Analysis of Shallow Loss Safety Net Programs in the Proposed 2012 Farm Bill for Arkansas Rice Farms and the U.S. Rice Sector

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Abstract

This study examines impacts of shallow loss safety net programs proposed in S. 3240 and H.R. 6083 for 2013-2017 with focus on Arkansas rice and the U.S. rice sector. The results suggest that the Price Loss Coverage program provides a relatively strong safety net for long-grain rice producers.

Keywords: farm bill, rice, shallow loss, revenue

Introduction

The Food, Conservation, and Energy Act of 2008 (P.L. 110-246), more commonly known as the 2008 Farm Bill, expired on September 30, 2012. During the political process of negotiating and ultimately writing a new comprehensive five-year bill in the 112th United States (U.S.) Congress, the Senate and House Committee on Agriculture passed their versions of the 2012 Farm Bill this past summer.

The difficult policy environment going into this process included high Federal budget deficits as well as relatively high crop prices and incomes in agriculture, ultimately driving the need and potential for cuts in Federal spending in agriculture. As Figure 1 shows, the House Committee on Agriculture proposed legislation would reduce spending by nearly $35 billion and the Senate version by about $24 billion in spending over the ten-year period 2013-2022, based on the March 2012 Congressional Budget Office (CBO) baseline (CBO, 2012).

The Agriculture Reform, Food, and Jobs Act of 2012 (S. 3240) passed the Senate on June 21, 2012 on a strong bipartisan 64-35 vote.[1] S. 3240 repeals direct payments (DPs), counter-

[1] Available online at: http://www.gpo.gov/fdsys/pkg/BILLS-112s3240pp/pdf/BILLS-112s3240pp.pdf

cyclical payments (CCPs), and Average Crop Revenue Election (ACRE), but retains loan-deficiency payments (LDPs). The novel shallow revenue loss program, Agriculture Risk Coverage (ARC) replaces ACRE and is made available for producers of crops such as rice, corn, wheat, and soybeans (cotton is ineligible). Producers of these crops may also elect to participate in the Supplemental Coverage Option (SCO), a new premium-based program that is intended to supplement an individual producer's crop insurance policy, but they are ineligible for participation in the Stacked Income Protection Plan which is exclusively available only for producers of upland cotton (STAX). STAX is also a novel premium-based program, and its participants cannot participate in the Supplemental Coverage Option. Southern state Senators viewed the commodity title of the bill as unfair to traditionally southern commodities (i.e., rice and peanuts) relative to mid-west commodities, as shown in Table 1, and voted against it.

The Federal Agriculture Reform and Risk Management Act of 2012 (H.R. 6083) passed the House Committee on Agriculture on July 12, 2012, again with a strong bipartisan vote (35-11).[2] It also repeals DPs, CCPs and ACRE, while retaining loan-deficiency payments. With some program design modifications, it also includes STAX and the Supplemental Coverage Option. In 2013, producers (except for cotton) may make, for the period 2013-2017, a one-time irrevocable choice between the novel Price Loss Coverage (PLC) and Revenue Loss Coverage (RLC) programs. In addition, only PLC participants may also elect to participate in the SCO program (RLC participants are ineligible). Cotton producers can participate in STAX but cannot participate in the PLC and RLC programs. Finally, STAX participants cannot participate in the

[2] Available online at: http://www.gpo.gov/fdsys/pkg/BILLS-112hr6083rh/pdf/BILLS-112hr6083rh.pdf

Supplemental Coverage Option. This version of the bill treated southern crops more equitably relative to the Senate version of the bill, as Table 1 shows.

Overall, both House and Senate bills propose an immediate transition from traditional farm programs (e.g., DPs) to a greater reliance on farm risk management tools such as crop insurance. In addition, both bills rely on a relatively new philosophical approach of providing coverage of "shallow revenue" losses. Such an idea was first introduced in the 2008 Farm Bill with the disaster-aid Supplemental Revenue Assistance (SURE) program. This program required a producer to purchase an individual crop insurance policy and increased that producer's insurance coverage level by 15 percent. It effectively covered losses less than the insurance deductible selected by the producer, or what is typically referred to as "shallow revenue" losses.

Reluctance by the House Republican leadership to bring the House Committee on Agriculture version of the bill to the floor for discussion left the completion of the 2012 Farm Bill negotiation process in limbo until the end 2012. On January 1, 2013, in conclusion of the political negotiations to address the nation's $16 trillion debt issue focused on both spending cuts and tax increases, the House and Senate passed a bill to temporarily avoid the so-called "fiscal-cliff" titled "American Taxpayer Relief Act of 2012" (H.R. 8).[3] It was signed into law by President Barack Obama on January 2, 2013. This bill provides a one-year extension of the 2008 Farm Bill and applies only to the 2013 crop year. In effect, it extends certain programs of the 2008 legislation such as price and income safety net programs for grain producers for nine months (through Sept. 30, 2013).

