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Explaining ARC-CO Payments with Illustrations for the 2016 and 2017 Crops

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Introduction

Objective of this article is to explain the conditions under which the ARC-CO (Agriculture Risk Coverage – County) crop program makes payments. These conditions are often not well understood. It is common to discuss ARC-CO in terms of price, thus ignoring the role yield plays in determining payments by this revenue program. In addition, discussions often fail to mention that ARC-CO has a floor below which its reference revenue cannot decline. Illustrations use US data for the 2016 and 2017 crops of corn, soybeans, and wheat.

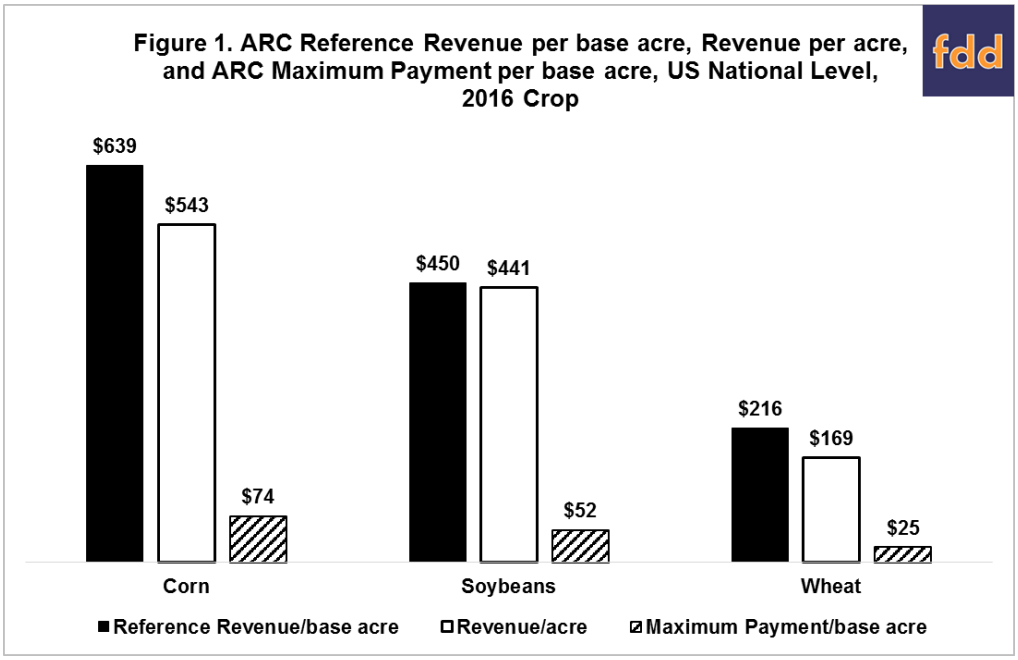
Background

Traditional crop programs, such as PLC (Price Loss Coverage), make payments when US crop year price is below a US reference price but above the US loan rate. The reference price is set by Congress and does not change until Congress changes it. Payments per base acre are capped by the US loan rate. In contrast, ARC-CO is a county revenue program. It makes payments when crop year county revenue is below the county's reference revenue. A county's reference revenue equals 86% times the Olympic average US price for the last 5 crop years times the Olympic average county yield for the last 5 crop years. The reference revenue has a floor since the price used to calculate it cannot decline below the PLC reference price. Payment per base acre is capped at 11.63% of the reference revenue.

ARC Payment Profile for 2016 US Crop

Because ARC is a revenue program, revenue needs to be monitored. Monitoring price or yield only monitors the components of revenue.

