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Farm Safety-Net Payments Under the 2014 Farm Bill: Comparison by Program Crop

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Summary

The 2014 farm bill (Agricultural Act of 2014, P.L. 113-79) authorizes farm safety-net programs for the five crop years of 2014 through 2018. This includes revenue support for 20 "covered commodities" under either the Agricultural Risk Coverage (ARC) program or the Price Loss Coverage (PLC) program and interim financing and floor price support for an expanded list of 24 "loan commodities" under the Marketing Assistance Loan (MAL) program. Outlays under the MAL, ARC, and PLC programs are funded by the U.S. Department of Agriculture's (USDA's) Commodity Credit Corporation (CCC).

In addition, federally subsidized crop insurance is available for over 100 agricultural commodities—including both covered and loan commodities. Federal crop insurance is permanently authorized by the Federal Crop Insurance Act (7 U.S.C. 1501 et seq.) but is periodically modified by new farm bill legislation. The principal subsidy component of federal crop insurance is premium subsidies that pay for an average of 62% of the cost of buying an insurance policy since 2014. Premium subsidies are funded by USDA's Federal Crop Insurance Corporation (FCIC).

Through the first three years of the 2014 farm bill (2014 through 2016), USDA has spent over $38 billion on commodity-specific farm program outlays. Annually, commodity-specific outlays are estimated at $12.7 billion per year, including $7.5 billion for CCC programs and $5.2 billion in FCIC crop insurance premium subsidies. When farm program payments are linked to specific crops, they can influence relative market incentives and resource allocations. Furthermore, significant differences in spending across program crops may have regional or geographic implications.

This report looks at available CCC and FCIC data for the major program crops and compares relative support using several different measures: absolute payments, payments per acre, payments as a share of the value of production, and payments as a share of the cost of production. In addition, price and income support levels are compared to market prices. By all of these measures, there has been substantial variation in relative support across program crops. Annual corn payments account for 46% of all CCC and FCIC commodity-specific outlays; however, corn also has the most planted acres and the largest annual value of production. When payments are compared per acre, and as a share of either the value or the cost of production for each crop, then peanuts and rice receive higher levels of support than do other program crops. Also significant is the absence of any net program outlays for the U.S. dairy sector under the 2014 farm bill.

One particular analytical method for comparing price-protection levels across program crops involves PLC reference prices. PLC reference prices for each commodity are adjusted such that 35%, 40%, or 45% of monthly farm price observations fall below the adjusted reference price during the January 2008 through May 2017 period. The choice of these reference levels is arbitrary but facilitates comparison. Important differences in support levels emerge. Peanuts and cottonseed (included for comparative purposes as a hypothetical program crop) receive significantly higher price protection levels compared to the other program crops. Canola and sorghum also have above-average support levels relative to the remaining program crops. In contrast, soybeans and pulse crops receive lower levels of price protection.

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Introduction

The U.S. Department of Agriculture (USDA) operates several programs that supplement the incomes of farmers and ranchers in times of low farm prices and helps them to manage risks associated with natural disasters and with variability in crop and pasture yields and commodity prices. These programs—referred to as the "farm safety net"—include three components: federal crop insurance, farm revenue support programs, and agricultural disaster assistance.[1]

Over the years substantial federal resources have been spent in support of the farm safety net. Much of this spending has gone to a small group of field crops. Within this group of field crops, there has been significant variation in both absolute and relative levels of historical farm support. The 2014 farm bill (Agricultural Act of 2014, P.L. 113-79) changed the structure of several safety-net programs;[2] however, important differences in commodity-specific funding persist.

In their June 2017 baseline projections of USDA program outlays through 2027, the Congressional Budget Office (CBO) projects disparities in payments and relative support levels across program crops.[3] CBO's June projections are described in a lay-friendly study released by *farmdocdaily* on July 14, 2017.[4] In the *farmdocdaily* study, when combined farm safety-net payments (excluding federal crop insurance premium subsidies) are expressed on a per-acre basis, peanuts receive the highest support rate with an average of $288 per acre. Rice receives the second-highest per-acre rate at $135 per acre. The average annual payment rate for all other program crops is below $30 per acre.

The CBO projections are looking forward in years yet to come. In contrast, this report uses actual historical data to construct a series of charts and tables that provide information on the distribution of commodity-specific outlays under the farm safety-net programs of the 2014 farm bill during its first three years of operation (2014 through 2016). This information is intended to provide statistical context for evaluating the distribution of current farm program payments. This report does not assess the merit or fairness of this distribution, nor does it evaluate the social welfare outcome of federal farm payments.

The first section of this report briefly describes the U.S. agricultural sector relative to USDA farm programs. The second section discusses why an understanding of commodity-specific support has merit. The third section summarizes the specific federal programs involved in the farm safety net—which crops are eligible for payments and whether payments are coupled with, or decoupled from, actual production. The fourth section of this report uses a series of charts to compare commodity-specific outlays that have occurred during the first three years of the 2014 farm bill using several different measures. The final section compares the relative levels of market price protection provided by marketing assistance loan rates and Price Loss Coverage (PLC) reference prices—all of which are fixed in statute—among program crops and relative to recent market

[1] See CRS Report R43758, *Farm Safety Net Programs: Background and Issues*, coordinated by Randy Schnepf. While many critics of farm subsidies take issue with what does and does not constitute a safety net and whether current farm programs actually perform as such, the term *safety net* is used here for all farm commodity and risk management programs as a catchall descriptor rather than as an assessment of the merits. The issue of how the current programs perform as a "safety net" is explored in more detail in the section of this report entitled "Hypothetical Equity Adjustments to Program Parameters."

[2] For more information on specific farm commodity programs, see CRS Report R43448, *Farm Commodity Provisions in the 2014 Farm Bill (P.L. 113-79)*, coordinated by Randy Schnepf.

[3] CBO, *June 2017 Baseline for Farm Programs*, June 24, 2017.

[4] J. Coppess et al., "Reviewing the June 2017 CBO Baseline," *farmdocdaily*, vol. 7, no. 127, http://farmdocdaily.illinois.edu/2017/07/reviewing-the-june-2017-cbo-baseline.html.

conditions. Although significant differences in support across program crops are revealed, this report does not assess the merit or fairness of such differences. Several supplementary data tables are included at the end of the report and referenced throughout the text.

Overview of U.S. Agricultural Sector

U.S. agricultural production value has averaged $385.1 billion during the first three years (2014 through 2016) of the 2014 farm bill (**Table 1**). Field crops eligible for USDA revenue support programs (discussed later in this report) have accounted for $115.7 billion, or 30% of the total. When combined with milk production—milk is eligible for potential federal payments under the Margin Protection Program (MPP)—the average value of program commodity production is $155.5 billion and represents 40.3% of U.S. agricultural production. The remaining nearly 60% of U.S. agricultural production is not eligible for USDA revenue support programs but is potentially eligible for either disaster assistance or crop insurance.

Table 1. U.S. Farm Sector Cash Receipts by Agricultural Category

(Annual average values priced at farm-gate for crop years 2014-2016)

Commodity or Activity	Average Annual Value ($ billions)	Share (%)
Total Crop Production	**$194.9**	**50.6%**
Field Crops	$120.4	31.3%
Feed Grains: corn, sorghum, barley, and oats	$59.7	15.5%
Oil Crops: soybeans and other oilseeds	$39.8	10.3%
Food Grains: wheat and rice	$13.2	3.4%
Cotton (lint and seed)	$6.0	1.6%
Tobacco	$1.8	0.5%
Fruits, Tree Nuts, and Vegetables	$47.2	12.3%
All Other Crop Production	$27.3	7.1%
Subset: Major Program Crops[a]	*$115.7*	*30.0%*
Total Livestock Production	**$190.2**	**49.4%**
Cattle and Calves	$75.8	19.7%
Poultry and Eggs	$45.4	11.8%
Dairy	$39.8	10.3%
Hogs	$22.4	5.8%
Miscellaneous Livestock[b]	$6.9	1.8%
Total Agricultural Production	**$385.1**	**100%**

Source: Calculations by CRS, using data from: USDA, Economic Research Service, "Farm Income and Wealth Statistics: Cash Receipts by Commodity," as of February 7, 2017, https://www.ers.usda.gov/data-products/farm-income-and-wealth-statistics/data-files-us-and-state-level-farm-income-and-wealth-statistics/.

Notes:

a. A subset of Total Crop Production, "Major Program Crops" includes corn and other feed grains (sorghum, barley, and oats), wheat, rice, upland cotton, soybeans, peanuts, and other oilseeds (sunflower, flaxseed, canola, rapeseed, mustard, safflower, crambe, and sesame), pulse crops (dry peas, lentils, and large and small chickpeas), and sugar crops (sugar beets and sugar cane).

b. Includes sheep, goats, and other minor livestock commodities.

Why Examine Commodity-Specific Support?

While federal agricultural policy may have specific national goals—such as ensuring abundant agricultural output and safeguarding America's agricultural resources—when the supporting program outlays vary significantly across eligible crops, there is potential for unintended policy consequences. In particular, when farm program payments are linked to specific crops, they can influence relative market incentives and resource allocations. The stronger the payment-to-crop linkage, the greater the potential for producers to alter their crop choices based on the relative likelihood of program payments. Also, significant differences in support levels across program crops may have strong regional or geographic implications, because not all agricultural activities may be undertaken successfully in all agro-climatic settings, as these vary widely across the United States.[5] Finally, the size of annual U.S. farm program outlays increases the potential severity of any unintended consequences.

Substantial Funding Has Supported the Farm Safety Net

Over the years, substantial federal resources have been spent under federal commodity programs. Since U.S. farm support programs were first authorized in the 1930s, USDA's Commodity Credit Corporation (CCC)[6] has provided over $500 billion in taxpayer dollars in support of farm programs.[7] Nearly $303 billion (or about 60%) of total CCC commodity support payments have occurred since the 1996 farm bill (Federal Agriculture Improvement and Reform Act of 1996, commonly referred to as the Freedom to Farm Act; P.L. 104-127) was signed into law, including over $188 billion in payments to a select group of major field crops—feed grains (corn, sorghum, barley, and oats), cotton, wheat, rice, soybeans, and peanuts.

