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The Effects of Premium Subsidies on Demand for Crop Insurance

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What Is the Issue?

Over the last 20 years, the Federal crop insurance program has grown to be a major source of Government support for U.S. crop farmers. A key factor in the rise of the program has been the introduction and subsequent growth of premium subsidies that provide producers with financial incentives to participate. With the growth of the crop insurance program, information on determinants of enrollment can help policymakers, Government officials, and other stakeholders better understand the implications for risk management and program implementation.

What Did the Study Find?

Between 1997 and 2002—an interval spanning a major legislative change to crop insurance—increases in premium subsidies generally appeared to induce farmers to enroll more land. However, the effects varied by region and crop and were relatively small (although results remained quite similar to the findings of previous studies). Subsidies appeared to have a larger effect on the intensity of crop insurance use, namely, total premiums and premiums per acre, suggesting the subsidies' largest effects were to induce those already enrolled in crop insurance to enroll in higher levels of coverage. Key findings follow:

- Based on total premiums (the sum of the premium the producer pays for a policy plus associated premium subsidies), the average response for *corn producers* in the Midwest (IL, IN, IA, and OH) was to increase the demand for crop insurance when the price of crop insurance fell. That is, a 1-percent increase in subsidies per acre appeared to generate an increase of roughly 0.96 percent in total premium purchases. The average response of corn producers in the Lake States (MI, MN, and WI) and the Northern Plains (KS, NE, and SD) exhibited smaller changes, with total premium purchases increasing by 0.83 percent and 0.80 percent, respectively, following a 1-percent increase in subsidies.
- The average responses of *soybean producers* were similar but smaller than those of corn producers (not surprising, as corn producers often grow soybeans as well). For a 1-percent increase in subsidies, the average response of soybean producers was to increase total premium purchases by 0.84 percent in the Midwest, 0.59 percent in the Lake States, and 0.47 percent in the Northern Plains.

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- Despite a decrease of roughly 6 million acres in wheat plantings in the Northern Plains (KS, NE, ND, and SD) and Southern Plains (OK and TX) between 1997 and 2002, the average response of *wheat producers* in both regions showed relatively strong increases in demand for crop insurance. For each 1-percent increase in subsidies, demand rose by 0.74 percent and 0.91 percent in terms of total premiums purchased, respectively.
- The effects of subsidy increases are also revealed in other measures of demand for crop insurance during the period. Premiums per acre (total premiums divided by acres insured) and liabilities per acre (total liability divided by acres insured) also tended to rise, with premiums increasing the most. The change in demand measured as acres enrolled (both total and buy-up policies—those policies above the minimal, fully subsidized catastrophic coverage available to growers) typically showed very small, and statistically insignificant, movements in response to subsidy changes. Further, these results were often negative, suggesting the potential for cross-product substitution effects. Together, these findings suggest that subsidies may not (during this timeframe) have drawn many new acres into crop insurance, but they appear to have induced higher levels of coverage on enrolled acres.
- Across all regions, for a 1-percent increase in subsidies, demand for crop insurance rose about 0.86 percent for corn, 0.74 percent for soybeans, and 0.64 percent for wheat in terms of total premiums. For liabilities, increases in demand ranged from roughly 0.2 percent for soybeans and wheat to 0.3 percent for corn. For acres enrolled, the rise in subsidies typically resulted in statistically insignificant changes in demand with magnitudes below 0.2 percent.

How Was the Study Conducted?

This study used data from a variety of sources. Data on crop insurance participation came from USDA, Risk Management Agency (RMA) administrative data for 1989-2012. Data on planted acres came from USDA, National Agricultural Statistics Service (NASS) surveys conducted from 1989 through 2012, while data on historical yields came from NASS surveys conducted from 1966 through 2002. Data from NASS's 1997 and 2002 Censuses of Agriculture provided information on farm characteristics. Controlling for price movements, regression analysis measured the sensitivity of crop insurance demand to a change in the subsidies offered. County-level data were used to examine regional effects of subsidies on various measures of crop insurance participation, including total premiums spent on crop insurance, total premiums per acre, total liabilities per acre covered by crop insurance, and both the total acres enrolled and the total acres enrolled in buy-up. Overall, because county-level data were used (individual-level data are not available at this time), idiosyncratic behavior of individuals cannot be controlled for, so care must be taken in interpreting results—what holds at the aggregate (county) level may mask considerable variation at the individual level. Furthermore, the analysis was undertaken one crop at a time, assuming that each enterprise on a farm is operated independently of the next. If cross-product substitution effects exist that are not taken into account here, results may change.