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Is ACRE Program Participation During the 2012 Farm Bill Likely to Pay Off for Arkansas Producers? Preliminary Evidence from the Representative Panel Farms Framework

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ABSTRACT

The Average Crop Revenue Election, an optional and voluntary revenue support counter-cyclical program, was made available to United States farmers starting in the 2009 crop year. However, participation rates nationally have remained low due to a number of factors. This study estimates the effect on Arkansas farmers of participation in this program during the 2012 Farm Bill assuming full program continuation. Five Arkansas representative panel farms provide the framework for the analysis. Ten-year historical data is used to develop national and world crop price, as well as farm-specific yield and expense empirical distributions by using multivariate empirical probability distributions. Stochastic baseline projections for 2012-2016 with 500 random draws are simulated in Simetar. The results imply that program participation pays off for Arkansas farmers during the years 2012-2016 even though the probability of receiving a program payment is low across all farm-crop combination pairs.

INTRODUCTION

The Average Crop Revenue Election (ACRE) program was a novel program in the 2008 Farm Bill. It was an optional and voluntary revenue support counter-cyclical program available to producers starting in 2009. Once enrolled, producers: were ineligible to receive counter-cyclical payments (CCPs), had their direct payments (DPs) reduced by 20 percent, had their loan rates reduced by 30 percent, and must have remained enrolled in the program during the whole period 2009-2012.

In order for ACRE payments to be received, two triggers (one at the State and one at the farm level) must be met:

[1.] Actual State revenue < ACRE State revenue guarantee

[2.] Actual farm revenue < ACRE farm benchmark revenue

When both triggers are met, the total program payment for the crop of interest is calculated as:

*ACRE payment rate per planted acre * 83.3 percent of the farm-specific actual (or considered) planted acres for the years 2009-2011 (85 percent in 2012) * farm-specific productivity ratio¹*

Since 2009, participation rates in ACRE across all States have remained low (8% of eligible farms in the 2009 crop year). Participation rates in Arkansas have also remained low during this period. Several factors likely have had an impact on this trend. First, DPs are of critical importance to the subsistence of Arkansas farms. Second, two triggers must be met in order for program payments to be received. Third, adverse selection is a major issue with the

¹ The United States Department of Agriculture's Economic Research Service (USDA/ERS) 2008 Farm Bill Side-By-Side Comparison provides specific detail on all ACRE program-related variables. Available online at: <http://www.ers.usda.gov/FarmBill/2008/Titles/TitleIcommodities.htm>

program.² Fourth, complicated program structure, rules and regulations have likely prevented producers from participation. Fifth, any potential payments are received late after crop harvest. Finally, the decision to participate in 2009 was irrevocable during the whole period 2009-2012.

The goal of this study is to assist Arkansas producers in making better informed decisions regarding participation in Federal agricultural programs during the 2012 Farm Bill. The objective is to assess the impact on Arkansas producers of participation in the ACRE program during the 2012 Farm Bill (assuming full program continuation). To achieve the main goal, two scenarios are considered:

[1.] What is the probability of receiving an ACRE payment during 2012-2016 on a by farm, crop and year basis?

[2.] Does it pay off for Arkansas farmers to participate in the ACRE program during 2012-2016?

PROCEDURES

This study employs the Arkansas representative panel farms framework. Representative farms are developed based on information jointly collected by extension economists from the Arkansas Cooperative Extension Service and Texas A&M University's Agricultural Food and Policy Center. Every two to three years, these professionals work closely with panels of farmers to update (or construct new) representative farms sharing common features with farms of a certain geographical location. During this process, information such as (but not limited to) planted acreage, crop mix, land tenure arrangements, participation in Federal farm programs, base acreage, historical yields, location-specific price wedges relative to the mean national prices, assets, costs, loan interest rates, and depreciation method is collected (Hignight, 2007).

² Adverse selection refers to the process of making a decision (Federal farm commodity program participation in this case) without possessing all the necessary information in order to do so (in this case, a decision must be made while facing future risk and uncertainty).

Table 1 shows characteristics for five eastern Arkansas representative panel farms providing the framework for this analysis. Farm names start with AR, Arkansas' two-letter State label, and end with a number representing the total planted cropland acres specific to each farm. For example, ARHR3000 is a 3,000 acre rice, soybean, and corn farm located in Hoxie, and ARNC5000 is a 5,000 acre cotton farm in Leachville.

Following Richardson, Klose and Gray (2000), a procedure for developing multivariate empirical (MVE) probability distributions for farm-related variables is employed. Specifically, ten-years of historical data are employed to develop national and world crop price, as well as farm-specific yield and expense (diesel fuel, fertilizer and electricity) empirical distributions. Simetar is used to simulate stochastic baseline five-year projections for the period 2012-2016 with 500 iterations per variable per year.