The Federal Crop Insurance Act of 1980 (P.L. 96-365) created the current public-private partnership between the federal government and private insurance companies and established federal support for crop insurance that includes substantial premium subsidies.[8] Under this framework, private insurance companies deliver and service crop insurance policies that are regulated and supported by USDA's Federal Crop Insurance Corporation (FCIC).[9] Since 1980,

[5] A region's agro-climatic setting encompasses the physical characteristics of its climate and natural resource endowment. Key characteristics include temperature, precipitation, sunlight, growing season, day length, latitude and seasonal variations, soil types, topography, and elevation. These features determine the agronomic feasibility of various agricultural activities such as crop or livestock production.

[6] The CCC is a U.S. government-owned and -operated corporation, created in 1933, with broad powers to support farm income and prices and to assist in the export of U.S. agricultural products. To this end, the CCC finances USDA's farm revenue support and export programs using its permanent authority to borrow up to $30 billion at any one time from the U.S. Treasury. See CRS Report R44606, *The Commodity Credit Corporation: In Brief*, by Megan Stubbs.

[7] CRS calculations based on farm income data through 2016 from the Economic Research Service (ERS), available at https://www.ers.usda.gov/data-products/farm-income-and-wealth-statistics/. The $500 billion total represents all CCC functions in support of production agriculture including various conservation payments, export programs, operating expenses, etc., in addition to the commodity support programs examined in detail in this report.

[8] For details, see CRS Report R40532, *Federal Crop Insurance: Background*, coordinated by Randy Schnepf.

[9] The FCIC is a U.S. government-owned and -operated corporation created by the Agricultural Adjustment Act of 1938 (P.L. 75-430; §503) to promote the economic stability of agriculture through a sound system of crop insurance and to provide the means for the research and experience helpful in devising and establishing such insurance. Management is vested in a Board of Directors subject to the general supervision of the Secretary of Agriculture. See USDA, Risk Management Agency (RMA), "Federal Crop Insurance Corporation (FCIC)," https://www.rma.usda.gov/fcic/.

the FCIC has paid over $80 billion in premium subsidies to support federal crop insurance policies. The traditional CCC farm program crops (cited in the previous paragraph) have been the beneficiaries of over 85% of federal crop insurance premium subsidies.

Prior to the 2014 farm bill, agricultural disaster assistance programs were usually ad hoc (meaning both unanticipated and off-budget)[10] and often targeted to the same set of crops covered by farm programs and crop insurance. From 1978 through 2013, USDA spent nearly $45 billion on various agricultural disaster assistance programs.[11] The 2014 farm bill changed this approach and created a set of permanent agricultural disaster assistance programs that focus assistance on livestock, orchards, and vineyards rather than on the traditional farm program crops.[12]

Public vs. Private Resource Allocation

Market prices—determined by the intersection of supply and demand—are the primary signal by which a market-based economy allocates resources.[13] U.S. farm commodity programs were intended to provide a safety net under, rather than supersede, market forces. However, USDA's combined CCC and FCIC outlays represent a substantial investment in the U.S. agricultural sector, particularly for a subset of commodities. The magnitude of federal support payments may have kept some resources in the agricultural sector that would have otherwise moved to other sectors of the economy.

Proponents of farm support programs have argued that producer vulnerability to seasonal weather uncertainty and global market conditions—particularly when substantial land and capital resources are invested in a single year's crop activity—merits public intervention. They contend that a single bad weather event or unexpected disruption in international markets could potentially drive significant irreplaceable resources from the agricultural sector. In contrast, critics contend that producers may choose from ample private sector risk-management tactics to offset weather risk while other sectors of the U.S. economy also face tough competition in international markets.

Apart from the policy choice of making a large public investment in a single sector of the nation's economy, the intensive focus on a small number of field crops raises the question of whether all U.S. farm commodities (and hence certain geographic regions of the country) have been treated equitably by the various farm programs. Significant funding differences across programs and commodities raise the question of whether potential unintended incentives might divert producer behavior from the production choices that would otherwise prevail in the absence of government programs. For example, some farm subsidy critics claim that, by focusing federal farm support primarily on feedstuffs (feed grains and protein meals), U.S. farm policy has lowered the cost for American consumers of meat relative to fruits and vegetables—which have been essentially unsubsidized. If true, this would suggest that current farm price and income support programs

[10] Ad hoc disaster assistance is supplementary to normal budget processes and, therefore, does not count against federal deficit scores until the money is actually spent.

[11] CRS calculations using USDA data from "Table 35—CCC Net Outlays by Commodity and Function, Fiscal Years 1978 through 2016 Forecast," February 27, 2014. Data includes payments under Market Loss Assistance ($19.7 billion); 1988-2005 Crop Disaster assistance ($18.8 billion), Livestock Indemnity and Forage assistance ($3.8 billion), and 2005-2007 disaster assistance ($2.4 billion) programs.

[12] For more information, see CRS Report RS21212, *Agricultural Disaster Assistance*, by Megan Stubbs.

[13] Economic theory holds that market efficiency is improved when there are a large number of buyers and sellers, homogeneous commodities, a large number of close substitutes, storable commodities, transparency of price formation, ease of transfer between buyers and sellers, no artificial restrictions on the market processes, and no externalities.

have indirect nutritional consequences.[14] Similarly, critics of federal intervention in crop insurance markets have argued that by removing a substantial portion of the risk of farming on land with high yield variability, large federal crop insurance subsidies have encouraged production on marginal and environmentally sensitive crop land or discouraged the adoption of more environmentally friendly production techniques.[15]

Regional Differences in Agricultural Activities

Most of the United States lies within a temperate zone, but agro-climatic variations still result in important regional specialization.[16] For example, the rich, deep soils of the U.S. Corn Belt—stretching from Ohio westward through Indiana, Illinois, Iowa, southern Minnesota, and northern Missouri to Nebraska and Kansas—make it one of the world's most productive corn- and soybean-growing regions. The warm, humid conditions of the U.S. Cotton Belt stretch from the Carolinas westward across the southern United States through the delta states and into northern Texas, while a Hard Wheat Belt encompasses the arid northern and southern plains states. High-protein spring wheat thrives in a northern tier from Montana to Minnesota, while soft wheat production is spread throughout the wetter environments of both the Corn and Cotton Belts and the Pacific Northwest. Irrigation has allowed agriculture to flourish in California, Arizona, New Mexico, and arid portions of the states bordering the eastern and western Rocky Mountains.

Livestock activities are also determined, in large part, by a region's resources and climate: The most marginal lands serve as a base for cow-calf operations, while hog, poultry, and cattle operations are determined by the interplay of feed availability, proximity to markets, land opportunity costs, and animal waste management and environmental considerations.

With these agro-climatic conditions in mind, significant funding differences across program crops raise questions about whether federal resources are being used equitably and in the most efficient manner possible to achieve their policy goals.

Commodity-Specific Farm Safety-Net Programs

USDA's three farm safety-net components are funded through two principal entities within the USDA: the CCC and the FCIC. Only farm safety-net outlays that can be linked to specific crops are included in the charts and data tables of this report, with the exception of **Figure 1**, which examines all farm safety-net outlays—commodity- and non-commodity-specific—since 1996.

The commodity-specific data exclude CCC outlays on conservation, trade, renewable energy, rural development, farm credit, and other general farm programs. Also excluded are CCC disaster assistance outlays that focus on livestock, tree crops, and orchards rather than farm program commodities. Similarly, FCIC outlays for the annual administration and delivery costs of private

[14] See for example, Michael Pollan, 2006, *The Omnivore's Dilemma*, London: Bloomsbury Publishing Plc., or Eric Schlosser, 2001, *Fast Food Nation: The Dark Side of the All-American Meal*, New York, NY: Houghton Mifflin Company. CRS neither endorses nor refutes any of the claims described here but merely references them to highlight viewpoints of the potential for both disparity and unintended consequences of policy outcomes.

[15] See for example, *Is Federal Crop Insurance Policy Leading To Another Dust Bowl?* Environmental Working Group, Anne Weir and Craig Cox, March 22, 2017, or *Soil Matters: How The Federal Crop Insurance Program Should Be Reformed To Encourage Low-Risk Farming Methods With High-Reward Environmental Outcomes* by Claire O'Connor, Natural Resources Defense Fund, NRDC Issue paper, ip:13-04-a, August 2013.

[16] For U.S. crop maps, see USDA, Office of the Chief Economist, "Major World Crop Areas and Climate Profiles (MWCACP)," https://www.usda.gov/oce/weather/pubs/Other/MWCACP/namerica.htm.

insurers and the costs associated with sharing the underwriting risk with private insurers are not included.[17]

The commodity-specific programs funded by the CCC and FCIC are briefly described in the following two sections. The outlays across programs and by commodities are summarized in **Table 4**, **Table 5**, and **Table 6** and discussed later in this report in "Comparison of Farm Safety-Net Program Outlays."[18]

Commodity-Specific CCC Support

CCC-funded commodity support programs include the marketing assistance loan (MAL) program and two revenue support programs—the Agricultural Risk Coverage (ARC) and Price Loss Coverage (PLC) programs. The MAL, ARC, and PLC programs are authorized by provisions of Title I of the 2014 farm bill and are mandated for 26 farm commodities. However, not all commodities are eligible for all three commodity programs.

Section 1111 of the 2014 farm bill defines a set of 22 "covered commodities" that are eligible for the ARC and PLC programs. Covered commodities include wheat, oats, barley (including wheat, oats, and barley used for haying and grazing), corn, grain sorghum, long-grain rice, medium-grain rice, pulse crops, soybeans, peanuts, and other oilseeds. Other oilseeds include sunflower seed, rapeseed, canola, safflower, flaxseed, mustard seed, crambe, sesame seed, and any other seed designated by the Secretary of Agriculture. Pulse crops include dry peas, lentils, small chickpeas, and large chickpeas. Noticeably absence from CCC revenue program eligibility is upland cotton, which was removed from eligibility for CCC revenue support programs under the 2014 farm bill as the result of a final ruling from a World Trade Organization (WTO) dispute settlement case successfully brought by Brazil against U.S. cotton support programs.[19] However, cotton producers have been eligible for several cotton-only program payments described below in "Cotton-Specific Programs."

