



Are ARC-CO and PLC Substitute Programs?

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The 2014 farm bill required farms to choose between ARC (Agriculture Risk Coverage) and PLC (Price Loss Coverage). While overlap in payments can occur, ARC and PLC have different design components that suggest they are not substitute programs. This suggestion is supported by an examination of payments per base acre made by these 2 programs for the 2014 through 2016 crop years. These observations and findings prompt a proposal to give farms a blended ARC-PLC election option of enrolling half of a crop's base acres on a farm in ARC and half in PLC.

ARC vs. PLC Design

ARC is a revenue decline program, where decline is defined relative to 86% of a county or farm benchmark based on revenue from the market for the 5 prior crop years. PLC is low national price program, where low is defined relative to 100% of a reference price set by Congress. ARC payments are subject to a 10% per acre payment cap while PLC payments are subject to a much larger cap determined by the difference between the crop's reference price and loan rate. Key design differences thus include decline in revenue vs. low price, market flexible vs. fixed support parameters, as well as different geographical foci, payment caps and coverage levels. For additional discussion of ARC and PLC, see data notes 1 and 2, respectively.

ARC-CO vs. PLC Payment

A scatter graph of ARC-CO vs. PLC payment per base acre by year for 2014 through 2016 crops of 10 covered commodities suggests payments by the 2 programs have a limited relationship (see Figure 1 and data note 3). A regression analysis confirms this suggestion. The relationship is significant and positive with 99% statistical confidence, but payments by one program explains only 32% of the variation in the other program's payments. Since extreme data can heavily influence a regression analysis, it was also

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conducted without peanuts and its large PLC payments. Explanatory power dropped to 4% (see Figure 2). The data used in the scatter graph and regression analysis are in Table 1. ARC-CO made payments to all 10 crops in all 3 years, although some payments were small. ARC-CO almost always makes payments to at least some counties due to low yields. In contrast, PLC made no payment in 16 of the 30 crop-year observations. Four crops received no PLC payment, including soybeans. PLC can also make large payments, as illustrated by the per acre payments for peanuts.