[3] Available online at: http://www.gpo.gov/fdsys/pkg/BILLS-112hr8enr/pdf/BILLS-112hr8enr.pdf

In 2013, as part of a potentially much broader national deficit reduction effort in the 113th U.S. Congress, most interest groups (e.g., USA Rice Federation) expect a new comprehensive five-year bill to be passed. In addition to ensuring considerable budget savings, such a bill would provide longer-term assurance for U.S. producers. Proposed programs in S. 3240 and H.R. 6083 are likely to be a starting point when lawmakers begin to write the 2013 Farm Bill this year. "Shallow revenue" loss safety net programs included in respective Titles I and XI (or modified versions thereof) appear particularly likely to be included in the final version of the 2013 legislation.

The goal of this study is to assess the economic impacts of Titles I and XI "shallow revenue" loss safety net programs in the Senate and House Committee on Agriculture versions of the 2012 Farm Bill during the five-year period 2013-2017 with a focus on the U.S. and Arkansas rice sectors.

First, using an Arkansas representative panel farms framework, we address two main questions related to Titles I and XI safety net programs in S. 3240 and H.R. 6083 (ARC, PLC, RLC, STAX and SCO):

1) *What are the estimated payments per planted acre (by farm and by crop)?*
2) *What are the probabilities of receiving a payment (by farm and by crop)?*

Second, employing the Arkansas Global Rice Model (AGRM), we examine the impact of the PLC program included in H.R. 6083 on the U.S. and Arkansas rice sectors during the same five-year period. Specifically, we address the following questions:

1) *What is the effect on the U.S. harvested area (rice; long/medium&short-grain rice)?*
2) *What is the impact on the Arkansas and other states' long-grain rice harvested area?*

3) *What is the effect on the U.S. season average farm price (rice; long-grain rice)?*

4) *What is the total and average value of the annual U.S. rice PLC payments?*

Methods and Data

This study first employs the Arkansas representative panel farms framework. Representative farms are developed based on information jointly collected by extension economists from the University of 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 is collected 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 (Hignight, 2007).

Table 2 shows characteristics for five eastern-Arkansas representative panel farms used for this analysis. The Wynne farm (Cross County) is a 1,400 acre rice-soybean operation. The Hoxie farm (Lawrence County) is a 3,000 acre operation producing rice, soybeans and corn. The Stuttgart farm (Arkansas County) is a 3,240 acre rice-soybeans-wheat farm. The Leachville farm (Mississippi County) is a 5,000 acre cotton only operation. Finally, the McGehee operation (Desha County) is a 7,500 acre rice-soybeans-cotton-corn-wheat farm. Please note that the Hoxie farm is the only farm in the sample that produces medium-grain rice, 150 acres.

Following Richardson, Klose and Gray (2000), a procedure for developing multivariate empirical (MVE) probability distributions for farm-related variables is employed. Specifically, ten-year historical data are used to develop empirical distributions for: national farm average and adjusted world crop prices; futures market projected and harvest crop prices; and farm and county-specific crop yields. Simetar (a Microsoft Excel add-in used to model risk) is used to simulate stochastic baseline five-year projections for the period 2013-2017 with 500 iterations (random draws) per variable per year.

Historical national farm average and adjusted world prices are obtained from the United States Department of Agriculture's National Agricultural Statistics Service (USDA/NASS) (USDA, NASS, 2012), the USDA's Economic Research Service (USDA/ERS) Rice Yearbook (USDA, ERS, 2012a) and Rice Outlook (USDA, ERS, 2012b). Historical futures market projected and harvest prices are obtained from the USDA's Risk Management Agency (USDA/RMA) (USDA, RMA, 2012). Actual historical farm-specific crop yields are obtained during the panel farm interview process, and historical county-specific crop yields are obtained from USDA/NASS (USDA, NASS, 2012). The "March 2012 Baseline Update for United States Agricultural Markets" by the Food and Agriculture Policy Research Institute (FAPRI)-University of Missouri is used to obtain projected crop prices (FAPRI, 2012). In addition, projected farm and county-specific crop yields are calculated by the authors by assuming farm, county and crop-specific growth trends.

The second analysis, which examines the economic impact of the proposed PLC program, employs the Arkansas Global Rice Model. The AGRM is a partial, non-spatial, multi-country statistical simulation and econometric analytical framework developed and managed by the University of Arkansas Rice Economics Program (AGREP) in Fayetteville over the last two

decades. The AGRM covers 43 key rice producing and consuming countries with all the other countries not individually-modeled included in one of the five rest-of-the-region models (Africa, the Americas, Asia, Europe, and Oceania). Thus, it is a representation of the entire global rice economy. Industry and macroeconomic data and model specifications are updated as necessary, or as new data become available. The AGRM can be used to generate annual projections of the world rice economy (production, consumption, trade, stocks, and prices) for a ten-year period; and has recently been extended up to 2035.

Using the AGRM, simulation is conducted to generate baseline projections and alternative scenarios on technology, trade, production shocks, consumption shocks, and policy analyses. In this study both deterministic outcomes and stochastic distributions of outcomes are generated. The model links countries through prices and trade to obtain global and national estimates of supply, utilization, trade, stocks and prices—highlighting the interdependence of the countries in the world rice economy. Through collaboration with FAPRI, the model makes assumptions about key macroeconomic variables and links to other crop and livestock models.