An expanded list of "loan commodities" is eligible for MAL benefits. Loan commodities include all covered commodities plus upland cotton, wool, mohair, and honey.

Coupled Price Protection: Marketing Assistance Loan (MAL) Program

The MAL program provides both a floor price and interim financing for so-called loan commodities. A participating producer may put a harvested "loan" crop under a nine-month, nonrecourse loan valued at a statutory commodity loan rate.[20] The loan uses the crop as collateral (in other words, the payments are "coupled" to current production) and the loan rate, in effect, establishes a price guarantee. The producer has the option to repay the loan and reclaim the crop when local market prices are above the loan rate plus interest. However, when local market prices fall below the statutorily fixed loan rate prior to loan maturity, then four potential MAL benefits become available to a producer with a crop under loan:

[17] FCIC delivery cost outlays are $1.4 billion per year. FCIC costs for the shared underwriting risk vary from year to year based on the distribution of losses and indemnity payments.

[18] See **Figure 1** and **Figure 2** for a comparison of total versus commodity-specific farm safety-net outlays since 1996.

[19] See CRS In Focus IF10193, *The WTO Brazil-U.S. Cotton Case*, by Randy Schnepf.

[20] See **Table 5** at the end of this report for a list of loan rates by loan commodity.

1. A participating farmer can repay the loan at a repayment rate based on local market conditions and pocket the difference as a marketing loan gain (MLG).[21]
2. Rather than taking the loan when the posted local price is below the loan rate, farmers may request a loan deficiency payment (LDP), with the payment rate equal to the difference between the loan rate and the loan repayment rate.
3. As a third alternative, a participating farmer may use commodity certificates to repay the loan at the lower local market price and avoid any potential program payment limit associated with the market gain.[22]
4. As a final option, to avoid any potential program payment limits, a producer could forfeit the pledged crop to USDA at the end of the loan period and keep any price gains associated with forfeiture.

MAL program benefits are available on the entire crop produced, which means a farmer receives no benefits in the event of a crop loss.

Decoupled Revenue Support: ARC and PLC Programs

In contrast to the MAL benefits, the ARC and PLC programs make payments based on historical acres and yields and therefore are not dependent on current production. In other words, they are decoupled from current producer production choices. In addition, both ARC and PLC use annual prices in their payment formulas rather than daily or weekly prices used by the MAL program.

PLC payments make up the difference between a crop's statutory "reference price" and its national season average farm price (SAFP).[23] ARC payments make up the difference between a county revenue guarantee (based on 86% of the product of the five-year Olympic moving averages of historical data for national SAFPs and county yields) and actual crop revenue (defined as the average county yield times the national SAFP).[24] The county ARC program is referred to as ARC-CO. ARC-CO and PLC payments to a producer are paid on 85% of the farm's acreage history (referred to as the farm's base acres)[25] times the farm's historical crop yield (referred to as the payment yield) times the payment rate. For each program crop, eligible producers (those with base acres for program crops) had a one-time choice in early 2015 between the PLC and ARC programs depending on their preference for protection against a decline in either (a) crop prices or (b) crop revenue, respectively. Alternately, rather than selecting between PLC and the ARC-CO guarantee for each covered commodity, a farmer could select a farm-level "individual" ARC guarantee (ARC-IC), which combines all covered crops into a single, whole-farm revenue guarantee. ARC-IC payment is based on 65% of base acres and program yields.

[21] USDA announces daily posted county prices (terminal prices adjusted for transportation costs from the county to the terminal) as reference prices for operating its grain and oilseed MAL repayment provisions. The situation is very different for operating the MAL repayment provisions for cotton and rice. In their case, world prices are determined in markets outside the United States. Then USDA converts their international reference prices to a U.S. location by adjusting for transportation costs. It is these "adjusted world prices" that are used for operating the cotton and rice MAL repayment provisions.

[22] Commodity certificates and payment limit issues are discussed in more detail in CRS Report R44739, *U.S. Farm Program Eligibility and Payment Limits*, by Randy Schnepf and Megan Stubbs.

[23] See **Table 5** at the end of this report for a list of PLC reference prices by covered commodity.

[24] An Olympic average excludes the high and low data points from the calculation of the average.

[25] For calculating ARC and PLC program payments, the term *base acres* is the historical planted acreage on each farm using a multi-year average from as far back as the 1980s. A farm's base with respect to a covered commodity is the number of acres in effect under the 2008 farm bill (7 U.S.C. 8702, 8751) as of September 30, 2013, subject to any reallocation, adjustment, or reduction under the 2014 farm bill. Base acreage is calculated for each covered commodity and transfers to the new owner when land is sold, making the new landowner eligible for farm programs.

Generic Base Recouples Program Payments

As mentioned earlier, the 2014 farm bill excluded upland cotton from eligibility for PLC and ARC payments. Instead, the former upland cotton base (totaling 17.5 million acres) was renamed as "generic" base. Generic base is eligible for ARC and PLC payments if a covered crop is planted on the farm. Thus, program crop choices made on generic base recouple ARC and PLC payments to plantings. A rational producer will consider potential program payments in addition to market conditions and crop rotations when making crop choices for generic base.

Coupled vs. Decoupled Payment Data

When program payments are based on current plantings or production, then economists describe such payments as "coupled" to producer behavior. If coupled program support levels are set too high relative to market conditions, a producer may have greater incentive to make crop choices based on potential program payments, rather than on relative market prices. When this happens, the program support level can be said to have stifled the market signal that reflects relative supply and demand conditions.

In contrast, "decoupled" payments try to break the linkage between producer behavior and federal programs. A decoupled program may use a current-year payment trigger but make payments based on historical acreage and yields. In this manner, decoupled payments attempt to minimize the link to producer crop choices. Because ARC and PLC programs make payments (when triggered) on historical base acres of a specific crop or crops, rather than on actual production, they are generally considered to be "decoupled" from current production.

USDA argues that ARC and PLC payments on base acres are decoupled as evidenced by how it notified 2014 crop year outlays to the WTO. ARC and PLC outlays on base acres were notified as non-commodity-specific program spending, whereas ARC and PLC payments on generic base were notified as fully coupled commodity-specific spending.[26] However, if producers are allowed to routinely update their historical base acres and program yields (or to reallocate their base acres across the various program crops) with each new farm bill, then the decoupling is weakened and the linkage between producer behavior and program payments is strengthened. Even if producers simply have the "expectation" that they will be allowed to update or recalculate their base acres and program yields with each new farm bill, then the decoupling is weakened, since producers would have an incentive to make planting choices so as to maximize their expected crop program payment prospects under future farm bills.

Producers were given a one-time choice between ARC and PLC by commodity for their base acres for the life of the 2014 farm bill (2014-2018). There is already an expectation by CBO that producers will be allowed to make a new choice between ARC and PLC for base acres under the next farm bill.[27]

To facilitate comparisons, this report treats ARC and PLC partially decoupled data as commodity-specific and tied to each program crop's base acres. In so doing, the results may overstate the linkage between ARC and PLC payments and potential producer behavior.

Cotton-Specific Programs

Although upland cotton was excluded from eligibility for ARC or PLC payments under the 2014 farm bill, producers of upland cotton remain eligible for MAL benefits and derive benefit from payments under a provision that provides economic adjustment assistance to users (EAAU) of upland cotton (P.L. 113-79, Section 1207(c)) and cotton storage cost reimbursements (Section 1204(g)).

EAAU payments are made to domestic users for all documented use of upland cotton on a monthly basis, regardless of the origin of the upland cotton. The payment rate is $0.03 per pound and results in CCC outlays of about $49 million per year. Although the payments are made to

[26] U.S. notification to the WTO Committee on Agriculture for marketing year 2014, document G/AG/N/USA/109, January 19, 2017.

[27] CBO—in both its January and June 2017 farm baseline projections—assumes that producers will be allowed to alter their current ARC-PLC selections by commodity. For example, corn producers switch from 93% participation in ARC and 6.6% in PLC under the 2014 farm bill to 17.6% ARC and 82.1% PLC under the next farm bill.

cotton users, at least a portion of the payment is likely returned to producers in the form of higher prices associated with the increased demand from domestic users.

In addition, the 2014 farm bill (Section 1119) established Cotton Transition Assistance Payments (CTAP) as an offset for the loss of ARC and PLC program eligibility. Under CTAP, upland cotton producers were eligible for payments on a percentage of former cotton base acres for crop years 2014 and 2015: For 2014, 60% of base received payments; for 2015, payments were made on 36.5% of base. CTAP was valued at a combined $484 million during 2014 and 2015.

In 2016, USDA used its administrative authority under the CCC Charter Act to offer U.S. upland cotton producers a one-time cotton ginning cost-share (CGCS) payment program valued at $328 million.[28] The CGCS program provides cost-share payments for cotton producers' cotton ginning costs based on their 2015 cotton plantings multiplied by 40% of average regional ginning costs.

Dairy Programs

Under the 2014 farm bill, milk production is supported by the Margin Protection Program (MPP) and the Dairy Product Donation Program (DPDP). The MPP is a voluntary program that makes payments to participating farmers when a formula-based national margin—calculated as the national average farm price for all milk[29] minus a national-average feed cost ration[30]—falls below a producer-selected insured margin that can range from $4.00 per one hundred pounds (cwt.) to $8.00/cwt. Producer payments are based on a farm's historical milk production and are, thus, partially decoupled from current production behavior. However, producers may change their coverage level each year (within the $4 to $8 range), thus integrating current market conditions into the producer's program and production choices. Whereas participation in MAL, ARC, and PLC is free, the MPP program operates more like an insurance program: Milk producers must pay an annual administrative fee of $100 for each participating dairy operation and statutorily fixed premiums that rise steadily for higher margin protection levels and greater volumes of insured milk. As a result, there is the potential for a producer to experience MPP costs associated with participation without any benefits if national margin payments are not triggered. Through the first three years of the 2014 farm bill, MPP payments have been triggered only at high margin levels where producer participation has been low. As a result, producer-paid MPP premiums have actually exceeded program payments.

