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Crop Insurance Premium Subsidies Are A Means of Income Redistribution

The U.S. federal crop insurance is a major farm policy aimed at providing risk protection/reduced risk exposure to agricultural producers. A key component of this policy is the provision of multiple contract options and premium subsidies that reduce the cost of crop insurance to agricultural producers. Premium subsidies have been growing over time and accounted for more than $6 billion in government outlays in 2019, with $2 billion being applied to coverage levels of 80% and higher (USDA-RMA, 2020). While the government has justified the use of premium subsidies as a necessary means of increasing producer participation in crop insurance, many have argued that premium subsidies are just another means of income redistribution from taxpayers to producers.

Given the significant producer heterogeneity with respect to attitudes towards risk and the fact that these attitudes are private information, an argument can also be made that premium subsidies are a means of resolving this information asymmetry and inducing certain insurance contract choices by producers. Indeed, the provision of multiple insurance contracts reveals the government's objective of inducing a separating equilibrium (where producers select from a menu of contracts based on their risk preferences) and the premium subsidies represent a necessary means of achieving this objective.

A recent study of ours published in PLoS ONE seeks to analyze and evaluate all different policy objectives/roles of premium subsidies and improve our understanding of the relationship between the stated and revealed government objectives and the role of premium subsidies in achieving these objectives.

To study the role of premium subsidies in crop insurance policy design and implementation, the research develops a novel framework of analysis that effectively captures the empirically relevant heterogeneity in producer attitudes towards risk (which has been ignored by the relevant literature), as well as the tradeoffs involved in producer decisions with respect to different crop insurance options/contracts available to them. The stated government objective of premium subsidies to increase producer participation in crop insurance is evaluated along with their role in inducing the desired producer behavior and a separating equilibrium in the presence of asymmetric information, and transferring income from taxpayers to agricultural producers/policy participants.

The analysis reveals a strong connection and a complementarity between the stated and revealed policy objectives of the government. Premium subsidies can, indeed, increase producer participation in the program, induce a (any) desired separating equilibrium with producers with different levels of risk aversion choosing different levels of risk coverage, and result in welfare transfers to agricultural producers.

In particular, premium subsidies do increase producer participation in crop insurance. Crop insurance data from the Risk Management Agency (RMA) is consistent with the positive impact of premium subsidies on producer participation in crop insurance over time. Through the implementation of several legislative acts expanding premium subsidies, the crop insurance program

grew from $254.8 million in premium subsidies for 99.6 million insured acres in 1994 to $6.36 billion in premium subsidies for 769 million insured acres in 2019.

The analysis also shows that premium subsidies can induce a desirable separating equilibrium in the presence of asymmetric information by making the participation of producers with different attitudes towards risk in the policies designed for them incentive compatible. The change in the structure of premium subsidies by the 2000 Agricultural Risk Protection Act (ARPA) can be viewed as an attempt to induce a different separating equilibrium. In 2000, the year before ARPA was enacted, the average per acre subsidy for low-coverage insurance (i.e., coverage below 80%) was $4.74, while the average subsidy for high-coverage insurance (i.e., coverage at or above 80%) was $2.49 per acre. In 2001, the first year ARPA took effect, the average per acre subsidy for low-coverage insurance increased to $8.29 while the average per acre subsidy for high-coverage insurance increased to $9.23. The percent of acres in a high-coverage contract increased from 5.9% in 2000 to 9.3% in 2001, a 57.6% change.

Finally, premium subsidies function as means of income redistribution from taxpayers to agricultural producers that participate in crop insurance. As noted earlier, premium subsidies have been growing over time and accounted for $6.26 billion and $6.36 billion in 2018 and 2019, respectively. The low-coverage insurance policies received $4.2 billion in 2018 and $4.32 billion in 2019, while high-coverage policies received $2.07 billion in 2018 and $2.04 billion in 2019.

Given that premium subsidies result in income transfers from taxpayers to producers who participate in crop insurance, the question that naturally arises (and is at the heart of this research) is whether these transfers are a goal or a necessity for the desired increased participation (and a separating equilibrium) to emerge. To answer this question, we evaluated whether the government could achieve increased participation at reduced costs. It turns out that it can, which makes income redistribution very much a goal of this government policy.

In particular, our analysis shows that the government could achieve the (any) desired increase in producer participation by providing the premium subsidy associated with the low-coverage crop insurance to new participants only. Without a subsidy paid to producers with low-coverage insurance already in the program, there would be no need for a subsidy for existing producers with high-coverage insurance to maintain the desired separating equilibrium (and the share/type of producers opting for high-coverage crop insurance). It is important to note that, under this mechanism, the new policy participants would receive the premium subsidy for as long as the government desired their participation in crop insurance. Existing policy participants (who keep paying the same premium rate) would have no incentive to leave the program as their expected returns with crop insurance are greater than those without. In addition, by participating in the program and purchasing a certain coverage level, a producer reveals their true type/level of risk aversion. If such producers were to leave the program one year, they would be able to reenter with the terms that were in place when they were participating (and would not be eligible for new subsidies designed to induce producers that used to self-insure to enter the program).

At this point, it is also important to note that, while our analysis focuses on the introduction of new premium subsidies, our results are more general and apply also to cases where the government increases the magnitude of existing subsidies. In such a case, under our proposed mechanism, it is the increase in the premium subsidy associated with the low-coverage insurance that would be available only to new policy participants (while existing policy participants would keep paying the premium associated with their chosen insurance coverage policy, which includes the subsidies already in place). Put in a different way, in cases where the government already subsidizes different insurance coverage policies, our proposed mechanism would not remove existing subsidies from current policy participants but would, instead, make the increase in the current premium subsidies available only to new policy participants.

To assess the magnitude of the savings associated with the implementation of our proposed policy design, we compare its costs to those of ARPA, focusing on the years before and after the implementation of this reform. We estimate that the alternative policy design could have achieved the same acreage enrollment in crop insurance by

saving taxpayers $780 million, or 95% of the new subsidy payments in 2001 alone. It is important to note that additional savings would have been realized also in subsequent years as premium subsidies under ARPA have continued to exist.

The fact that the proposed design can achieve the stated government objective of increased producer participation at reduced costs invalidates the argument that the income redistribution taking place under the current policy design is necessary for increasing producer participation in crop insurance. The presence of a policy design that can achieve increased producer participation and induce any desired separating equilibrium at reduced costs reveals that the premium subsidies in the current policy design are either a means of income redistribution or a policy failure.

Reference:

United States Department of Agriculture, Risk Management Agency (USDA-RMA), 2020. "State/County/Crop Summary of Business." Available at: https://rma.usda.gov/en/Information-Tools/Summary-of-Business/State-County-Crop-Summary-of-Business (accessed on 5/18/20).

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