Results and Conclusions

All results from the Arkansas representative panel farm analysis are expressed as five-year (2013-2017) average annual estimated payments per planted acre (expressed in U.S. dollars) and associated probabilities of receiving payments greater than zero (expressed in percentages). Figures 2 through 5 illustrate the stochastic results from the analysis of the ARC (under both individual and county coverage), PLC and RLC programs for the Stuttgart, Wynne, Hoxie and McGehee representative panel farms, respectively.

For the Stuttgart farm (Figure 2), under the ARC program, payments under county coverage are higher than individual coverage for all crops. Long-grain rice receives the highest payments under county coverage ($21) while wheat is a distant second. Under both coverage options, probabilities of receiving a payment are low for all crops: nearly 40% for long-grain rice, and even lower for the other crops, particularly for irrigated soybeans. Under the PLC program, payments for long-grain rice are relatively high: $89 and producers can receive such payments in nearly eight out of ten years on average. Irrigated soybean producers do not receive any payment under this program, while wheat farmers receive $9 on average with a 45% chance of receiving such payments. Finally, payments under the RLC program (and corresponding probabilities) for all crops are nearly equal with expected outcomes for the ARC program with county coverage.

Under the ARC program for the Wynne farm (Figure 3), payments (and corresponding probabilities) under county coverage are higher for long-grain rice and irrigated soybeans. For dryland soybeans, payments are equal with a relatively higher chance of receiving such payments under individual coverage. Under the PLC program, long-grain rice payments are generous: $111 and occur with a probability of 77%. Irrigated and dryland soybeans, however, do not receive any payment under this program. Finally, RLC payments (and corresponding probabilities) for all crops are comparable with expected outcomes for the ARC program with county coverage.

For the Hoxie farm (Figure 4), under the ARC program, long and medium-grain rice and corn receive higher payments under county coverage. Irrigated soybeans receive more payments under individual coverage while dryland soybeans receive equal payments under

both coverage options. Probabilities of receiving such payments are low across all crop-farm combinations; and always below 40%. Under the PLC program, long-grain rice receives $97 with a probability of 77%. Irrigated and dryland soybeans do not receive any payment, while medium-grain rice and corn receive $1 and $4, respectively. However, payments for these two crops can rarely be expected as they occur with probabilities of 6% and 13%, respectively. Finally, RLC payments (and corresponding probabilities) for all crops are generally similar with expected outcomes for the ARC program with county coverage.

For the McGehee farm (Figure 5), under the ARC program, all crops except wheat receive higher payments under county coverage. Wheat receives equal payments under both coverage options, $6. Under county coverage, among all crops, rice receives the highest payments ($21) followed by corn ($18). The probability of receiving such payments is also highest for rice (41%) followed by corn and wheat (32% each). Under the PLC program, long-grain rice receives $82 with a probability of 77%. Full-season and double-crop soybeans do not receive any PLC payment, while corn and wheat receive $4 and $8, respectively. However, payments for corn occur with a probability of only 13% while wheat payments are received with a probability of 45%. Finally, RLC payments (and corresponding probabilities) for all crops are generally similar with expected outcomes for the ARC program with county coverage.

Tables 3 and 4 illustrate the stochastic results from the analysis of the STAX and SCO (under ARC and non-ARC participation) programs, respectively. In these two analyses, we report estimated gross indemnity payments received only, since premiums-paid by farmers are not considered in the analysis. Table 3 shows the results only for the Leachville and McGehee farms, as they are the only cotton-producing farms among the representative farm samples.

We assume a protection factor of 120% in the analysis; and report results for three revenueguarantee levels: 70%, 80% and 90%. Overall, expected gross indemnities are greater for irrigated than for dryland cotton. For irrigated cotton, both farms receive nearly equal gross indemnity payments: approximately $40 under 70% coverage, $68 under 80% coverage, and close to $100 under 90% coverage. Dryland cotton, on the other hand, receives $32, $53, and $76 in gross indemnities under 70%, 80%, and 90% coverage, respectively. Probabilities of receiving an indemnity payment are in the 32-35% range under 70% coverage, 46-52% range under 80% coverage, and 66-68% range under 90% coverage.

Table 4 illustrates the SCO program participation results for the Stuttgart, Wynne, Hoxie and McGehee farms. In the analysis, we assume participation in a revenue protection crop insurance policy with a 70% coverage level. Across all farm-crop combinations, gross indemnity payments are higher under non-ARC participation. Long and medium-grain rice gross indemnities under this participation option are low, nearly $10 on average. Average gross indemnity payment for wheat is $23 while for corn, gross indemnities average about $20. For dryland soybeans gross indemnity payments are in the $23-$33 range, while for irrigated soybeans such payments are highest among all crops, and are in the $34-$49 range. Probabilities of receiving indemnity payments are also highest for soybeans among all crops, followed by wheat and corn. Such probabilities for rice are low, and are in the 11-13% range.

