises is anticipated. A faster response to market signals, especially prices, is also anticipated. Without the safety net of previous farm programs, more management skills are needed on operations and their presence is rewarded.

Another force changing the structure of agriculture is the trend toward industrialization, although causality is difficult to assign for this factor. When up-stream and down-stream industries consolidate there is a fear of losing market power to the larger consolidated business firms. Similarly, mergers may eliminate jobs that may not be easily replaced in rural areas. At the same time, if mergers make the segment more efficient, then there is the potential for the production sector to share in the benefits.

Other external factors may also drive change. Environmental policy is one example. Changes in the Conservation Reserve Program, wetlands rulings, and landowner liability laws for items such as lagoon spills can all influence farm structure by bringing land in to or out of production or by imposing costs on different enterprises. In addition, changes in consumers' tastes and preferences influence demand for different commodities. Finally, technology also drives change – often quickly and dramatically. Computers, for example, give farmers improved access to information and aid in record keeping. With new tools, farmers can make more profitable, informed decisions.

External factors can impact the comparative advantage South Dakota agriculture holds in specific enterprises. Comparative advantage often dictates what is produced or what enterprises are undertaken. Cost and profit levels can also be affected, which can change the relative profitability of different enterprises. As profit levels change, farm structure can ultimately be affected as some farms gain and others lose because of external factors.

Number of South Dakota Farms

Declining farm numbers and increasing physical farm sizes are the most well known structural trends in North American agriculture. Since 1935, South Dakota's farm numbers have decreased and average farm size has increased. From 1935 to 1997, South Dakota farm numbers declined from about 83,300 to 31,300, while average farm size increased from 445 acres to 1418 acres. The number of farms per county is largest in eastern South Dakota (figure 1). Nationally, farm numbers also declined from a peak of 6.8 million farms in 1935 to 2.0 million farms in 1997, while average farm size increased from 145 acres to 436 acres.

Since 1964, the average annual decline in South Dakota's farm numbers has been 1.4%, varying from 1.9% in the 1974 to 1978 period to only 0.4% in the 1982 to 1987 period. From 1978 to 1997, farm numbers in western South Dakota essentially stabilized, compared to annual reductions of 1.1% in the central region and 1.6% in the eastern region. The situation was reversed in the earlier 1935 – 1950 period, when the annual reduction rate of farm numbers in eastern counties (0.7%) was less than one-fourth the reduction rate in western counties (3.3%). It is interesting to note that the highest rate of decline occurred earlier in the western region (1935 – 1950) than in the central region (1950 – 1964) or eastern region (1964 – 1978).

The more recent changes in farm numbers largely reflect the long-run trends. Since 1987, the annual rate of decline in farm numbers has increased and was above the long-term average rate in the most recent Census period (1992 to 1997). The largest declines in farm numbers by county were in the southeast part of the state (figure 2). Since 1964, the eastern region has exhibited the highest rate of decline in farm numbers. In contrast, from 1992 to 1997, several counties in western South Dakota actually saw an increase in the number of farms.

Size of South Dakota Farms

Average farm size in South Dakota increased from 445 acres in 1935 to 997 acres in 1969 and 1,418 acres in 1997. Farm size generally increases as we move from east to west in South Dakota (figure 3). The smallest average farm sizes are found in eastern South Dakota where average farm size by county is 360 to 1030 acres. In western South Dakota average farm and ranch size varies from 1600 to 7000 acres in most counties. Recent changes in farm size mirror changes in farm numbers, with counties in eastern South Dakota showing the largest increase in recent years (figure 4).

The age distribution of farm operators in 1997 provides indications of a continued decline in farm numbers and subsequent larger farm sizes. In 1997 there were 20,200 farmers age 45 years or older and almost all of these people will be retired from farming by the year 2025. However, there are only 11,100 younger farmers to replace them. In order to stabilize farm numbers at current levels, an additional 400 to 600 farm entrants are required per year to offset the exit of older farmers. This

Figure 1. Number of farms by county

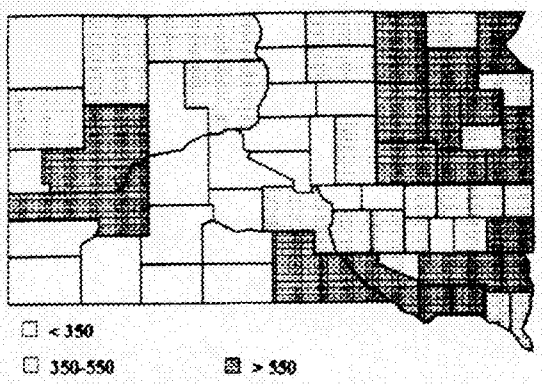


Figure 3. Average farm size by county (acres)