Sugar

Current farm law mandates that raw cane and refined beet sugar prices are supported through a combination of limits on domestic output that can be sold (marketing allotments), nonrecourse marketing assistance loans for domestic sugar (but at the processor level), quotas that limit imports, and a sugar-to-ethanol backstop program (Feedstock Flexibility Program).[31] These sugar program features result in essentially no CCC outlays.

[28] USDA, Farm Service Agency,"Cotton Ginning Cost-Share (CGCS) Program, Fact Sheet, June 2016; https://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdafiles/FactSheets/2016/CGCS_Program_Fact_Sheet.pdf.

[29] "All milk" represents the average price for all milk sold by producers irrespective of the end use—whether for fluid milk consumption or for processing into butter, cheese, powder, or soft products such as ice cream or yogurt.

[30] The feed-cost ration is determined by a statutorily fixed formula set by the 2014 farm bill that uses USDA national average farm prices to calculate a value.

[31] See CRS In Focus IF10223, *Fundamental Elements of the U.S. Sugar Program*, by Mark A. McMinimy.

U.S. producers of both sugar and milk receive important price support via import protection from low-price international products under tariff-rate quotas (TRQs).[32] Such TRQ support does not appear as a CCC outlay; instead, the costs are borne by domestic consumers. For example, sugar TRQ protection is notified annually as market price support (valued at over $1.4 billion in 2014) to the WTO by the U.S. government.[33] The potential costs of TRQ protection are not included with the data used in this report.

Agricultural Commodities Without CCC Program Support

In contrast to producers of traditional program crops, producers of specialty crops (e.g., fruits, vegetables, and tree nuts) and livestock have generally received little or no direct government price or revenue support through commodity programs. Instead, these commodities benefit more generally from federal investments in agricultural research and extension programs and from federal support for domestic food and nutrition programs. Specialty crop and livestock farms may manage risks through business diversification and the purchase of federal crop insurance and may benefit from participation in federal disaster assistance programs.

Commodity-Specific FCIC Support

The FCIC directs and finances federal crop insurance programs.[34] The largest federal cost in support of federal crop insurance programs is federal subsidies on producer premiums. The federal government, through the FCIC, has paid on average 62% of all crop insurance premiums from 2014 to 2016. As both participation in crop insurance programs and the value of insured crops have grown over time, so too has the absolute level of federal premium subsidies.

Premium subsidies are crop-specific. In 2016, crop insurance policies covered 290 million acres and over 100 commodities including fruit trees, nursery crops, pasture, rangeland, forage, and dairy and livestock margins. However, the major farm program crops (i.e., the covered crops) account for over 90% of all federal premium subsidies. Federally subsidized policies protect producers against losses during a particular season, with price guarantee levels established early in the year using the preplanting values of harvest-time futures contracts. As a result, the revenue guarantee protected by federal crop insurance moves up and down with market conditions. This contrasts with commodity programs where protection levels are fixed in statute (e.g., PLC reference prices and MAL loan rates) or use a five-year Olympic moving average for national farm prices and county yields to determine a revenue guarantee (e.g., ARC-CO).

[32] For a discussion of the cost of TRQ protection, see CRS Report R43817, *2014 Farm Bill Provisions and WTO Compliance*, by Randy Schnepf.

[33] WTO, G/AG/N/USA/109, Supporting Table DS:5, Product-Specific Market Price Support, January 19, 2017.

[34] Federal crop insurance is permanently authorized by the Federal Crop Insurance Act as amended (7 U.S.C. 1501 et seq.) but is periodically modified by new farm bill legislation. Insurance policies are serviced through approved private insurance companies. The insurance companies' losses are partially reinsured by USDA, and their administrative and operating costs are reimbursed by the government. The program is administered by the USDA's Risk Management Agency (RMA) and financed through USDA's FCIC. For details, see CRS Report R40532, *Federal Crop Insurance: Background*, coordinated by Randy Schnepf.

Note on Commodity-Specific Farm Payment Data

Since the starting point for the next farm bill debate will likely be the current set of farm programs as defined under the 2014 farm bill, this report limits its analysis to commodity-specific outlays under the 2014 farm bill programs—in particular, for the crop years 2014 through 2016 for which program data are available. This limitation is adopted primarily because the farm safety-net programs underwent substantial revision under the 2014 farm bill. Including data from previous years could potentially result in mixing policy goals and outcomes from now-obsolete programs.

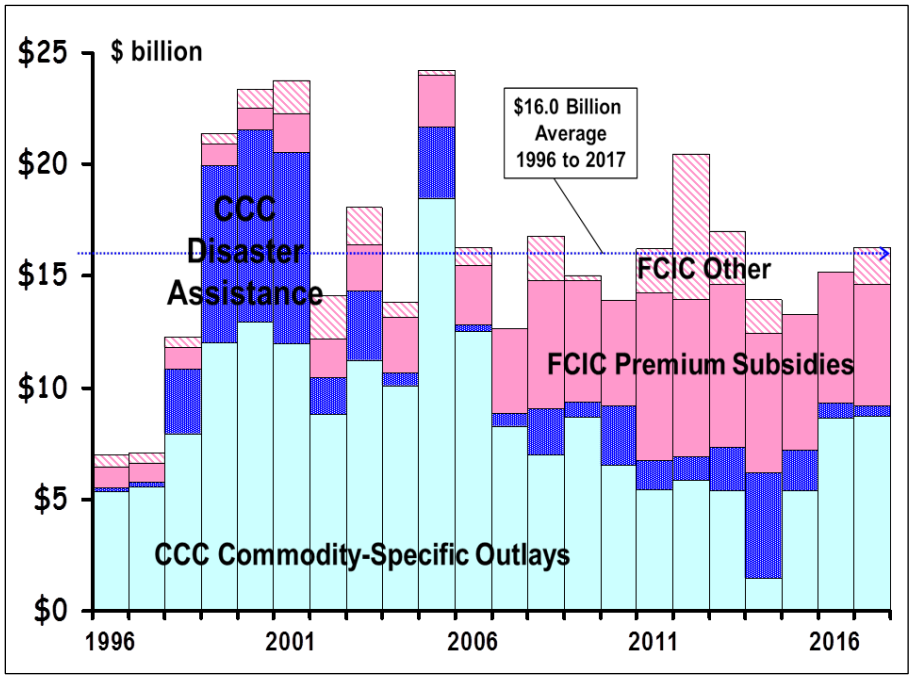
CCC data, as reported by USDA's Farm Service Agency (FSA), are used for all CCC outlays with the exception of ARC-CO and PLC payments for 2016. Instead, CBO projections of ARC-CO and PLC outlays for FY2018 (from CBO's June 29, 2017, baseline for farm programs) are used to represent crop year 2016 payment data due to the delayed timing of payments.

An important feature of ARC and PLC programs is that they make payments on a delayed basis: Their payment formulas require an entire marketing year's worth of monthly price data before the final SAFP is available and payments can be determined. Furthermore, two provisions in the 2014 farm bill—Sections 1116(e) and 1117(f)—prohibit any payments before October 1 following completion of a program crop's market year. For example, the marketing year for 2016 spring and summer-grown crops ends in mid-2017. Thus, related ARC-CO and PLC payments for the 2016 crop year will not be made prior to October 1, 2017.[35] As a result, the 2016 ARC and PLC payments are made in FY2018.

Comparison of Farm Safety-Net Program Outlays

From 1996[36] through 2017, total outlays for farm safety-net programs (including non-commodity-specific spending) were on average $16 billion per year including $8.6 billion for commodity programs, $2.5 billion for disaster assistance, and $4.9 billion for crop insurance (**Figure 1**).

Figure 1. USDA Farm Safety-Net Total Outlays, 1996 to 2017



[35] When the 2016 crop year ARC-CO and PLC payment data is publicly reported by FSA, they will be incorporated into the CCC payment estimates of this report.

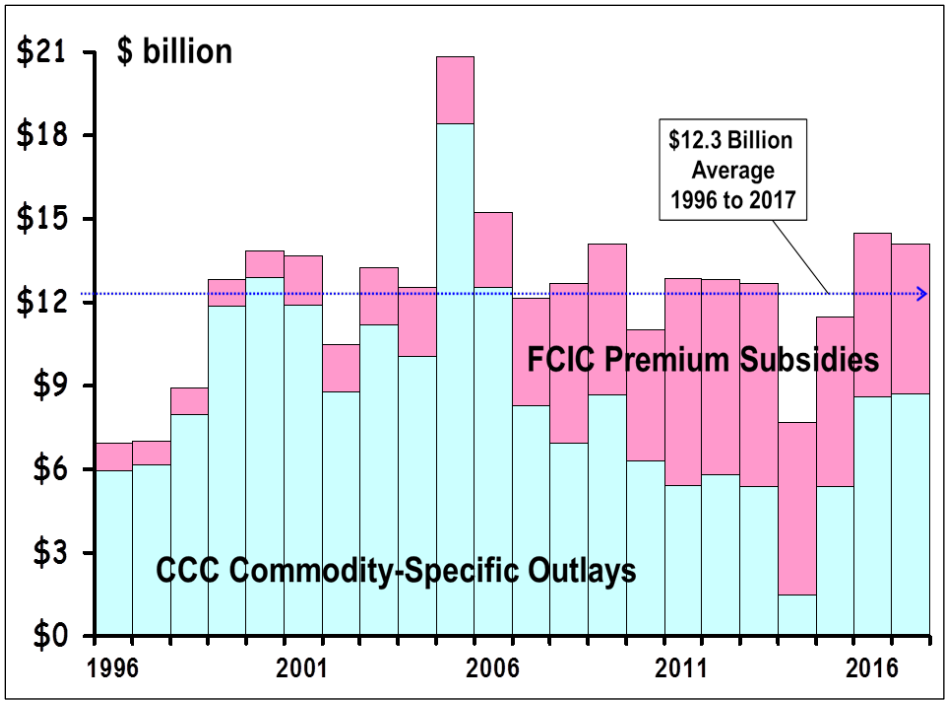
[36] Data begin with the 1996 farm bill (P.L. 104-127).

