



## State Distribution of Direct vs. Net Crop Insurance Payments, 2004-2013

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### Overview

The 2014 farm bill replaced direct payments with risk management programs. Moreover, a key farm safety net policy and political factor is the distribution of program payments by state. This post therefore examines the distribution by state of direct payments and net crop insurance payments for the 2004-2013 crops.

### Data

Direct payment data by state are from the U.S. Department of Agriculture (USDA), Economic Research Service (ERS) "U.S. and State Farm Income and Wealth Statistics" (see [here](#)). Only total U.S. direct payments are available for 2013. Thus, the state distribution of direct payments is assumed to be the same for 2013 as for 2012. Net crop insurance payments equal insurance indemnity payments to farms minus premiums paid by farms. Net insurance payment data by state are from the USDA, Risk Management Agency (RMA) "Summary of Business Reports and Data" (see [here](#)). The 2004-2013 observation period was selected because (1) it is after the important changes to crop insurance enacted in the *Agriculture Risk Protection Act of 2000* and (2) is considered a period long enough to provide an indication of longer term performance while maximizing the overlap with the price run-up that began with the 2007 crop year and changes to crop insurance enacted in the 2008 farm bill, notably the higher subsidy rate for enterprise insurance. As a sensitivity test, the period since 1997 was examined. Results are similar.

### Comparison of State Shares

The 5 states with the largest share of direct payments over the 2004-2013 crops were Iowa (9.9%), Illinois (8.8%), Texas (7.9%), Kansas (6.5%), and Nebraska (6.5%). In comparison, the 5 states with the largest share of net crop insurance payments were Texas (16.7%), North Dakota (8.5%), Kansas (8.4%), Iowa (7.9%), and Illinois (7.5%). While 4 states appear in both lists, their shares differ, notably for Texas.

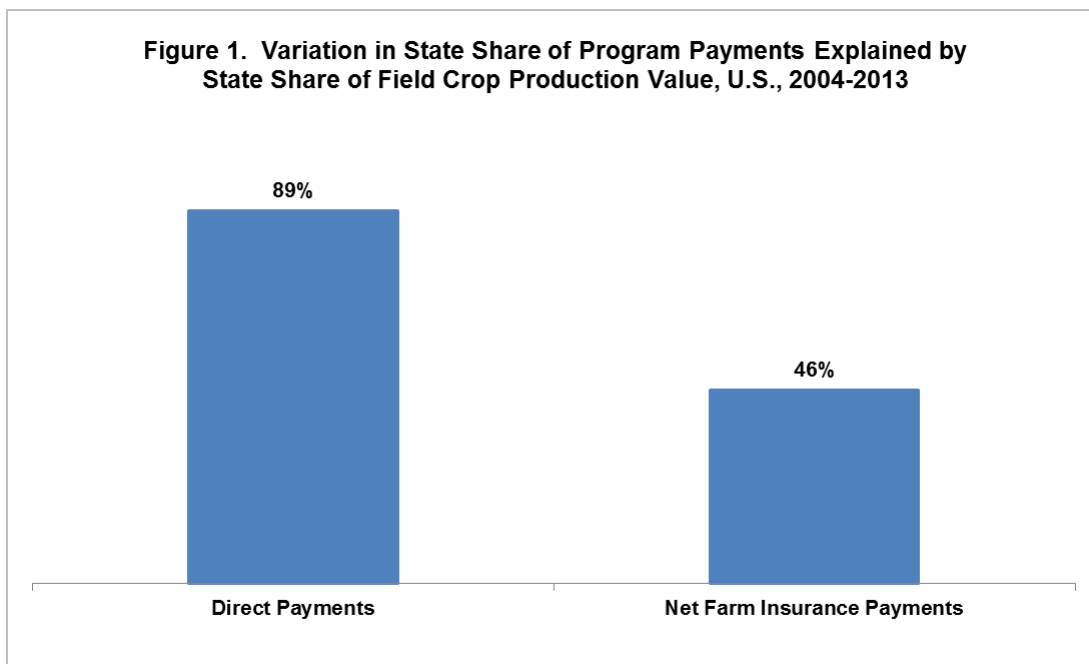
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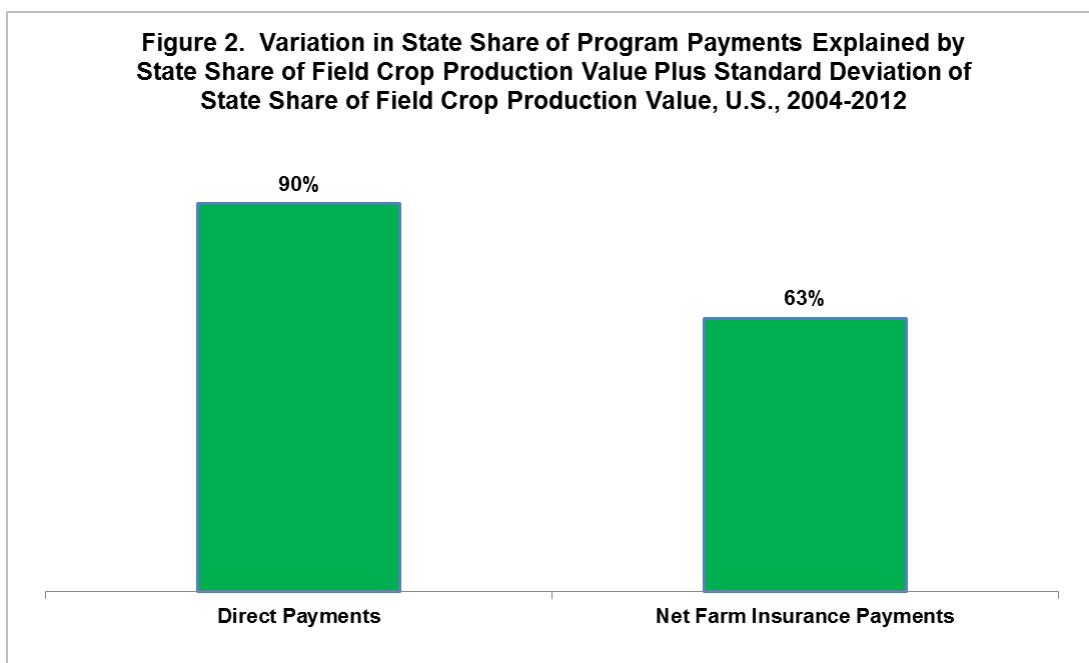
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A similar picture emerges when all states are examined. For 32 of 49 states (Alaska was not included), the crop insurance share was within plus or minus one percentage point of the direct payment share. Hence, for these states, the share of payment did not differ by much for direct and net crop insurance payments. Eleven states had a difference of 1.5 or more percentage points (a “+” sign means insurance share exceeded direct payment share): Texas (+8.8%), North Dakota (+4.1%), South Dakota (+3.3%), Kansas (+1.9%), California (-1.8%), Louisiana (-1.9%), Iowa (-2.0%), Ohio (-2.1%), Minnesota (-2.9%), Nebraska (-3.0%), and Arkansas (-3.8%). These differences may be large enough to be a potentially meaningful shift in the distribution of payments by state, provided the future distribution of net crop insurance payments is similar to the 2004-2013 distribution.