Historical national and adjusted world prices are obtained from the USDA's National Agricultural Statistics Service (USDA/NASS),³ the USDA/ERS Rice Yearbook,⁴ and the USDA/ERS Rice Outlook.⁵ Actual historical farm-specific yields, on the other hand, are obtained during the representative panel farm interview process. 2008 Farm Bill policy variables such as crop-specific direct payment rates, loan rates and target prices are obtained from the USDA/ERS Side-By-Side Comparison. Finally, historical farm expense data are obtained from USDA/NASS (diesel fuel, potash, nitrogen, and phosphate) and personal communication with Mr. Phil Tacker (electricity).⁶

The "February 2011 Baseline Update for United States Agricultural Markets" by the Food and Agriculture Policy Research Institute (FAPRI)-University of Missouri is used to obtain

³ Available online at: <http://www.nass.usda.gov/>

⁴ Available online at: <http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1229>

⁵ Available online at: <http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1285>

⁶ Mr. Tacker is currently an Irrigation Specialist with Delta Plastics.

projected crop prices.⁷ An earlier version of the same publication (March 2011), on the other hand, is used to obtain projected indices of prices paid by farmers. Finally, projected farm-specific crop yields are calculated by the authors by assuming farm and crop-specific growth trends.

RESULTS AND DISCUSSION

Table 2 shows the results from the first scenario. The probabilities of receiving an ACRE payment during the period 2012-2016 are low across all farm-crop combination pairs. For example, such probabilities are in the 18 percent (Hoxie farm in 2016)-48 percent (Stuttgart farm in 2013) range for long-grain rice and the 16 percent (Hoxie farm in 2016)-42 percent (Stuttgart farm in 2012) range for irrigated soybeans.

Tables 3 and 4 illustrate the results from the second scenario. Average annual ACRE payments on a per acre basis range from \$21 (Stuttgart and Wynne farm) to \$33 (Leachville farm). Across all sample crops, the highest ACRE payments on a per acre basis as an annual average over the years 2012-2016 are received for corn (e.g., \$53 for the McGehee farm) and medium-grain rice (e.g., \$43 for the Hoxie farm) and the lowest for wheat (e.g., \$12 for the Stuttgart farm) and dryland soybeans (e.g., \$7 for dryland soybeans for the Hoxie farm). Finally, in terms of profitability for ACRE farm participants, only one of the sample farms (Wynne) has a negative net income on a per acre basis as an annual average during 2012-2016 (-\$137). The reason for this is the relatively high depreciation cost of this farm. For all other farms under ACRE participation, average annual net incomes during the same period range from \$22/acre (Hoxie farm) to \$189/acre (Leachville farm). On the other hand, under BASE participation (farmers choose not to participate in ACRE), the Wynne farm again is the only farm that has a negative net income on a per acre basis as an annual average during the years 2012-2016. For the

⁷ The latest version of the report is available online at: http://www.fapri.missouri.edu/index.asp?current_page=home

other farms, under BASE participation, average annual net incomes during the same period range from \$9/acre (Hoxie farm) to \$163/acre (Leachville farm). However, across all sample farms, the annual average net farm income/acre is greater under ACRE participation as compared to BASE participation. Net farm income/acre differences among both participation options range from \$11 (Wynne farm) to \$26 (Leachville farm).

The results suggest that the Leachville farm, an irrigated and dryland cotton farm, would benefit the most from ACRE participation during the 2012 Farm Bill even though the analysis shows that the highest ACRE payments on a per acre basis as an annual average during 2012-2016 are received for corn and medium-grain rice. This can be explained with the small number of planted acres in the sample for these two crops (e.g., only the Hoxie farm grows medium-grain rice (150 acres)).

SIGNIFICANCE OF FINDINGS

During the period 2009-2012, ACRE participation rates in Arkansas (as well as across all other States) have been low. Numerous factors have likely had an impact on such a trend. This study examines the impact on Arkansas farmers of ACRE participation during the 2012 Farm Bill assuming full program continuation. The results suggest that ACRE participation pays off for Arkansas producers during the years 2012-2016 even though the probability of receiving an ACRE payment is low across all farm-crop combinations. Therefore, it remains unclear whether or not a producer should potentially participate in ACRE and the decision to participate should be cautiously examined by each producer individually. The main reason for this is that a certain level of uncertainty exists in terms of yield and price variation at both the farm and State level. However, due to the recently stronger market price environment (relative to the year 2009 when

farmers could initially enroll) it is likely that farmers would have a greater incentive to participate in ACRE during 2012-2016.