Figures 6-13 illustrate the results from the AGRM analysis. Each of the figures illustrates four variables: the baseline projection (full continuation of 2008 Farm Bill programs), the stochastic average of the potential adoption of the PLC program, as well as the lower 10th

percentile and upper 90th percentile range of possible outcomes under the PLC program scenario.[4]

As Figure 6 shows, on average, total U.S. rice harvested area is expected to increase from less than 2.7 million acres in 2012 to more than 3.1 million acres in 2017. In addition, total U.S. long-grain rice harvested area is expected to increase on average from just above 1.9 million acres in 2012 to approximately 2.4 million acres in 2017 (Figure 7) while total U.S. medium and short-grain rice harvested area is expected to increase from just above 700,000 acres in 2012 to more than 750,000 in 2017 (Figure 8). In Arkansas, long-grain rice harvested area on average increases from 2012 to 2015, but declines in each of the following two years to less than 1.21 million acres in 2017 (Figure 9).

Figure 10 shows that on average, the U.S. rice season average farm price increases from 2012 to 2013, but declines between 2013 and 2016. Finally, it increases from 2016 to 2017, but is lower than the price under the baseline scenario. On the other hand, the U.S. long-grain rice season average farm price on average increases slightly from 2012 to 2014, but declines sharply between 2014 and 2016. Finally, it increases from 2016 to 2017 and is virtually equal to the price under the baseline scenario (Figure 11).

As Figure 12 illustrates, on average, expected total U.S. rice PLC payments d increase sharply from 2012 to 2016, but decline between 2016 and 2017 and are approximately $200 million in the final year of the study period. In addition, U.S. average rice PLC payments

[4] These results are based on a stochastic analysis used to determine the range of possible outcomes (confidence intervals) in addition to a deterministic analysis which generates only average point estimates. Stochastic estimates are useful since actual market outcomes deviate from average estimates.

received reach a five-year high in 2016, but are always lower than $100 per planted acre (Figure 13).

Conclusively, the potential inclusion of the PLC program in the 2013 Farm Bill would provide a relatively strong price safety net for U.S. and Arkansas long-grain rice producers. This is particularly important considering the likely removal of the DPs program from the final version of this legislation which traditionally has provided a strong safety net for U.S. long-grain rice producers. Other proposed programs in S. 3240 and H.R. 6083 provide a limited safety net for these producers. Long-grain rice RLC payments are approximately $25 per acre with about 45% probability of receiving those payments. Average RLC payments for all other crops are typically less than $15 per acre (about $5 per acre for soybeans and wheat, and $10-$15 per acre for corn and medium-grain rice) with a probability of receiving such payments always lower than 30%. Across all crops, ARC payments are typically higher under county coverage than individual coverage. Under county coverage, long-grain rice estimated ARC payments are approximately $20 per planted acre with a chance of about 40% of receiving such payments. Finally, estimated SCO gross indemnities for long and medium-grain rice are nearly $10 per planted acre with probabilities of receiving such payments in the 11-13% range.

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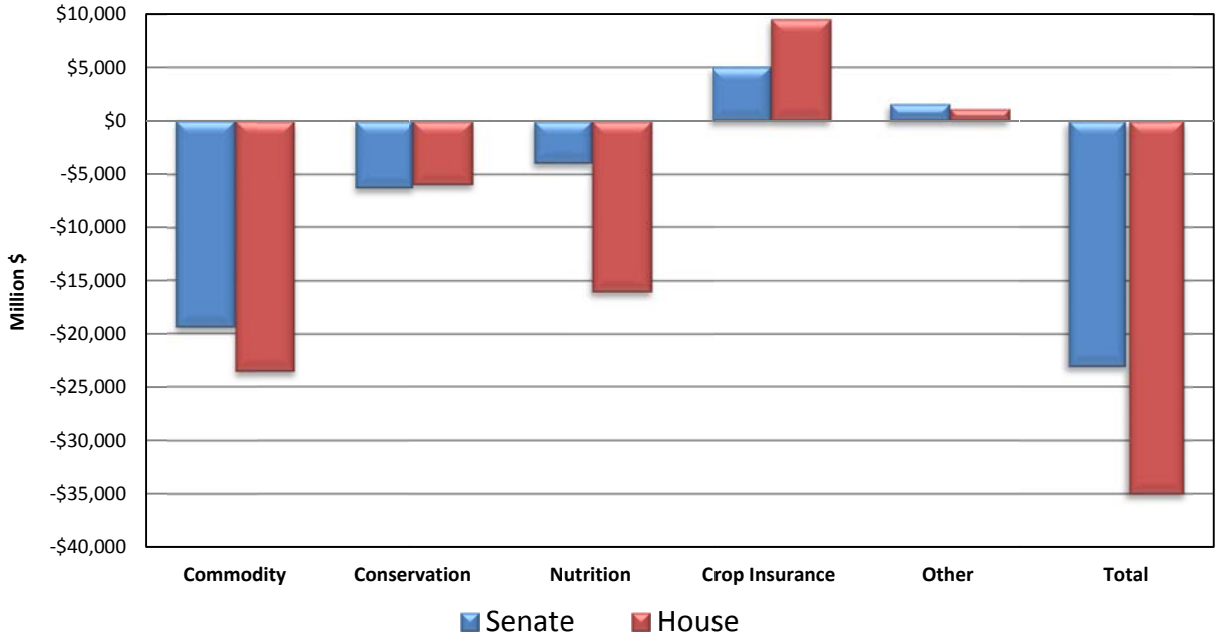
Tables and Figures