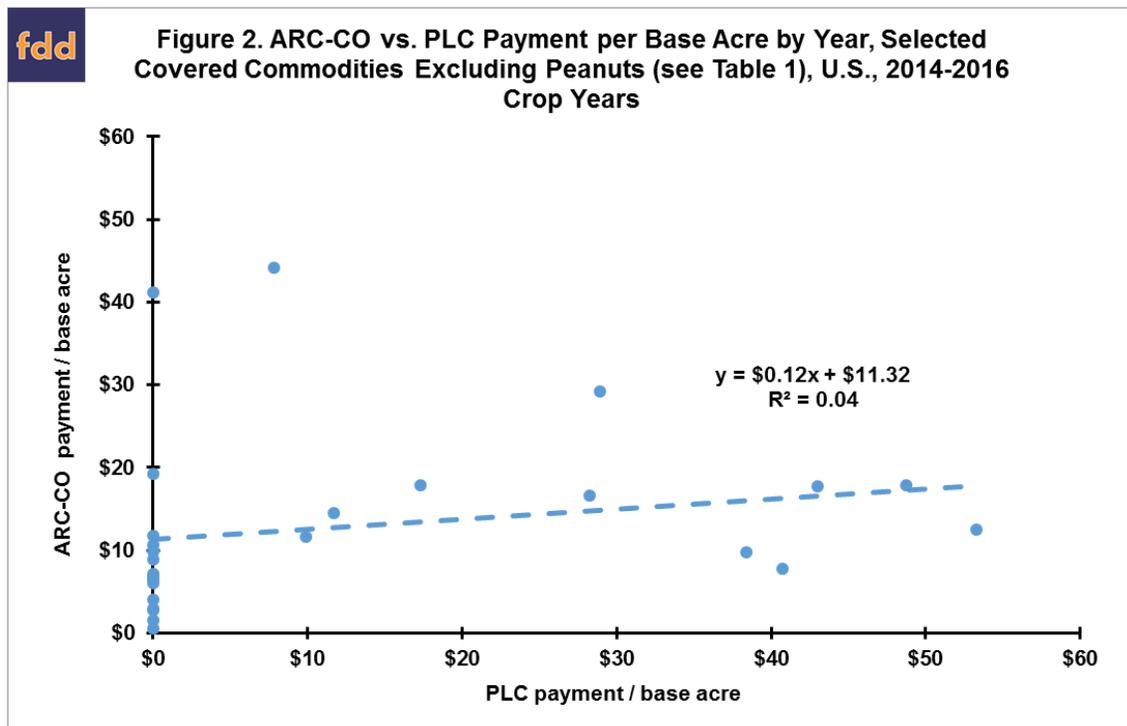
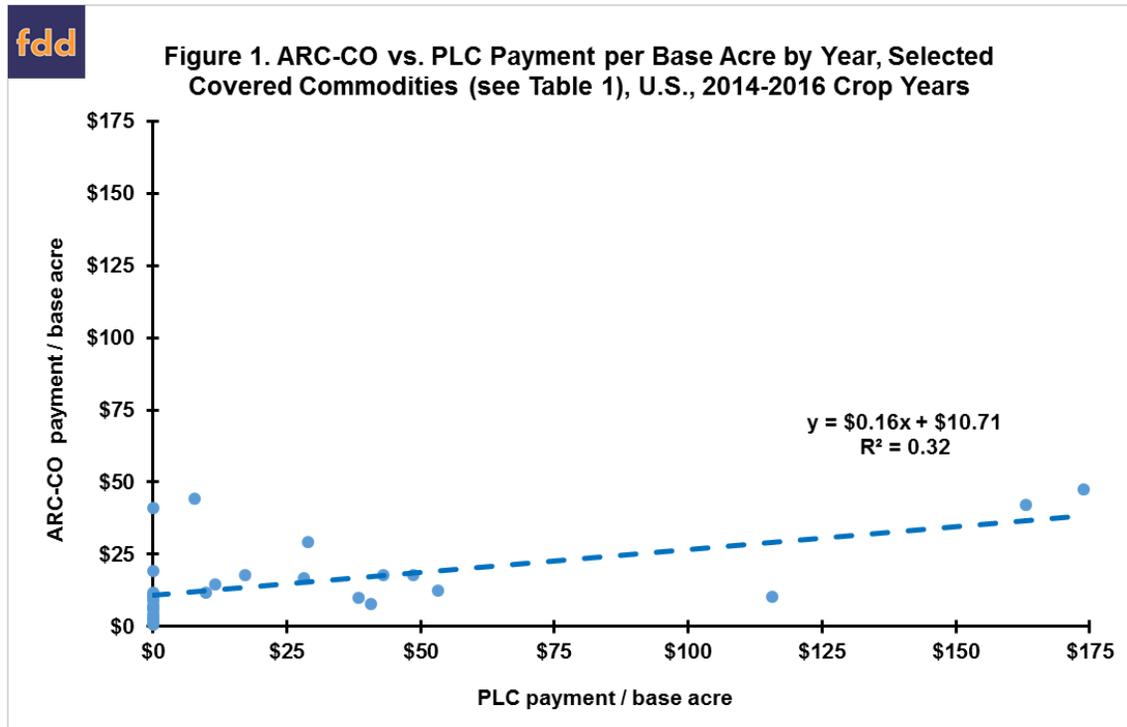


Table 1. ARC-CO and PLC Payment Per Base Acre, Selected Covered Commodities, U.S., 2014-2016

covered commodity	ARC-CO 2014	PLC 2014	ARC-CO 2015	PLC 2015	ARC-CO 2016	PLC 2016	ARC-CO average	PLC average
barley	\$6	\$0	\$7	\$0	\$4	\$0	\$6	\$0
canola	\$10	\$38	\$12	\$53	\$8	\$41	\$10	\$44
corn	\$41	\$0	\$44	\$8	\$29	\$29	\$38	\$12
lentils	\$3	\$0	\$11	\$0	\$1	\$0	\$5	\$0
oats	\$2	\$0	\$12	\$10	\$15	\$12	\$9	\$7
peanuts	\$10	\$116	\$47	\$174	\$42	\$163	\$33	\$151
peas, dry	\$7	\$0	\$7	\$0	\$9	\$0	\$7	\$0
sorghum	\$12	\$0	\$17	\$28	\$18	\$49	\$15	\$26
soybeans	\$6	\$0	\$19	\$0	\$3	\$0	\$9	\$0
wheat	\$10	\$0	\$18	\$17	\$18	\$43	\$15	\$20