ACKNOWLEDGMENTS

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LITERATURE CITED

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TABLES AND FIGURES

Table 1: Arkansas Representative Panel Farm Characteristics

Farm Name	ARHR3000	ARNC5000	ARC7500	ARHR3240	ARWR1400
Location	Hoxie	Leachville	McGehee	Stuttgart	Wynne
County	Lawrence	Mississippi	Desha	Arkansas	Cross
Acres Owned	1,000	1,000	1,200	648	420
Acres Under Crop Share Lease	1,500	3,200	5,985	1,552	490
Acres Under Cash Lease	500	800	315	1,040	490
Cash Rent for Land (\$/acre)	100	125	130	100	100
Planted Acres	3,000	5,000	7,500	3,240	1,400
Medium Grain Rice	150	0	0	0	0
Long Grain Rice	1,300	0	1,875	1,620	700
Irrigated Soybeans	1,125	0	1,625	1,296	650
<i>Full-Season Irrigated Soybeans</i>	0	0	1,625	0	0
<i>Double-Crop Irrigated Soybeans</i>	0	0	750	0	0
Dryland Soybeans	125	0	0	0	50
Corn	300	0	1,500	0	0
Irrigated Cotton	0	4,750	1,500	0	0
Dryland Cotton	0	250	0	0	0
Wheat	0	0	1,000	324	0
Base Acres					
Medium Grain Rice	175	0	0	0	0
Long Grain Rice	1,575	0	2,375	1,620	700
Irrigated Soybeans	1,125	0	2,585	1,296	650
<i>Full Season Irrigated Soybeans</i>	0	0	2,585	0	0
<i>Double Crop Irrigated Soybeans</i>	0	0	0	0	0
Dryland Soybeans	125	0	0	0	50
Corn	0	0	0	0	0
Irrigated Cotton	0	4,250	2,375	0	0
Dryland Cotton	0	225	0	0	0
Wheat	0	0	0	235	0

Table 2: Percentage Probability of Receiving an ACRE Payment (2012-2016), by Farm, Crop and Year*

Year	Stuttgart			Wynne			Leachville		Hoxie				McGehee						
	LGR	IRSB	W	LGR	IRSB	DLSB	IRCT	DLCT	LGR	MGR	CN	IRSB	DLSB	LGR	CN	W	IRCT	FSSB	DCSB
2012	39	42	22	38	23	35	49	50	33	54	56	27	33	35	57	24	40	32	42
2013	48	37	49	46	30	31	38	39	43	43	51	21	29	46	52	50	31	31	37
2014	32	33	30	30	29	29	23	23	27	31	32	23	29	31	33	28	19	30	31
2015	20	23	19	20	24	19	24	25	19	24	29	20	18	20	30	23	25	24	21
2016	19	22	21	19	21	16	24	25	18	25	30	16	18	19	29	17	24	21	20

*note: LGR, IRSB, W, DLSB, IRCT, DLCT, MGR, CN, FSSB, and DCSB stand for long-grain rice, irrigated soybeans, wheat, dryland soybeans, irrigated cotton, dryland cotton, medium-grain rice, corn, full-season soybeans and double-crop soybeans, respectively.

Table 3: ACRE Payments/Acre (2012-2016), by Farm, Crop and Year (in \$ U.S.)*

Year	Stuttgart			Wynne			Leachville		Hoxie				McGehee						
	LGR	IRSB	W	LGR	IRSB	DLSB	IRCT	DLCT	LGR	MGR	CN	IRSB	DLSB	LGR	CN	W	IRCT	FSSB	DCSB
2012	35	23	8	34	15	13	61	48	30	76	75	17	10	33	83	8	59	22	22
2013	50	18	27	51	18	12	40	30	47	54	66	12	9	51	73	26	37	21	18
2014	29	15	12	29	17	11	22	15	27	35	39	12	8	31	43	11	21	19	14
2015	15	10	7	15	13	6	20	15	15	24	32	11	5	16	34	8	26	13	9
2016	13	9	8	13	10	4	20	15	12	23	29	9	5	14	32	6	26	11	8
Mean	28	15	12	29	15	9	33	25	26	43	48	12	7	29	53	12	34	17	14

*note: LGR, IRSB, W, DLSB, IRCT, DLCT, MGR, CN, FSSB, and DCSB stand for long-grain rice, irrigated soybeans, wheat, dryland soybeans, irrigated cotton, dryland cotton, medium-grain rice, corn, full-season soybeans and double-crop soybeans, respectively.

Table 4: 2012-2016 Annual Average Net Farm Income, in \$/Acre (by Farm)*

Farm Location	Wynne	Hoxie	Stuttgart	Leachville	McGehee
	Annual Average (2012-2016), in \$/acre				
Market Receipts	638	656	539	935	721
DPs (ACRE)	42	41	38	16	28
LDPs (ACRE)	0	0	0	3	1
Weighted ACRE Payments (ACRE), by Planted Acres	21	23	21	33	28
Total Government Payments (ACRE)	64	64	59	51	57
Total Receipts (ACRE)	702	720	598	986	778
DPs (BASE)	53	51	47	20	35
LDPs (BASE)	0	0	0	4	1
CCPs (BASE)	0	0	0	1	1
Total Government Payments (BASE)	53	51	47	25	37
Total Receipts (BASE)	691	707	586	960	758
Total Cash Expenses	672	649	469	737	642
Depreciation	167	49	61	60	61
Net Farm Income (ACRE)	-137	22	68	189	75
Net Farm Income (BASE)	-148	9	56	163	55
<i>Difference (BASE-ACRE)</i>	<i>-11</i>	<i>-13</i>	<i>-12</i>	<i>-26</i>	<i>-20</i>

*note: Under BASE participation, farmers receive DPs, CCPs and loan-deficiency payments (LDPs), and do not participate in the ACRE program.