Figure 1: Projected Changes in Spending (by Title) Compared to the March 2012 CBO Baseline for the Senate and House Committee on Agriculture 2012 Farm Bills (2013-2022)



Source: CBO, 2012

Table 1: Projected Spending (Million $), by Crop under the March 2012 CBO Baseline and the Senate and House Committee on Agriculture 2012 Farm Bills (2013-2022)

Crop	March 2012 CBO Baseline	Senate Bill	Percent Change	House Bill	Percent Change
Corn	$ 22,179	$ 16,639	-25	$ 11,148	-50
Soybeans	$ 7,618	$ 9,133	20	$ 6,109	-20
Wheat	$ 11,131	$ 4,403	-60	$ 5,683	-49
Cotton	$ 6,843	$ 3,990	-42	$ 4,666	-32
Rice	$ 4,336	$ 1,282	-70	$ 3,261	-25
Peanuts	$ 1,013	$ 590	-42	$ 1,200	18
Sorghum	$ 2,038	$ 1,553	-24	$ 1,017	-50
Barley	$ 852	$ 214	-75	$ 714	-16

Source: CBO, 2012

Table 2: Arkansas Representative Panel Farm Characteristics

Farm Location County	Hoxie Lawrence	Leachville Mississippi	McGehee Desha	Stuttgart Arkansas	Wynne Cross
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
Full-Season Irrigated Soybeans	*0*	*0*	*1,625*	*0*	*0*
Double-Crop Irrigated Soybeans	*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
Total Planted Acres	**3,000**	**5,000**	**7,500**	**3,240**	**1,400**

Figure 2: Stuttgart Farm: Average Annual (2013-2017) Estimated Payments per Planted Acre (in U.S. $) and Probabilities of Receiving a Payment (in %)

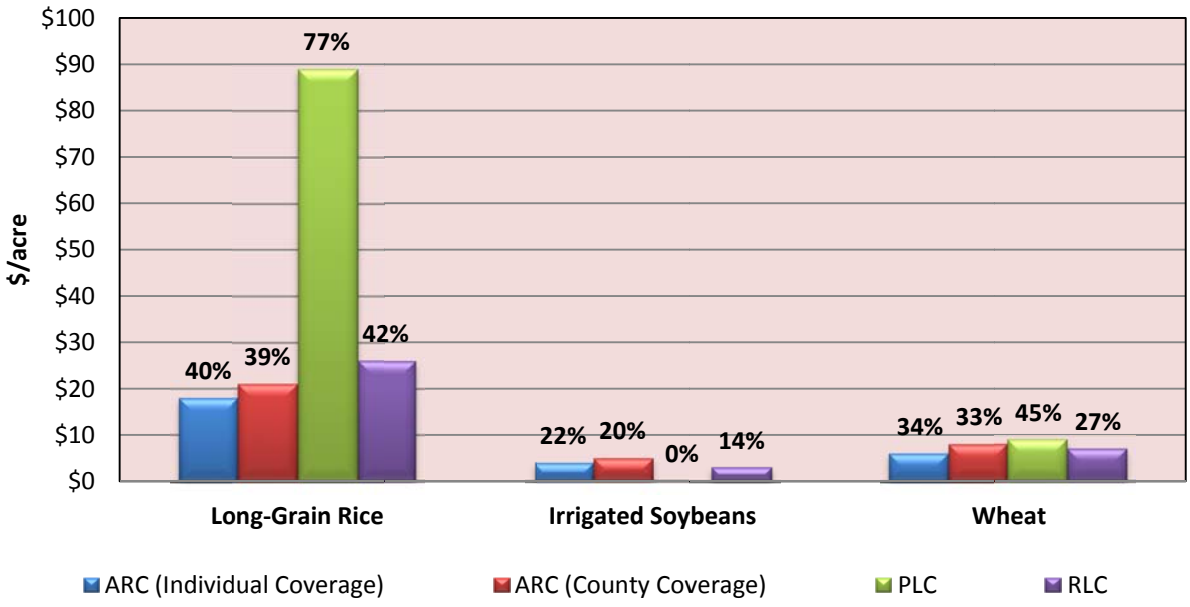


Figure 3: Wynne Farm: Average Annual (2013-2017) Estimated Payments per Planted Acre (in U.S. $) and Probabilities of Receiving a Payment (in %)

