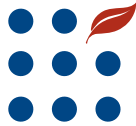




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Commodity Payments, Farm Business Survival, and Farm Size Growth

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Abstract

In the last 25 years, U.S. crop farms have steadily declined in number and grown in average size, as production has shifted to larger operations. Larger farms tend to receive more commodity program payments because most payments are tied to a farm's current or historical production, but whether payments have contributed to farm growth is uncertain. This study uses farm-level data from the census of agriculture to determine whether there is a statistical relationship between farm commodity program payments and greater concentration in production. The analysis indicates that, at the regional level, higher commodity program payments per acre are associated with subsequent farm growth. Also, higher payments per acre are associated with higher rates of farm survival and growth.

Keywords: agricultural payments, farm size, farm survival, concentration, consolidation, government payments, commodity programs.

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Summary

What Is the Issue?

Farm structure is undergoing a complex set of changes. The census of agriculture shows increasing numbers of small farms (less than 50 acres) and large farms (1,000 acres or more), but also sharp and ongoing declines in the number of farms in the middle. Small farms, while numerous, account for less than 2 percent of all U.S. farmland, while large farms account for 67 percent. Consequently, the growth in the number of large farms has increased the concentration of crop production—that is, an increasingly large share of cropland and production is concentrated on relatively few large farms. A number of factors, including technological change or changing factor prices, could have driven the increase in concentration of production. Commodity program payments may also be contributing to the growth in concentration—allowing farms that receive more payments to grow faster than they would have without payments.

This report uses data from five agricultural censuses (1982, 1987, 1992, 1997, 2002) to determine whether there is a statistical relationship between the level of commodity program payments received and subsequent changes in farm structure. The analysis pursues four broad questions. How can changes in concentration of agricultural production be measured and how has it changed? Is there a link between concentration of agricultural production, farm size or farm survival, and commodity program payments? If so, how large and how extensive is this link? Finally, what might drive the observed links?

What Did the Study Find?

Crop production is shifting to larger farms. For example, farms with at least 1,000 acres in corn harvested 19.8 percent of all U.S. corn acres in 2002, up from 4.6 percent in 1987. Farmland has shifted to larger enterprises in most commodities and in most parts of the country, although the rate of growth varies substantially by location and across commodities.

Commodity program payments per acre displayed a strong positive association with subsequent increases in cropland concentration (weighted-median farm size). Areas with higher average payments per acre had higher rates of concentration growth over the subsequent 5-year period. In addition, areas with higher payments per acre at the beginning of this analysis (1987) had faster growth in concentration over the next 15 years. The association between payments and concentration growth was maintained after controlling for several factors that might affect concentration growth, including the initial (beginning of period) level of concentration, land characteristics such as crop sales per acre, the share of cropland in all farmland, and location.

An analysis of program crop producers finds past commodity payments as a share of sales to be positively and significantly associated with the observed lifespan of farm businesses. The 25 percent of farms with the highest payment as a share of sales had a longer lifespan than farms in the lowest quartile. After controlling for farm and operator characteristics that might be correlated with farm survival, the positive relationship between program

payments and farm survival rates persisted. Commodity program payments appear to have a larger effect (on estimated farm business lifespan) for operations with higher sales than for those with lower sales. A separate analysis of producers specializing in four major crop categories found that, conditional on survival, payments are positively associated with subsequent growth in farm size.

The apparent association between payments per acre and subsequent growth in concentration is consistent with the hypothesis that commodity program payments accelerate structural change. However, it is not possible to rule out other explanations for the association between payments and farm structure. If unobserved factors that influence concentration growth are also associated with government payments, then the association between payments and concentration may stem from the unobserved factors rather than payments. Despite efforts to account for many kinds of unobserved factors, it is impossible to know for certain how large of an issue this may be. This is a standard caveat for studies that use data collected from the observed world rather than from a carefully designed experiment.

How Was the Study Conducted?

The study relies on farm-level records from the census of agriculture, including a farm's acreage (cropland and all farmland) and commodity mix, its gross income from sales and from commodity program payments, and its location (State, county, and ZIP Code). Use of census data enables the researchers to develop measures of land concentration for local areas (as defined by ZIP Codes) and to track changes in the size of individual farms and regions over time. Concentration of production is measured using the weighted-median farm size: the farm size at which half the land in a ZIP Code is in larger farms and half is in smaller farms.

The study illustrates how cropland concentration varies across ZIP Codes, and how the distribution has changed over time. Payments per acre vary widely across ZIP Codes and reflect differences in crop mix, crop yields, and operator enrollments in commodity programs. The authors compare how cropland concentration has changed in ZIP Codes with different initial levels of farm payments per acre. The authors use statistical regression analyses to assess the robustness of the link between payments and concentration. The ZIP Code analysis is supplemented with farm-level analyses of the link between commodity program payments (expressed as a share of farm sales) and farm business survival and subsequent farm growth.