Source: CCC data are from ERS, *Farm Income and Wealth Statistics*, as of February 7, 2017; FCIC data are from *Summary of Business Data*, RMA, as of April 24, 2017; projected FCIC data for 2017 are from CBO, June 2017 Baseline for Farm Programs.

Note: CCC non-commodity-specific farm safety-net outlays include minor funding for bioenergy and trade programs and $2.5 billion/year for disaster assistance programs. FCIC non-commodity-specific outlays (referred to as "Other") include administration and operating expenses of $1.4 billion annually and shared underwriting risk, which varies from year to year.

After removing the non-commodity-specific outlays, the remaining commodity-specific outlays for that same period averaged $12.3 billion per year, including $8.6 billion for revenue support programs and $3.8 billion for crop insurance premium subsidies (**Figure 2**).

Figure 2. Commodity-Specific Farm Safety-Net Outlays, 1996 to 2017



Source: CCC data are from ERS, *Farm Income and Wealth Statistics*, as of February 7, 2017; FCIC data are from *Summary of Business Data*, RMA, as of April 24, 2017; projected FCIC data for 2017 are from CBO, June 2017 Baseline for Farm Programs.

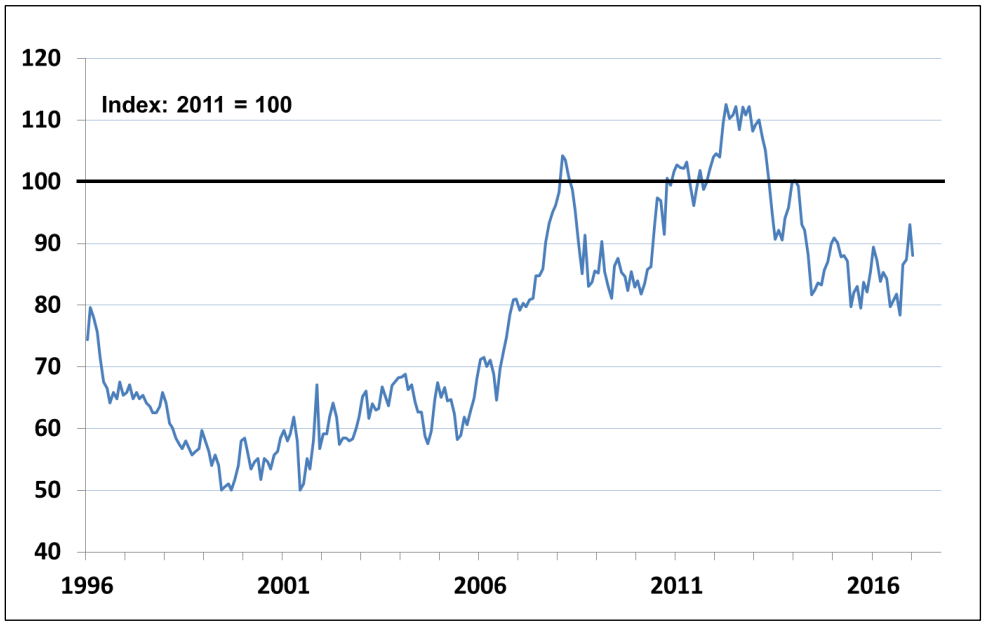
Note: Only commodity-specific outlays are included. CCC data exclude outlays for bioenergy, trade programs, and disaster assistance. FCIC data exclude shared underwriting risk and A&O costs.

USDA commodity programs operate counter-cyclically to commodity prices: Payments increase when commodity prices fall below support levels and decline when prices rise. In contrast, federal crop insurance outlays are pro-cyclical to commodity prices: Liability, premiums, and federal support outlays increase or decrease with commodity prices. As a result of their opposing cyclical behavior, CCC and FCIC outlays tend to counter-balance each other.

Between 2006 through 2013, CCC-funded program outlays declined while FCIC support for crop insurance expanded. This shift was primarily the result of market conditions and the associated rise in commodity prices that occurred during that same period (**Figure 3**) rather than a change in

policy.[37] Since 2014, farm prices have again turned downward and CCC outlays have increased relative to FCIC outlays.

Figure 3. Index of Monthly Average Farm-Prices Received (2011 = 100)



Source: USDA, National Agricultural Statistics Service (NASS), Index for all commodities, monthly average farm price received, 2011 = 100, *Agricultural Prices*, various issues.

Note: NASS uses the monthly price estimates for 48 commodities to calculate prices received indexes for overall farm prices. The index measures the change in the prices agricultural producers receive compared to a base period (1990-1992 = 100). The base period is adjusted to 2011 by CRS. For more information, see https://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Prices_Received_and_Prices_Received_Indexes/. The index is dominated by major program crops, especially corn and soybeans, and is reflective of market conditions underlying the farm support programs.

Program-Specific Outlays

The 2014 farm bill's safety-net programs cover the five crop years of 2014 through 2018. Through the first three years (2014 through 2016), CCC and FCIC outlays are a combined $38.1 billion.[38] In annual terms, commodity-specific outlays are estimated at $12.7 billion per year, including $7.5 billion for CCC programs plus $5.2 billion in FCIC crop insurance premium subsidies (**Figure 4** and **Table 6**).[39]

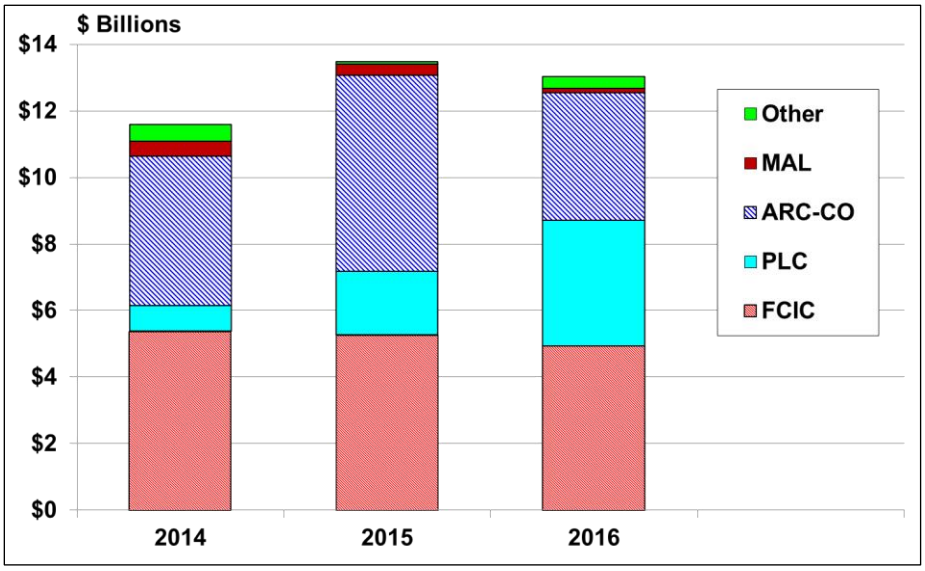
CCC programs accounted for 59% of commodity-specific outlays (see **Figure 5** for program breakouts), with FCIC outlays accounting for the balance of 41%.

[37] These market conditions include globalization of agricultural markets and the rapid expansion of U.S. agricultural exports, the equally rapid rise of the U.S. ethanol industry and its associated demand for corn as the primary feedstock, and the severe and widespread U.S. drought of 2012 whose supply-diminishing effects lingered into 2014.

[38] Note that the data source for CCC outlays in **Figure 1** is ERS Farm Income data, which reports calendar and fiscal year data, whereas the CCC data cited here and used in all commodity-specific figures and detailed in **Table 5** is FSA, which reports outlays on a crop year basis.

[39] See the Shaded Box "Note on Farm Safety-Net Payment Data" for a description of the data sources.

Figure 4. Commodity-Specific Farm Safety-Net Outlays by Program

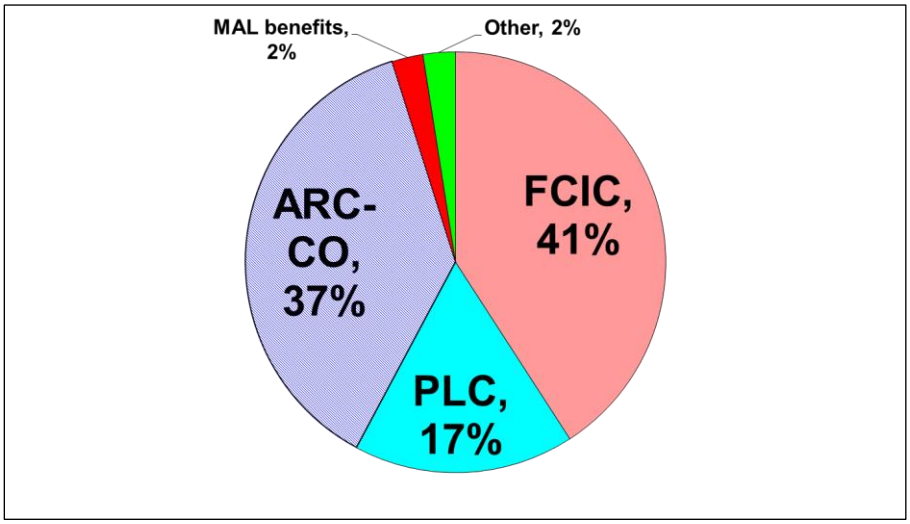


Source: CRS calculations for crop years 2014-2016 using CCC program data from FSA and CBO's June 2017 baseline of farm programs and crop insurance data from RMA as of April 24, 2017.