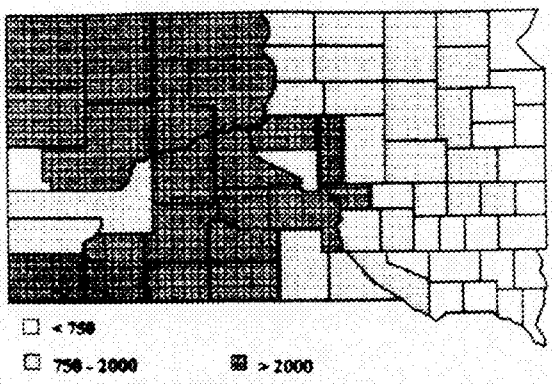


Figure 2. Change in number of farms by county (1987-1997)

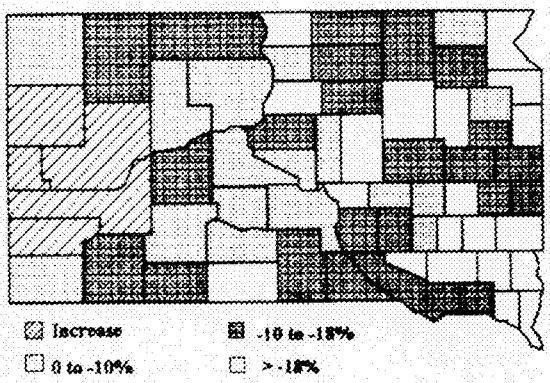
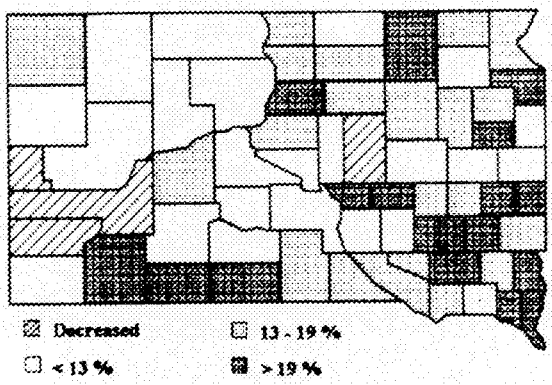


Figure 4. Change in average farm size (1987-1997)



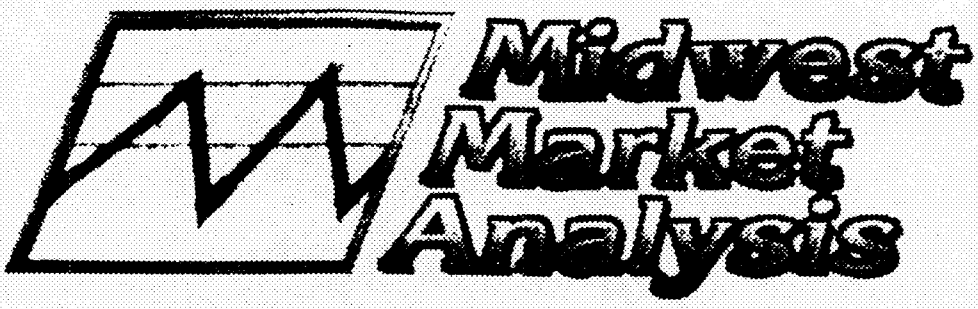
represents more than a doubling of current entry rates. Therefore, even if optimistic economic conditions and farm structure policies are assumed, stabilized farm numbers are not realistic. If current trends continue, by the year 2020 farm size will increase 36-52%, or to 1930-2160 acres.

Conclusions

The forces of change, be they economic, technological, or political, will likely continue to affect farm structure. The most apparent aspect of farm structure, farm numbers, will likely continue to decline. However, the most influential driver is likely to be the change in the age distribution of farmers, with older, smaller farmers giving way to younger, larger farmers.

Several other aspects of farm structure remain to be explored. Who controls agricultural resources from a management perspective? The answer lies in sales volume and concentration trends and land tenure and ownership trends. What has happened to farm income? The answer lies in farm household income and employment trends. Where farm size is concerned, is bigger necessarily better? The answer lies in the economies of size, scale, and scope, reflected in farm enterprise specialization or diversity, and in a profile of South Dakota farms by economic class. Look for these topics in future *Economics Commentators* or check out the report noted below.

[1] Diersen, Matthew A., Larry Janssen, and Paula Loewe. *The Structure of South Dakota Agriculture: Changes and Projections.* Research Report 2000-1, Economics Department, South Dakota State University. February 2000.



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