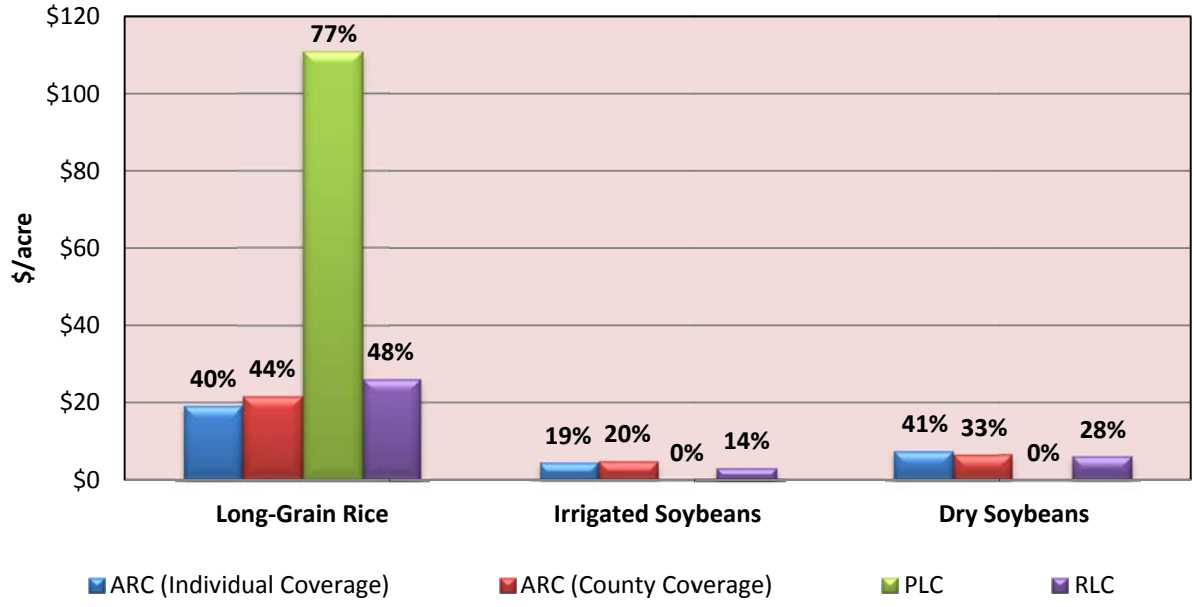


Figure 4: Hoxie Farm: Average Annual (2013-2017) Estimated Payments per Planted Acre (in U.S. $) and Probabilities of Receiving a Payment (in %)

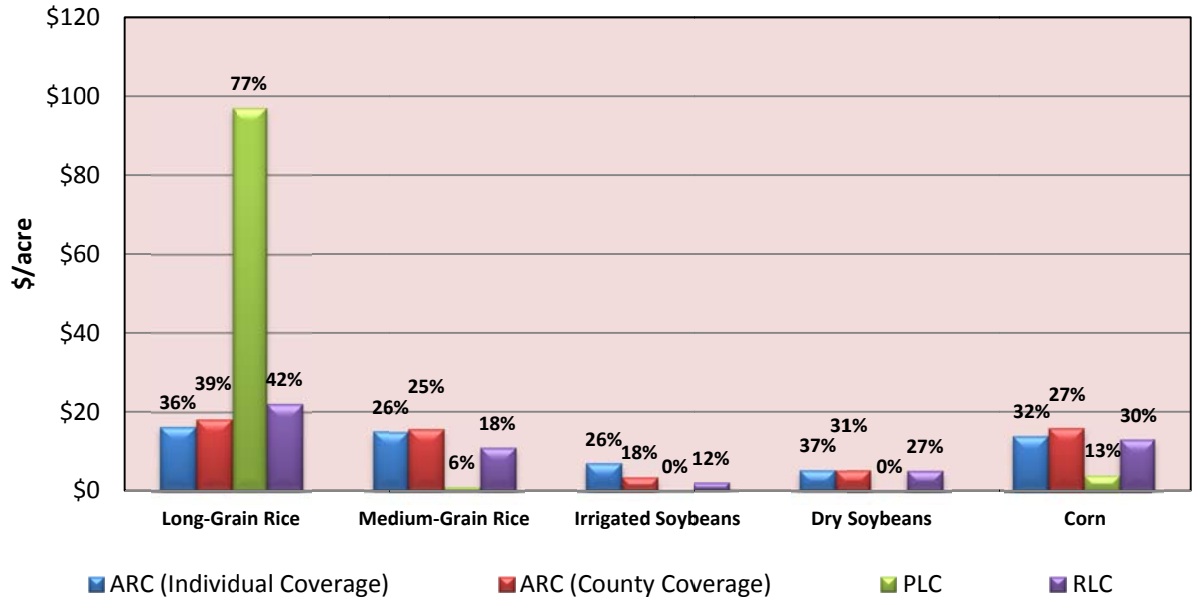


Figure 5: McGehee Farm: Average Annual (2013-2017) Estimated Payments per Planted Acre (in U.S. $) and Probabilities of Receiving a Payment (in %)