Summary Observations

- Over the 2014 through 2016 crop years, a positive relationship has existed between average per acre payment by ARC-CO and PLC, but the relationship has low explanatory power.
- A low explanatory power is not unexpected since ARC and PLC have different designs. Key design differences include decline in revenue vs. low price, market flexible vs. fixed support parameters, as well as different payment caps and coverage levels.
- Design differences translate into different payment flows, as illustrated by the different payment flows for ARC-CO and PLC over the 2014 through 2016 crop years.
- Consistent with past farm bills, including 2014; farms are expected to have the option of signing up for a new program starting with the 2019 crop. If current programs are reauthorized in a similar form, farms will have 2 options for a given crop on a given FSA farm: ARC or PLC.
- The preceding discussion suggests consideration be given to adding a 3rd option: a 50-50 blended ARC - PLC option of enrolling half of a crop's base acres on a FSA farm in ARC and half in PLC. This 3rd option would provide farms with some assistance for declines in revenue via the ARC portion of the blended option and with some assistance for low prices relative to the reference price via the PLC portion of the blended option.
- The blended ARC-PLC option would be potentially most useful to covered commodities for which notable uncertainty exists whether ARC or PLC will make the highest payments.

Data Notes

- (1) ARC has county and individual farm versions, commonly designated ARC-CO and ARC-IC. ARC-CO makes a payment if county revenue is less than 86% of the county's benchmark revenue. ARC-IC makes a payment if average actual revenue per acre across all program crops planted on an ARC-IC farm is less than 86% of the farm's benchmark revenue per acre. Benchmark revenue is determined using 5-year Olympic averages (removes high and low values) of U.S. crop year price and county (ARC-CO) or farm (ARC-IC) yield. Thus, payments by ARC are determined on a county-by-county basis (ARC-CO) or farm-by-farm basis (ARC-IC), not a national basis. ARC-CO makes payments on 85% of base acres while ARC-IC makes payments on 65% of base acres. Per acre payment is capped at 10% of the benchmark revenue. A limit exists on the market orientation of ARC-CO and ARC-IC. If average price for a crop year is less than the crop's reference price, the reference price replaces the crop year average price in the Olympic 5-year average that calculates the price used in the ARC revenue benchmark. Thus, the price used to determine the ARC revenue benchmark has a floor equal to the reference price.

- (2) PLC makes payments when U.S. crop year price is less than 100% of the crop's reference price. Thus, PLC payments are determined on a national basis, implying every U.S. farm enrolled in PLC for a crop will receive a payment once a PLC payment is triggered for that crop. The reference price is set by Congress as a fixed value. Payment yield is also fixed. Payment is made on 85% of base acres. Per unit payment rate cannot exceed the difference between the crop's fixed reference price and fixed loan rate. For the 10 crops in this analysis, the loan rate averages 51% of the reference price. The range is from 38% for barley to 66% for peanuts, with corn, soybeans, and wheat at 53%, 60%, and 53%, respectively. See Zulauf, Schnitkey, Coppess, and Paulson for a more extensive discussion of payment cap related issues.
- (3) There are 22 covered commodities, but for only 10 are payment data for the 2016 crop year and thus for the 2014-2016 crop years currently available: barley, canola, corn, lentils, oats, peanuts, dry peas, sorghum, soybeans, and wheat. To avoid double counting, payments to a program crop planted on generic base are removed from that crop's payments before dividing by the crop's base acres. Generic base reflects former cotton base acres as of the 2013 crop year. Cotton is not eligible for ARC and PLC under the 2014 farm bill, but generic base can receive a farm program payment if a covered commodity is planted on the generic base.

Data Source

U.S. Department of Agriculture, Farm Service Agency. "ARC/PLC Program." November 2017.
https://www.fsa.usda.gov/programs-and-services/arcplc_program/index

U.S. Department of Agriculture, Farm Service Agency. "ARC/PLC Program Data." November 2017.
https://www.fsa.usda.gov/programs-and-services/arcplc_program/arcplc-program-data/index

Zulauf, C., G. Schnitkey, J. Coppess, and N. Paulson. "Per Acre Payment Caps: Their Role as Payment Limits." *farmdoc daily* (7):54, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, March 24, 2017.