### Analysis of State Shares

To further examine the potential changes in payment shares by state as the farm safety net shifts from direct payment to risk management programs, a regression analysis is conducted. The regression specifically examines the relationship between a state’s share of the value of field crop production and its share of program payments. The regression finds that the higher is a state’s share of field crop production, the higher is its share of direct payments. Moreover, the state share of field crop production explains 89% of the variation in the state share of direct payments (see Figure 1). Thus, the state distributions of direct payments and field crop production are highly related. State share of field crop production is also positively related to state share of net crop insurance payments, but the relationship is not nearly as strong. Only 46% of the variation in state share of net insurance payments is explained by the state share of field crop production.





A second variable of interest is the annual variation in a state's value of field crop production. This measure of annual revenue risk could be related to a state's share of net crop insurance payments. The annual variation in a state's value of field crop production is measured as the standard deviation of the annual percent changes in a state's value of field crop production. This variable is statistically significant with 95% confidence in explaining both the state share of direct payments and the state share of net crop insurance payments. The higher is the annual variation in a state's value of field crop production, the higher is the state's share of net crop insurance payments and the higher is its share of direct payments. However, this measure of annual revenue risk contributes much more to explaining a state's share of net crop insurance payments. Adding the annual variation of state value of field crop production to the regression increases the explanation of state share of net crop insurance payments from 46% to 63% (see Figure 2 vs. Figure 1). In contrast, the explanation of state share of direct payments increases by only 1 percentage point, from 89% to 90%.

### Summary Thoughts

- While many factors influenced the decision to shift from direct payments to risk management as a farm safety net focus, the generally similar distribution by state of direct payments and net crop insurance payments over the last 10 years is probably not a coincidence. State distribution of payments is an important policy and political consideration.
- State share of direct payments is highly related with state share of the value of field crop production. Thus, the distribution of direct payments by states followed the distribution of field crop production determined by the market. This finding suggests that direct payments likely had limited-to-little impact upon the U.S. geographical distribution of field crop production.
- Both state share of the value of field crop production and annual variation in state value of field crop production are important to explaining the distribution of net crop insurance payments by state. The more variable is a state's value of field crop production, the higher is its share of net crop insurance payments. This finding is not surprising. However, it raises the possibility that crop insurance payments could, over time, alter the distribution of production by state by shifting production to more risky production areas, especially when crop insurance payments are notably higher than the area's share of field crop production. Many factors can mitigate this implication, including the positive relationship that exists between the state distribution of insurance payments

and field crop production. More and better data is needed to disentangle the relationship, but this finding suggests the impact of crop insurance on the geographical distribution of field crop production is a potential future policy issue.

- An interesting policy question is whether potential impact is enough to create a policy issue. Precautionary decisions are made all the time in policy, where the precaution is to prevent a potential impact society deems undesirable even when studies of the potential impact find mixed results. Thus, U.S. society might decide that even the potential for a shift in crop production to more risky areas is enough of a reason to alter crop insurance. Such a debate is worth monitoring as the farm safety net continues its evolution into a risk management safety net.

## References

USDA Economic Research Service. *U.S. and State Farm Income and Wealth Statistics*.  
<http://www.ers.usda.gov/data-products/farm-income-and-wealth-statistics.aspx>

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