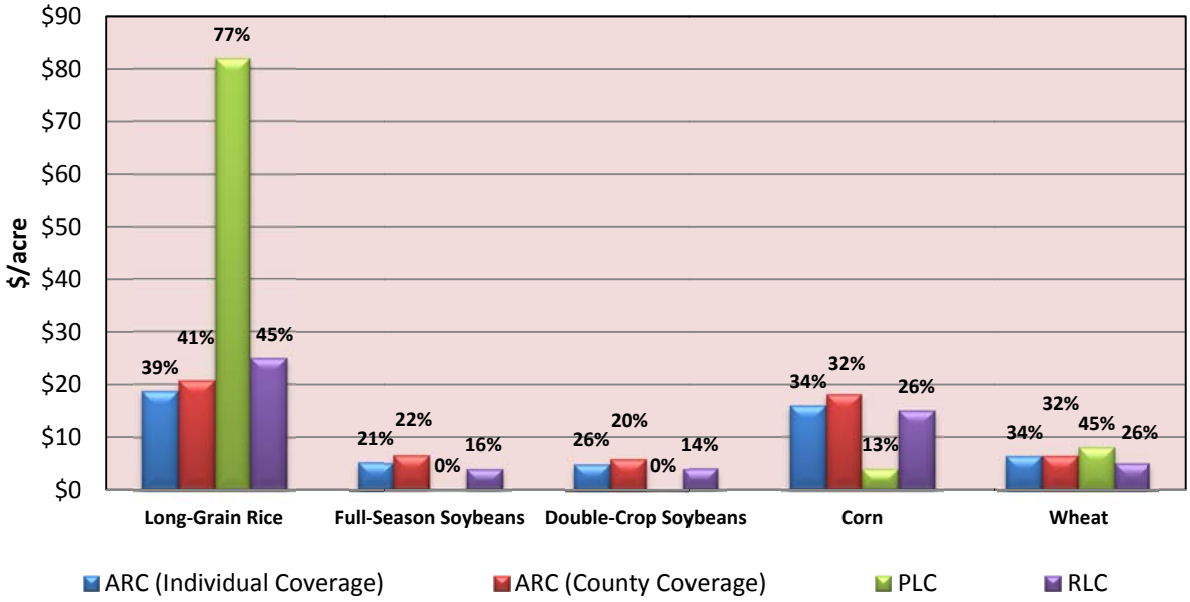


Table 3: Senate and House Bills (STAX): Average Annual (2013-2017) Estimated Gross Indemnity Payments per Planted Acre

	Leachville Farm		McGehee Farm
Revenue Guarantee	Irrigated Cotton	Dryland Cotton	Irrigated Cotton
	Average Annual (2013-2017) Indemnity Payments Per Planted Acre (in U.S. $)		
70%	40	32	41
80%	68	53	68
90%	99	76	98
	Average Annual (2013-2017) Probabilities of Receiving an Indemnity Payment (in %)		
70%	32	32	35
80%	46	47	52
90%	67	66	68

note: We assume a protection factor of 120% in the analysis.

Table 4: Senate Bill (SCO): Average Annual (2013-2017) Estimated Gross Indemnity Payments per Planted Acre

	Stuttgart Farm			Wynne Farm			Hoxie Farm					McGehee Farm				
Coverage Level	LRICE	ISOY	WHEAT	LRICE	ISOY	DSOY	LRICE	MRICE	ISOY	DSOY	CORN	LRICE	FSSOY	DCSOY	CORN	WHEAT
	Average Annual (2013-2017) Indemnity Payments Per Acre (in U.S. $)															
ARC Participant	0	11	8	1	14	12	1	1	15	9	5	1	16	11	4	8
Non-ARC Participant	8	36	23	10	44	33	9	9	45	23	21	10	49	34	20	23
	Average Annual (2013-2017) Probabilities of Receiving an Indemnity Payment (in %)															
ARC Participant	2	27	27	2	29	39	2	2	29	37	9	2	29	29	8	26
Non-ARC Participant	11	50	42	12	52	54	12	13	51	51	23	12	51	51	22	41

note: We assume participation in a revenue protection crop insurance policy with a 70% coverage level.

