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Measures of Trends in Farm Size Tell Differing Stories

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The total amount of land used for farming has been relatively stable for several decades, but this stability masks significant changes in the structure of agriculture. Since 1982, the number of large farms and very small farms has increased, while the number of small to midsized farms has declined. The changing size distribution of farms makes it difficult to capture the trends in a simple measure, such as the average or median farm size. A size measure that reflects both the increasing concentration of production on large farms and the growth in the number of small farms can provide insight into the structural changes occurring in U.S. agriculture.

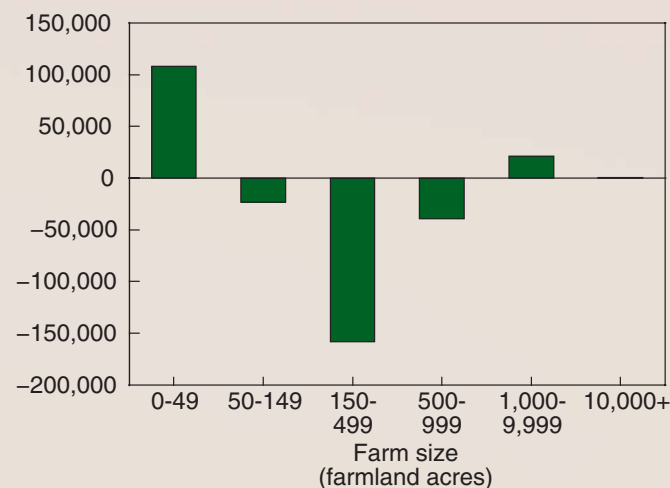
Farmland Has Become Concentrated on Larger Farms

In recent decades, agricultural land has become concentrated on larger operations—the number of farms with more than 1,000 acres increased by 14 percent between 1982 and 2002. Farms with 50-1,000 acres declined by about 17 percent, while the number of farms with fewer than 50 acres increased by roughly the same percentage.

Small farms, however, account for only a very small share of total farmland. Farms with fewer than 50 acres operated less than 2 percent of all farmland in 2002, while farms with more than 1,000 acres operated two-thirds of all farmland.

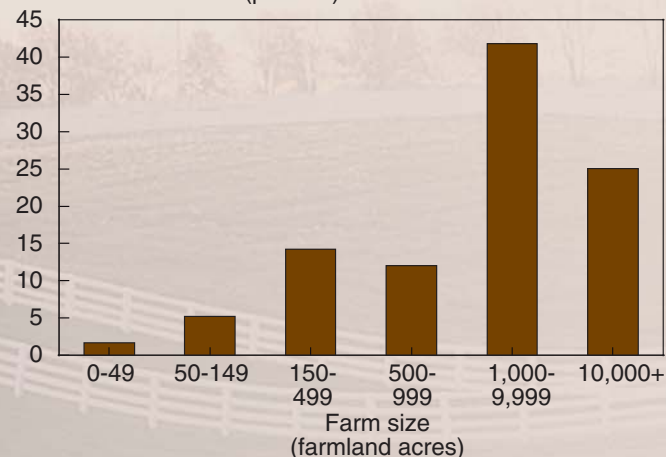
More large farms, more very small farms, fewer in the middle

Change in number of farms (1982-2002)



Most farmland is in large farming operations, 2002

Share of all farmland (percent)



Source: USDA, Economic Research Service tabulations based on USDA, National Agricultural Statistics Service's Census of Agriculture data.