Notes: FCIC = Federal Crop Insurance Corporation; PLC = Price Loss Coverage, ARC-CO = Agricultural Risk Coverage County-Level, and MAL = Market Assistance Loan programs. Average annual farm safety-net outlays during the 2014-2016 crop years were estimated at $12.7 billion, including $5.2 billion of FCIC crop insurance premium subsidies and $7.5 billion of CCC farm program payments from MAL benefits, ARC, PLC, and other programs including cotton and dairy programs.

Figure 5. Commodity-Specific Outlay Shares by Program

(Total combined CCC and FCIC outlays of $38.1 billion for 2014-2016)



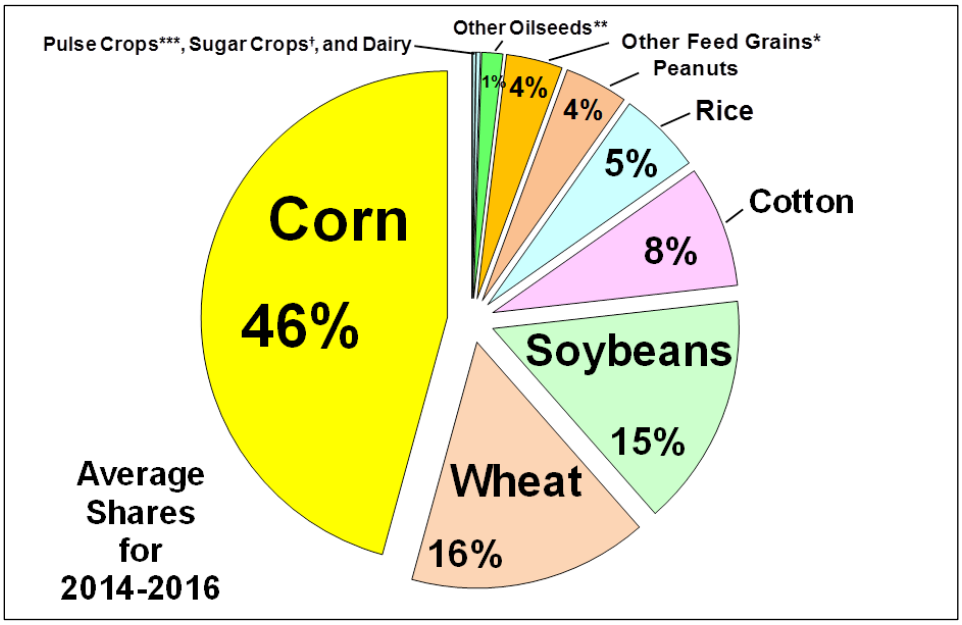
Source: CRS calculations for crop years 2014-2016 using CCC program data from FSA, CBO's June 2017 baseline of farm programs, and crop insurance data from RMA as of April 24, 2017.

Notes: FCIC = Federal Crop Insurance Corporation; PLC = Price Loss Coverage, ARC-CO = Agricultural Risk Coverage County-Level, and MAL = Market Assistance Loan programs. Average annual farm safety-net outlays during the 2014-2016 crop years were estimated at $12.7 billion, including $5.2 billion of FCIC crop insurance premium subsidies and $7.5 billion of CCC farm program payments from MAL benefits, ARC, PLC, and other programs including cotton and dairy programs.

Commodity-Specific Outlays

Most of the commodity-specific costs for the farm safety net under the 2014 farm bill may be attributed to a few major crops. Corn (46%), wheat (16%), soybeans (15%), cotton (8%), rice (5%), and peanuts (4%) cumulatively account for 94% of CCC and FCIC payments from 2014 through 2016 (**Figure 6**). Although these six crops receive a majority of farm program support, they do not constitute a majority of farm output value: During 2014 to 2016, these crops have accounted for about 28% of total farm receipts including fruits and vegetables, livestock, dairy, and poultry.[40] It is this preponderance of CCC and FCIC spending focused on a small number of commodities that merits further inspection of how the programs function across program crops.

Figure 6. Share of Commodity-Specific Outlays by Commodity



Source: CRS calculations for crop years 2014-2016 using CCC program data from FSA, CBO's June 29, 2017, baseline of farm programs, and crop insurance data from RMA as of April 24, 2017.

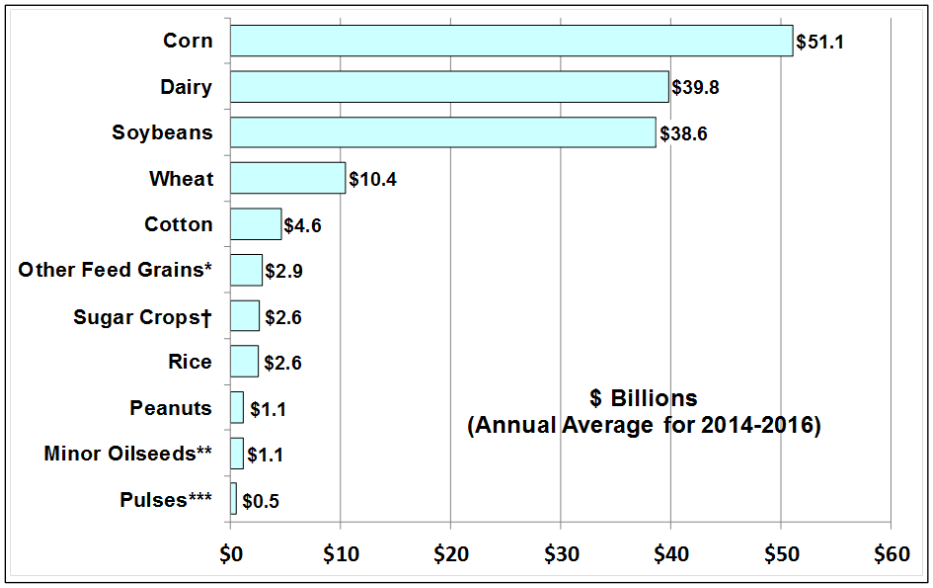
Notes: *Other feed grains include sorghum, barley, and oats. **Other oilseeds (or minor oilseeds) include sunflower, flaxseed, canola, rapeseed, mustard, safflower, crambe, and sesame. ***Pulse crops include dry peas, lentils, and large and small chickpeas. †Sugar crops include sugar beets and sugar cane.

Production Characteristics of Major Program Commodities

Corn is the largest crop grown in the United States both in terms of planted acres (**Figure 9**) and value of output (**Figure 7**). During 2014-2016, the three largest crops in value terms—corn, dairy, and soybeans—accounted for about 34% of the total value of U.S. agricultural output. When production values and planted acres are combined to reveal gross returns (before costs) per acre (**Figure 8**), then sugar crops have the highest per-acre valuation ($1,291 per acre) followed by rice ($913) and peanuts ($775). The national average returns-per-acre for program crops is $475 per acre. Soybeans, pulse crops, minor oilseeds, other feed grains, and wheat all have average returns per acre below the national average.

[40] Calculations by CRS, using data from ERS, Farm Income and Wealth Statistics: cash receipts by commodity, as of February 7, 2017

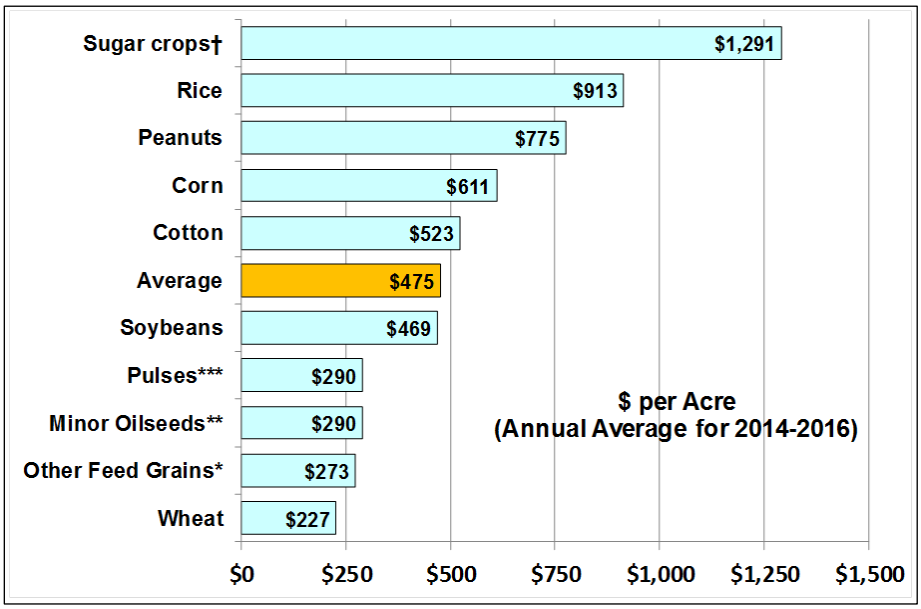
Figure 7. Value of Production by Commodity



Source: CRS calculation using crop-year data from the National Agricultural Statistics Service.

Notes: Average annual value of total production for program crops was $155.5 billion including dairy production. *Other feed grains include sorghum, barley, and oats. **Minor oilseeds include sunflower, flaxseed, canola, rapeseed, mustard, safflower, crambe, and sesame. ***Pulse crops include dry peas, lentils, and large and small chickpeas. †Sugar crops include sugar beets and sugar cane. Harvested area is used for sugar cane.

Figure 8. Output Value per Harvested Acre by Commodity



Source: CRS calculation using crop-year data from NASS.

Notes: *Other feed grains include sorghum, barley, and oats. ** Minor oilseeds include sunflower, flaxseed, canola, rapeseed, mustard, safflower, crambe, and sesame. ***Pulse crops include dry peas, lentils, and large and small chickpeas. †Sugar crops include sugar beets and sugar cane. Sugar crop "raw" values per cwt. are used to represent farm-level values rather than refined sugar values.