For example, even though record or near record US yields are expected for 2016 corn, soybeans, and wheat; ARC is expected to make payments for the average US acre of these crops. In short, US crop revenue is currently expected to be less than the ARC reference revenue for the 2016 crop year (see Figure 1). The high US yield is more than offset by a forecasted 2016 US crop year price that is even further below its 5-year Olympic average for the 2011-2015 crop years. To be specific, the US yield estimates in the August 2016 *World Agricultural Supply and Demand Estimates* (WASDE), expressed as a percent of the US ARC yield for the 2016 crop, are 111% for corn, 110% for soybeans, and 122% for wheat. In contrast, the mid-price forecast for the 2016 crop in the August 2016 WASDE, expressed as a percent of the US ARC price for the 2016 crop, are 66% for corn, 77% for soybeans, and 55% for wheat. (See the data note for the prices and yields used in the calculations discussed in this paragraph.)

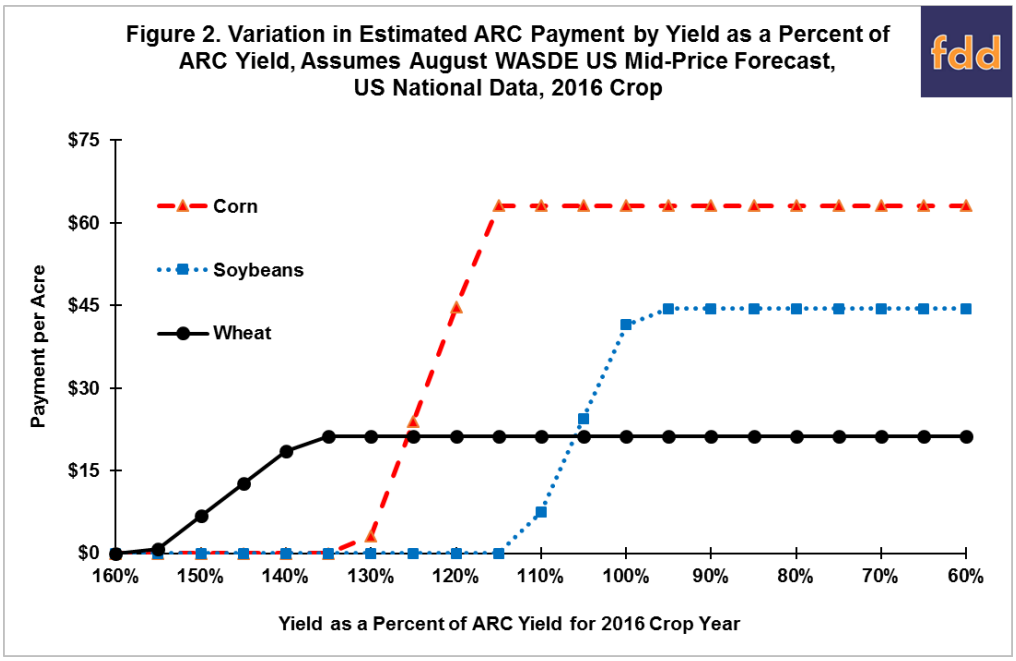


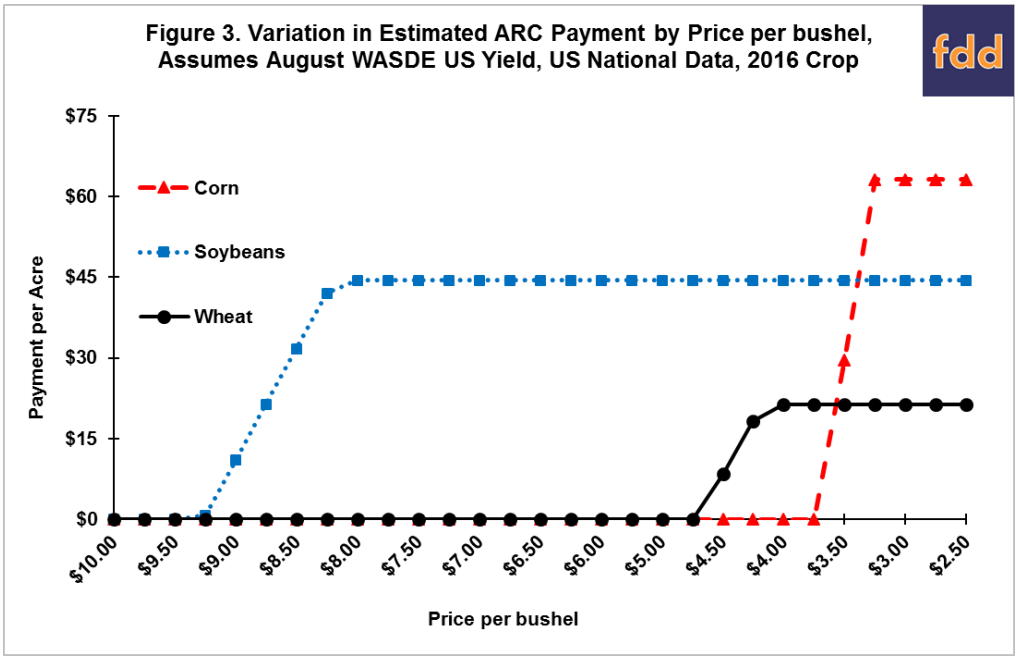
Projected payments for 2016 US corn and wheat are at their maximum values of $74 and $25 per base acre (see Figure 1). Estimated payment for US soybeans is $9/base acre. These estimates do not take into account that payments are made on 85%, instead of 100%, of base acres. The estimates also do not take into account any reduction due to budget sequestration.