Traditional Size Measures Mask Concentration Change

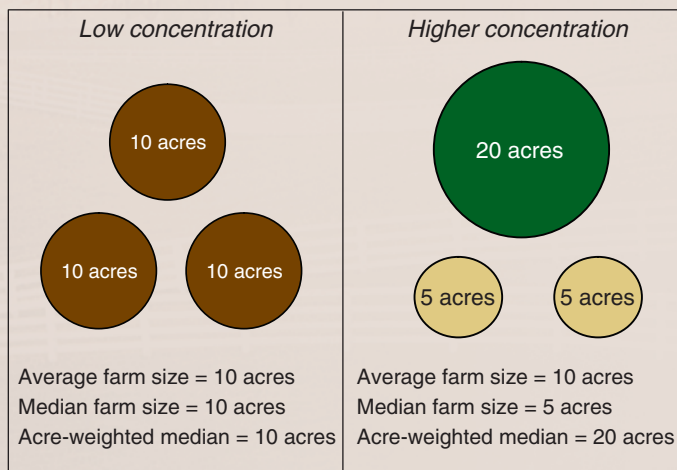
Because most farms are small but most production occurs on large farms, common measures of representative farm size—the average and median—obscure large changes in the concentration of production. Average and median measures of farm size focus on the typical farm, which is small, rather than the typical acre of farmland, which is associated with a larger operation.

Consider the example of three hypothetical farms, each with 10 acres. Suppose two consolidate to make a farm double in size and one farm is split into two smaller operations. Before and after the change, the number of farms, total amount of land, and average farm size remain the same. The median farm size—the farm for which half are smaller and half are larger—declines from 10 acres to 5 acres. Changes in the average and median farm size seem to belie the rather large increase in land concentration—a single farm now accounts for two-thirds of the land.

An alternative measure—the *acre-weighted median*—better reflects the size of operations where most production occurs. The acre-weighted median is calculated by ordering farms from smallest to largest and picking the farm size at the *middle acre* (the standard median focuses on the *middle farm*). Half of all land is on farms smaller than the acre-weighted median, and half of land is on bigger farms. In the three-farm example, two-thirds of the acres are on a 20-acre farm and one-third of the acres are on farms with 5 acres, so the acre-weighted median is 20 acres.

Measures of representative farm size

Three medium-sized farms → Two merge and one splits



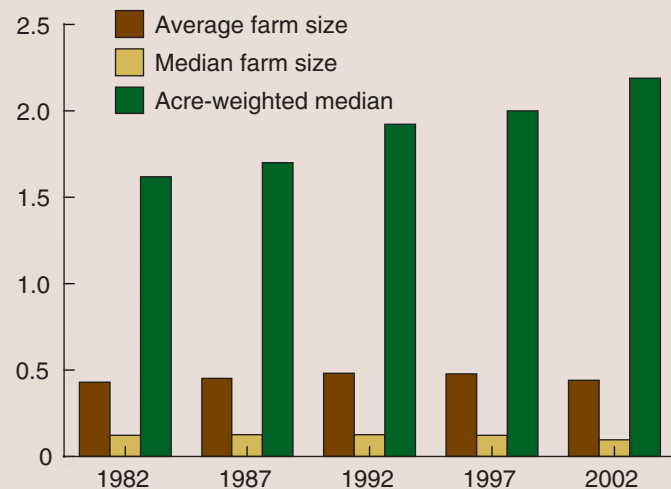
New Measure Tells a Different Story

This simple three-farm example is similar to what has actually occurred in U.S. agriculture, and the three size measures—average, median, and acre-weighted median—suggest different trends over time. Because the total amount of farmland and the number of farms have remained stable since 1982, average farm size has also remained stable. Average farm size was 441 acres in 2002, and ranged between 430 and 480 acres in the previous 20-year period. In contrast, the median farm size in 2002 of 95 acres represents a 20-percent decrease over the period, largely reflecting the growing number of very small farms.

On the other hand, the acre-weighted median increased by about 35 percent since 1982, reflecting continued shifts of land to bigger operations. In 2002, the acre-weighted median was 2,190 acres—half of all farmland was on farms that were larger than that size.

Measures of farm size show different trends

Farmland (1,000 acres)



Source: USDA, Economic Research Service tabulations based on USDA, National Agricultural Statistics Service's Census of Agriculture data.

This article is drawn from ...

ERS Data on Farmland and Cropland Concentration Measures, www.ers.usda.gov/data/croplandconcentration/