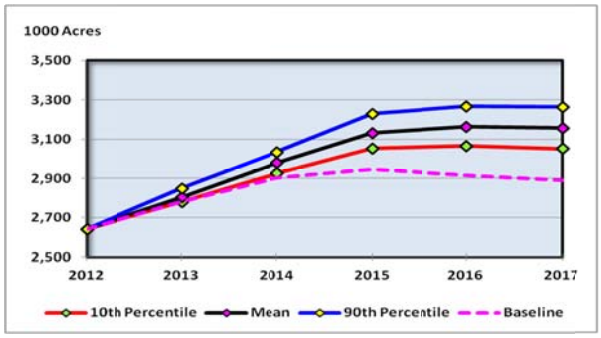


Figure 6: U.S. Rice Total Harvested Area, in 1000 Acres, 2013-2017

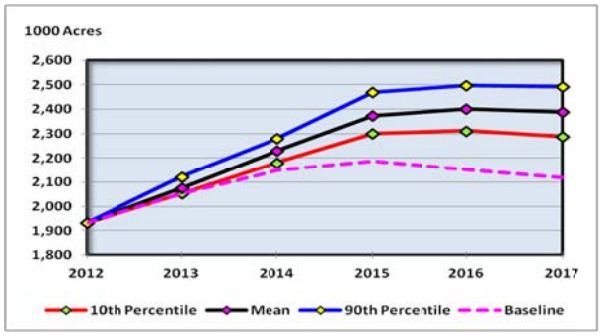


Figure 7: U.S. Rice Long Grain Harvested Area, in 1000 Acres, 2013-2017

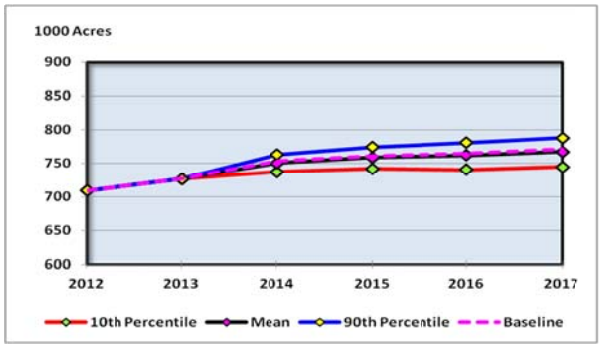


Figure 8: U.S. Rice Medium and Short Grain Harvested Area, in 1000 Acres, 2013-2017

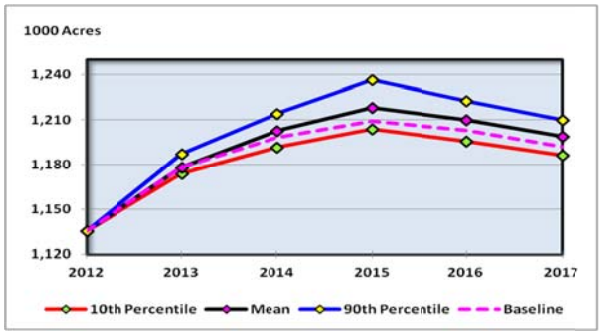


Figure 9: Arkansas Rice Long Grain Harvested Area, in 1000 Acres, 2013-2017

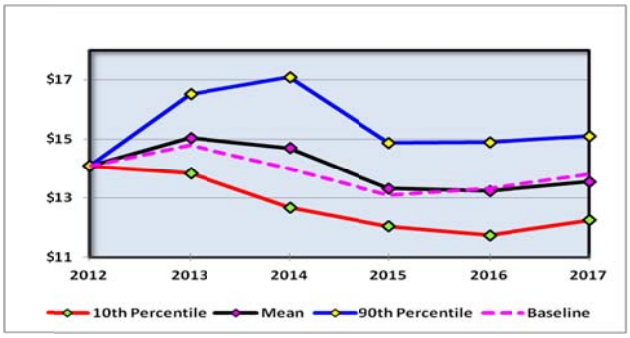


Figure 10: U.S. Rice Season Average Farm Price, $/Cwt, 2013-2017

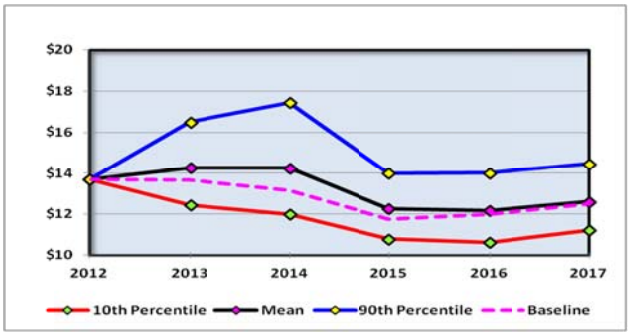


Figure 11: U.S. Rice Long Grain Season Average Farm Price, $/Cwt, 2013-2017

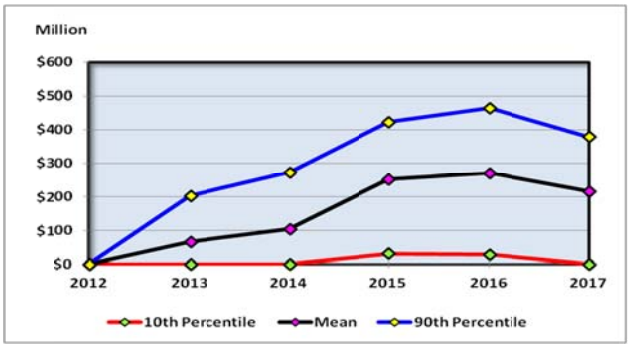


Figure 12: U.S. Rice Total PLC Payments, in Million Dollars, 2013-2017

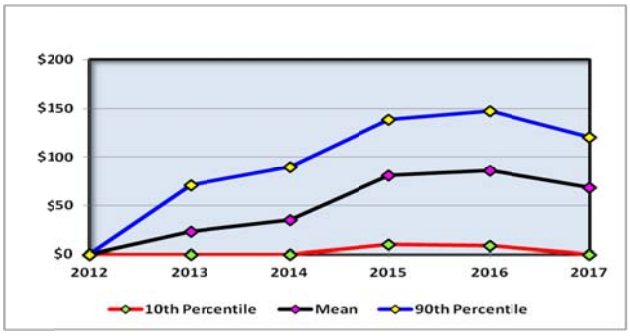


Figure 13: U.S. Rice Average PLC Payments, in Dollars per Acre, 2013-2017