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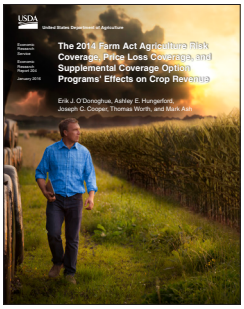

Find the full report at *www.ers.usda.gov/publications/err-economic-research-report/err204*

The 2014 Farm Act Agriculture Risk Coverage, Price Loss Coverage, and Supplemental Coverage Option Programs' Effects on Crop Revenue

Erik J. O'Donoghue, Ashley E. Hungerford, Joseph C. Cooper, Thomas Worth, and Mark Ash

What Is the Issue?

The structure of U.S. agricultural commodity support changed significantly under the 2014 Farm Act. The new programs—in particular, Price Loss Coverage (PLC), Supplemental Coverage Option (SCO), and Agriculture Risk Coverage (ARC)—have linkages with each other and with the pre-existing Federal Crop Insurance (FCI) program. (In this report, the term "ARC" refers to the most popular version of ARC (ARC-County), which is an area-based, rather than individual-based, commodity program.) While PLC builds on the old Countercyclical Payment program, SCO and ARC are known as "shallow loss" programs, covering losses typically not covered by the "deep loss" FCI program. Understanding these new programs and how the available combinations of programs can affect crop revenue provides information on agricultural producers' enrollment decisions, the programs' impact on producers' risk and revenues, and expected program costs.

What Did the Study Find?

Interactions, both among these programs and the Federal Crop Insurance (FCI) program are complex. The mandatory decision producers had to make to elect either the Agriculture Risk Coverage or Price Loss Coverage programs will last for the duration of the Farm Act and has implications for how they can use crop insurance. For example, if a producer elects ARC, the producer cannot use SCO, a crop insurance policy. If the producer instead elects PLC, the producer can enroll in SCO, which then takes on the traits of the (required) underlying policy it supplements—which can have implications for the type and coverage level of the underlying crop insurance policy that a producer chooses to enroll in.

At first glance, the two major "shallow loss" programs for field crops, ARC and SCO, appear similar. However, like the benefits from the Direct and Countercyclical Program that was repealed with the 2014 Farm Act, ARC payments are not influenced by current production. In contrast, the size of the SCO payments are linked to the expected crop production of the farm for the current year.

Moreover, the ARC program has a "memory" for prices—it relies on historic prices to calculate the potential benefits for the producer. In contrast, the SCO guarantee depends on the higher

of the expected prices at planting time (also known as the futures price) or the realized harvest time price. Therefore, while ARC provides benefits that depend on past outcomes, which helps to smooth payments over time, SCO provides intra-year benefits, comparing expected returns at planting time with the actual returns realized at harvest time.

Assuming the futures prices are "close" to the eventual realized prices, these expected prices also matter for the benefits a producer receives from these programs. ERS research results suggest that in an environment with lower expected prices, the Agriculture Risk Coverage program helps to minimize the largest potential losses the most (in other words, ARC helps to increase the lower bound of expected revenues more than SCO would in an environment with low expected prices). In an environment with higher expected prices, the reverse is true and the Supplemental Coverage Option policy helps to minimize a producer's largest potential losses the most.

When producers had to make their decision to elect either ARC or PLC, historic commodity prices had been high while expected commodity prices for the upcoming crop year were low. Likely due to the differences in how the Agriculture Risk Coverage and Supplemental Coverage Option programs work with respect to both high historic prices and low expected commodity prices, producers overwhelmingly elected ARC instead of the Price Loss Coverage program (and hence over SCO). According to USDA's Farm Service Agency, producers elected ARC for 91 percent of corn base acres and 96 percent of soybean base acres. While almost all corn and soybean producers elected ARC, more than one in three wheat base acres were covered with PLC—and hence were eligible for enrollment in the SCO program. Compared to ARC, SCO appears to provide higher benefits for winter wheat, providing slightly higher average revenues while generating similar potential low-end losses as the ARC program, which could help explain why a significant portion of wheat producers made different choices than corn and soybean producers.

How Was the Study Conducted?

The analysis translates 2014 Farm Act terms into quantitative functions. Because no data exist for these programs—since they have only recently been enacted into law—ERS researchers used a model to simulate revenue outcomes for a representative (typical) producer for each county that produced corn, soybeans, and wheat. This model was used to generate distributions of simulated crop prices and yields, centered on their expected values at planting time in 2014.

For each crop, nonparametric county-level yield distributions are generated for each county for which USDA's National Agricultural Statistics Service (NASS) has reported data each year from 1975 through 2013. This amounted to 1,001 counties for corn, 889 counties for soybeans, and 510 counties for wheat. The price distribution is also generated non-parametrically, based on planting time and harvest time futures prices over the same period.

The analysis maintains the historical correlations of yields across all counties and between the county yields and prices using an empirical approach that helps describe the historic relationships between the two variables. The yield distribution for a typical (representative) farmer in each county is generated by inflating the county-level yield variability based on farm yield information implicit in actual crop insurance premium rates for each county.

The model makes 10,000 draws from each county and farm yield distribution as well as from the price distribution. Payments, net revenue, and total revenue (net revenue plus the payments) are then calculated for each of the 10,000 price and yield pairs to generate distributions for each of these variables, providing researchers with the data used in the analysis.