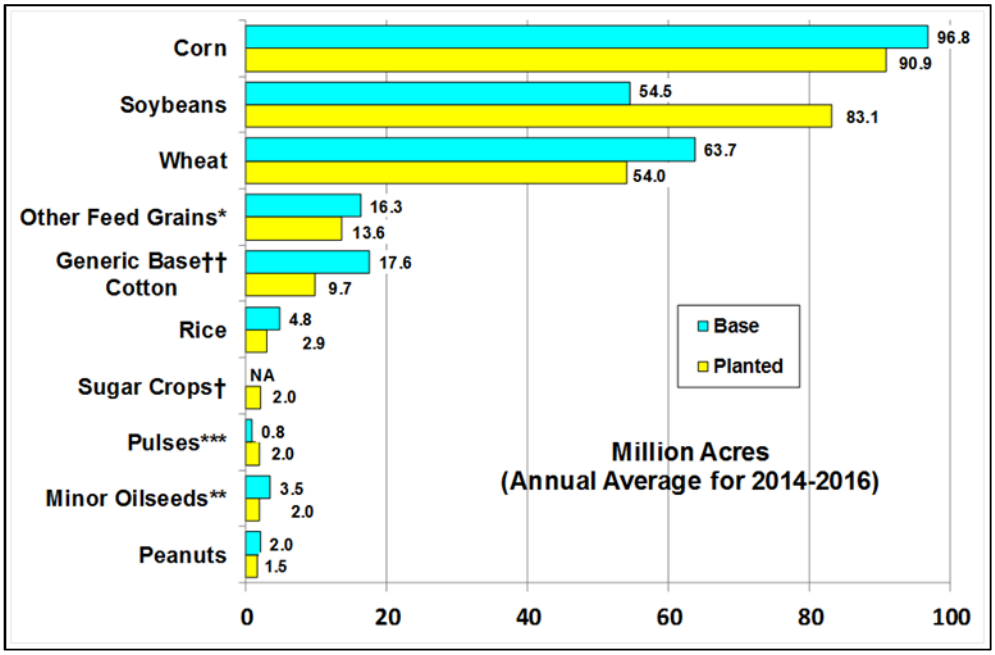
Comparison of Base Acres and Planted Acres

Since the allocation of commodity-specific payments is based largely on historical or current output, base acres and current planted acres are major factors in understanding the distribution of payments. For example, corn is the largest crop grown in the United States in terms of both planted acres and base acres (**Figure 9**). Thus, corn has the most acres potentially eligible for MAL benefits and ARC or PLC payments.

Because a farmer's actual plantings may differ from farm base acres, program payments may not necessarily align with financial losses associated with market prices or crop revenue. In order to better match program payments with farm risk, the 2014 farm bill provided farmers with a one-time opportunity to update individual crop base acres by reallocating acreage within their current base to match their actual crop mix (plantings) during the 2009-2012 crop years. However, significant differences still persist between actual planted acres and base acres (**Figure 9**), especially for soybeans, rice, pulses, and minor oilseeds.

In the case of cotton, which was removed from eligibility as a covered commodity, former cotton base acres were renamed "generic base" and made eligible for potential payments if a covered crop is planted on the farm. **Figure 9** includes a comparison of generic base (17.6 million acres)—previously upland cotton base—with average annual upland cotton planted acres (9.7 million acres).

Figure 9. Base versus Planted Acres, by Commodity



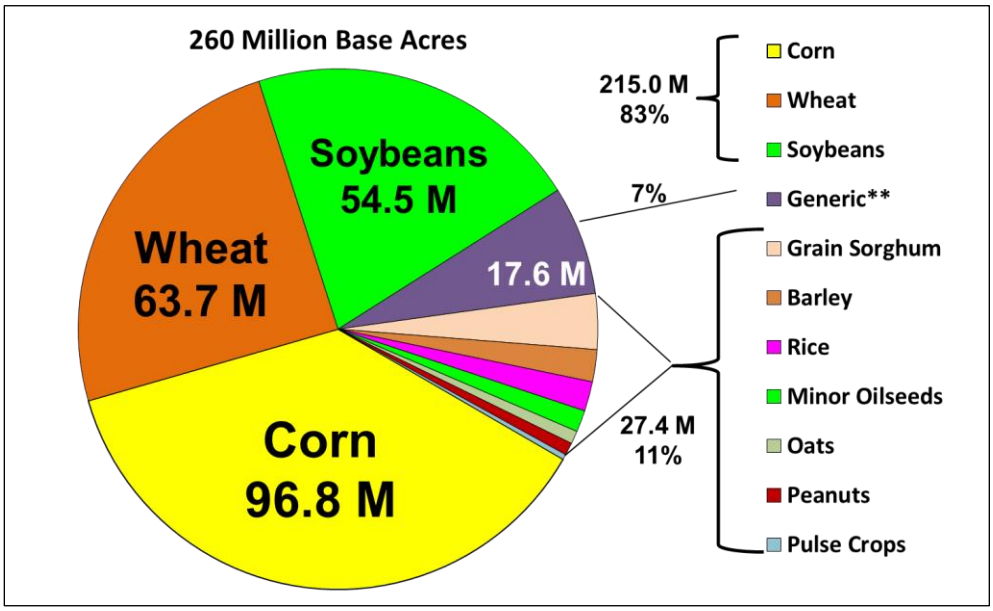
Source: 2014 farm bill (P.L. 113-79) and FSA.

Notes: NA = Not applicable. Base acres are historical average acres on a farm that have been planted to program crops defined under the 2002 farm bill (P.L. 107-171, §1101). Each base acre is associated with a particular program crop. *Other feed grains include sorghum, barley, and oats. **Minor oilseeds include sunflower, flaxseed, canola, rapeseed, mustard, safflower, crambe, and sesame. ***Pulse crops include dry peas, lentils, and large and small chickpeas. †Sugar crops include sugar beets and sugar cane. ††Generic base is former upland cotton base.

Under the 2014 farm bill, there are 260 million base acres eligible for payment under the ARC or PLC programs (**Figure 10**). The three largest crops—corn, soybeans, and wheat—account for

83% of total base acres. This compares with their combined 74% share of acres planted to principal crops in the United States over the same period.

Figure 10. Base Acres by Commodity, 2014 Farm Bill



Source: 2014 farm bill (P.L. 113-79) and FSA.

Notes: Base acres are historical average acres on a farm that have been planted to program crops defined under the 2002 farm bill (P.L. 107-171, §1101). Each base acre is associated with a particular program crop. **Generic base is former upland cotton base. Other feed grains include sorghum, barley, and oats; minor oilseeds include sunflower, flaxseed, canola, rapeseed, mustard, safflower, crambe, and sesame; pulse crops include dry peas, lentils, and large and small chickpeas; and sugar crops include sugar beets and sugar cane.

Comparison of Outlays by Commodity

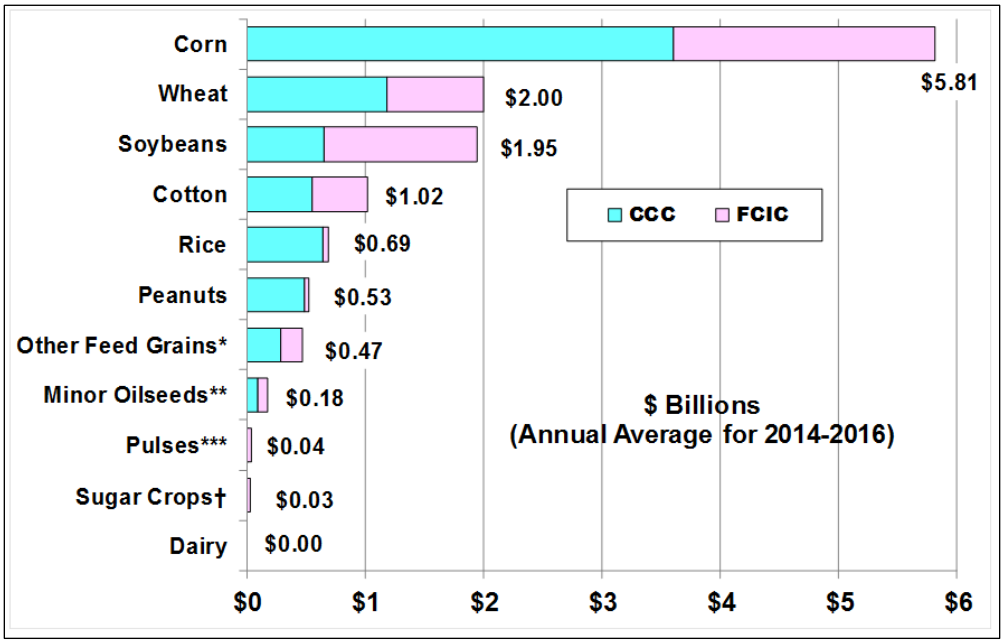
FCIC payments vary directly with planted acreage and market prices.[41] In contrast, the CCC payment distribution depends on both market prices and the degree of coupling. For example, the crop-specific distribution of coupled MAL payments is determined by the distribution of planted acres across program crops and by daily or weekly local market conditions (reflected in the local posted county prices or AWPs used to determine MAL benefits) relative to statutorily fixed loan rates. The distribution of decoupled ARC and PLC payments is determined by the distribution of base acres across program crops and by annual market conditions (reflected by the national season average farm prices used to determine the payment rates) relative to support levels.

Absolute Payment Levels

Under this commodity structure, corn producers have received an average of $5.81 billion per year under the 2014 farm bill (**Figure 11**). This compares with $2 billion per year for wheat and soybeans, respectively. Corn support represents 46% of annual CCC and FCIC commodity-specific payments (**Figure 6**). The absolute size of corn's federal farm support payments is largely determined by its extensive planted and base acres (**Figure 9**).

[41] Crop value and area planted are key determinants of total premium values. Summary of Business Data, RMA, USDA, as of January 23, 2017.

Figure 11. CCC and FCIC Outlays by Commodity



Source: CRS calculations for crop years 2014-2016 using CCC program data from FSA, CBO's June 29, 2017, baseline of farm programs, and crop insurance data from RMA as of April 24, 2017.

Notes: *Other feed grains include sorghum, barley, and oats. **Minor oilseeds include sunflower, flaxseed, canola, rapeseed, mustard, safflower, crambe, and sesame. ***Pulse crops include dry peas, lentils, and large and small chickpeas. †Sugar crops include sugar beets and sugar cane.