Many find it difficult to think in terms of revenue, preferring to think in terms of price or yield. For example, it is rare to see an outlook presentation that forecasts revenue per acre. Traditional farm programs reinforce this separation of revenue into price and yield components because they have been operationalized via price. While potentially subject to misinterpretation, the following two paragraphs attempt to begin to bridge the gap between thinking in revenue terms and thinking in price and yield terms.

Figure 2 illustrates how estimated US ARC payment per base acre varies with 2016 yield expressed relative to the 5-year Olympic average yield for 2011-2015. Given the important assumptions of 2016 crop year US ARC reference revenue and that the 2016 crop year price is the mid-price forecast of the August 2016 WASDE, ARC will make payments for corn, soybeans, and wheat as long as yield is less than 130%, 110%, and 155%, respectively, of the crop's 5-year Olympic average yield for 2011-2015. The maximum payment will occur if 2016 yield is less than 115%, 95%, and 135% of the 5-year Olympic average yield for 2011-2015. These values depend on the assumptions and will vary with changes in the assumptions.

Figure 3 illustrates how estimated US ARC payment per base acre varies with 2016 crop year price. Given the important assumptions of 2016 crop year US ARC reference revenue and that yield is the US yield forecast in the August 2016 WASDE, ARC will make payments for corn, soybeans, and wheat as long as 2016 US crop year price is less than $3.65, $9.25, and $4.70, respectively. The maximum payment will occur as long as 2016 crop year price is less than $3.25, $8.15, and $4.15, respectively. Again, these values depend on the assumptions and will vary with changes in the assumptions.

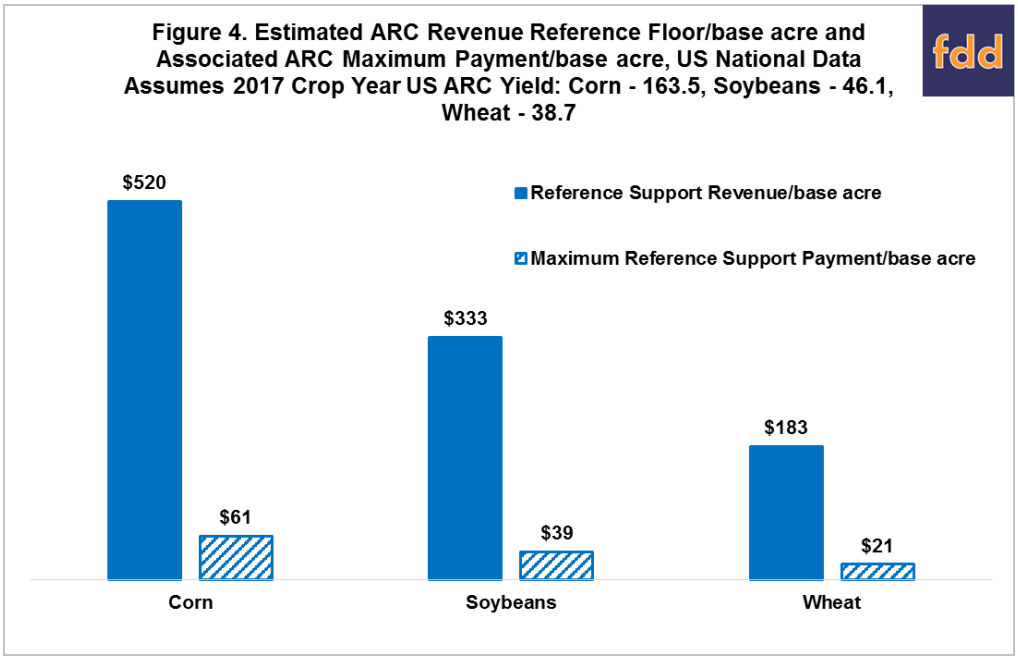




ARC Reference Revenue Floor

A floor exists since the crop year price used to calculate the ARC reference revenue can never be less than the PLC reference price. The reference price for corn, soybeans, and wheat is $3.70, $8.40, and $5.50. The ARC reference revenue floor equals 86% times the reference price times the Olympic average yield for the 5 prior crop years. Although it does not always happen, the floor has a tendency to increase over time because yield is increasing over time. For example, the 5-year Olympic average US yield per planted acre will increase from 155.0 to 163.5, 44.0 to 46.1, and 37.4 to 38.7 for the 2016 vs. 2017 crops of corn, soybeans, and wheat, respectively. Figure 4 contains the ARC reference revenue floor and associated maximum payment per base acre calculated using the preceding yields for 2017. These reference revenue floors are currently not expected to be effective for the 2017 crop as the current estimate of the 5-year Olympic average US price for the 2017 crops are $3.95 for corn, $10.73 for soybeans, and $6.12 for wheat, which are higher than each crop's reference price. However, unless crop

year US price for 2017 corn is higher than $3.70, the reference floor will likely be effective for many counties for the 2018 crop of corn.



Summary Observations

- Payments by ARC can only be understood when examined via the lens of revenue. Examining its payments through the lens of price and yield is incomplete and potentially misleading.
- The average US corn and soybean base acre is currently forecast to receive the maximum payment for the 2016 crop. The current estimate for US soybeans is around $9 per base acre.
- Estimated payments will vary as forecasts of revenue change. For example, given the important assumptions of 2016 crop year ARC reference revenue and that the 2016 crop year mid-price forecast of the August 2016 WASDE is realized, ARC-CO payments are likely if the yield of corn, soybeans, and wheat is less than 130%, 110%, and 155%, respectively, of the crop's 5-year Olympic average yield for 2011-2015. These values are only approximate guides that depend critically on the two assumptions.
- The ARC crop program has a floor under its reference revenue. The floor exists because the price used to compute the ARC reference revenue can never be less the PLC reference price. The reference revenue floor has not been effective so far during the operation of ARC-CO, but a distinct possibility exists that it could become effective for 2018 crop year corn.

References and Data Sources

USDA, Office of the Chief Economist. August 12, 2016. *World Agricultural Supply and Demand Estimates.* WASDE-556. http://www.usda.gov/oce/commodity/wasde/index.htm.

USDA, National Agricultural Statistics Service (NASS). *Quick Stats*. https://www.nass.usda.gov/Quick_Stats/index.php.

DATA NOTE	corn	soybeans	wheat
Olympic average US yield/plant acre, 2011-2015	155.0	44.0	37.4
Olympic average US price, 2011-2015	$4.79	$11.87	$6.70
2016 US yield/plant acre, August 2016 WASDE	172.5	48.5	45.7
2016 US mid-price forecast, August 2016 WASDE	$3.15	$9.10	$3.70