The top three program crops—corn, soybeans, and wheat—account for 77% of annual CCC and FCIC commodity-specific payments. Again, the absolute size of these three crops' share of federal farm support payments is principally the result of their large share of planted and base acres. The next section adjusts commodity payments for planted acres and for the value of production.

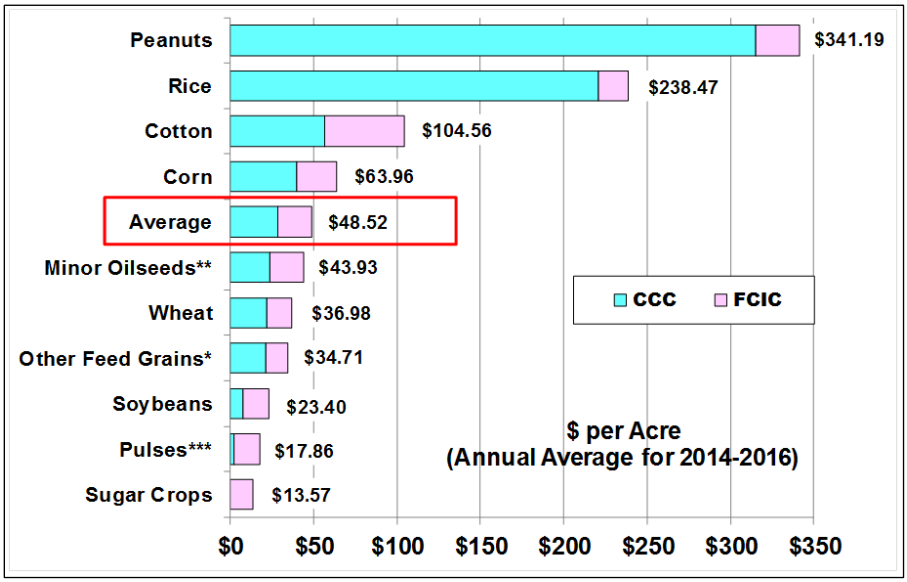
Payments Per-Acre and as a Share of Value of Production

When federal subsidies are measured as payments per acre (**Figure 12**) or as a share of the program crop's value of production (**Figure 13**), then peanuts, rice, and cotton emerge as the program crops with the highest payment levels under the current structure of farm programs and market conditions.

Average payments per acre across all program crops are $48.52 per acre. This represents 11% of the average per-acre value of production.[42] Payments to peanut and rice producers (or owners of peanut and rice base acres) are well above the average payment rate for all other program crops. Under the 2014 farm bill, peanuts have received an annual average payment of $341.19 per acre, representing 46% of the per-acre crop value. Rice, at $238.47 per acre (representing 27% of average per-acre crop value), ranked second among program crops. Cotton, at $104.56 per acre and 22% of average per-acre crop value, ranked third.

[42] Calculated by CRS using data for all program crops as (total CCC and FCIC payments per acre) divided by (total value of production per acre) and displayed in **Figure 13**.

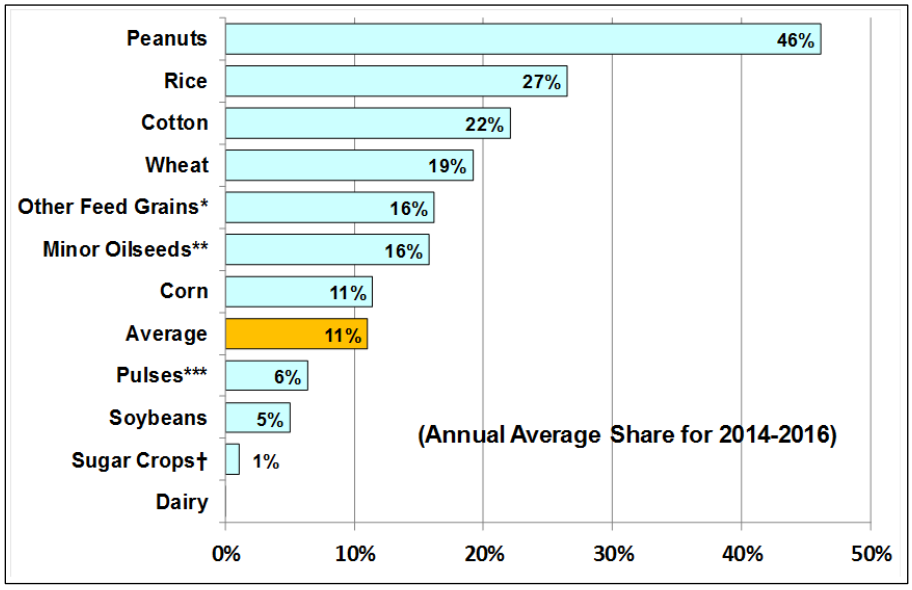
Figure 12. CCC and FCIC Outlays per Planted Acre by Commodity



Source: CRS calculations for crop years 2014-2016 using CCC program data from FSA, CBO's June 29, 2017, baseline of farm programs, and crop insurance data from RMA as of April 24, 2017.

Notes: Average annual value of total production for program crops, excluding dairy, was $115.7 billion. *Other feed grains include sorghum, barley, and oats. **Minor oilseeds include sunflower, flaxseed, canola, rapeseed, mustard, safflower, crambe, and sesame. ***Pulse crops include dry peas, lentils, and large and small chickpeas. †Sugar crops include sugar beets and sugar cane.

Figure 13. CCC and FCIC Outlays as Share of Production Value by Commodity



Source: CRS calculations for crop years 2014-2016 using CCC program data from FSA, CBO's June 29, 2017, baseline of farm programs, and crop insurance data from RMA as of April 24, 2017.

Notes: Average annual value of total production for program crops, excluding dairy, was $115.7 billion. *Other feed grains include sorghum, barley, and oats. **Minor oilseeds include sunflower, flaxseed, canola, rapeseed, mustard, safflower, crambe, and sesame. ***Pulse crops include dry peas, lentils, and large and small chickpeas. †Sugar crops include sugar beets and sugar cane.

Despite its large absolute payments of $5.8 billion, when adjusted for planted acres, corn producers are at $63.96 per acre, representing 11% of the corn crop's per-acre value. Soybean and pulse crops are below the average of federal support by every measure averaging per-acre payments of $23.40 and $17.86, respectively, and with value shares of 5% and 6%, respectively. Sugar program support appears low by both these measures but, as stated earlier, excludes the potentially substantial support value of import protection, which varies with international market conditions. For example, in its 2014 notification to the WTO, USDA reported $1.4 billion in import price protection for U.S. sugar. Sugar crops also rely on supply management controls (market allotments) that are not available to other program crops.

Another important observation is the absence of measureable direct support for the U.S. dairy sector. Outlays under the MPP program, created by the 2014 farm bill, have failed to offset the premiums that dairy producers have paid to USDA to participate. This absence of program payments is displayed in **Figure 11** and **Figure 12** and contrasts with **Figure 7**, which shows that the U.S. dairy sector represents the second-largest commodity sector (behind corn) among program commodities with an annual average value of production estimated at $39.8 billion during the 2014-2016 period. However, unlike corn and other program crops, dairy has received no measureable direct commodity support.

Also noteworthy are the cotton programs described earlier in section "Cotton-Specific Programs." The CTAP and CGCS programs were available only on a one-time, temporary basis and will not be available in future years under the 2014 farm program structure (barring congressional action).

Payments as a Share of Costs of Production (COP)

Most farmers have long endorsed the concept of basing support on the cost of production (COP), because costs have to be covered to stay in business. The permanent legislative authority for commodity support programs, the Agricultural Adjustment Act of 1938 (P.L. 75-430), uses prices paid for production inputs as a key determinant of support prices.

The 1973 farm bill, starting in 1975, used annual changes in COPs (as measured by the index of prices paid by farmers for production inputs, interest, taxes, and wages) and productivity efficiency (measured by yield increases) to adjust target prices, which were crop-specific reference prices used in determining payment rates. Current farm policy no longer explicitly includes COP as a determinant of support. Most economists argue against basing support on COPs for several reasons:

- First, they contend that the specialized nature of some farm inputs (particularly land, buildings, and machinery) makes their cost dependent on the value of the farm output. This means that when earnings are above market levels because of a subsidy, the gains will be capitalized into the prices of the specialized inputs, thereby raising the subsequent COP and leading to calls for additional subsidies.[43] In other words, the payments become self-inflating by bidding themselves into the capital assets (especially land values) that support agricultural production, thus resulting in higher farm payments as COPs rise.[44]

[43] This argument is explained by E. C. Pasour, "Cost of Production: A Defensible Basis for Agricultural Price Supports?," *American Journal of Agricultural Economics*, May 1980, pp. 244-248.

[44] John R. Groenewegen and Kenneth C. Clayton, "Agricultural Price Supports and Cost of Production", *American Journal of Agricultural Economics*, May 1982, p.271. Economists Groenewegen and Clayton argue that the "rationale for price support prices should be to allow immediate, or cash, expenditures to be met.... Price supports should not provide to owners of fixed agricultural resources the opportunity costs of those resources."

- Second, COPs are different for every farmer. Thus, there is the problem of choosing which cost categories and levels should be covered—for example, only variable costs and only at a level of the low-cost highly efficient farmers, or national average variable costs, or average total costs rather than variable costs.
- Another consideration is that COPs are the key metric for assessing competitiveness in the marketplace. Basing U.S. farm support payments on a crop's domestic COP could result in significant market distortions if U.S. COPs are above international COPs, since any surplus production could not move into international markets without some form of export subsidy.

Instead, most economists argue in favor of linking farm support to market conditions so as to minimize unintended incentives and subsequent resource misallocations. There are times when market prices drop substantially, but temporarily, below trend levels. At these times, support may be justified to prevent unnecessary and undesirable resource adjustments. This builds on the concept of a market-based "safety net" that uses market price trends as the basis for setting support levels. Market-based support is discussed more in the following section.

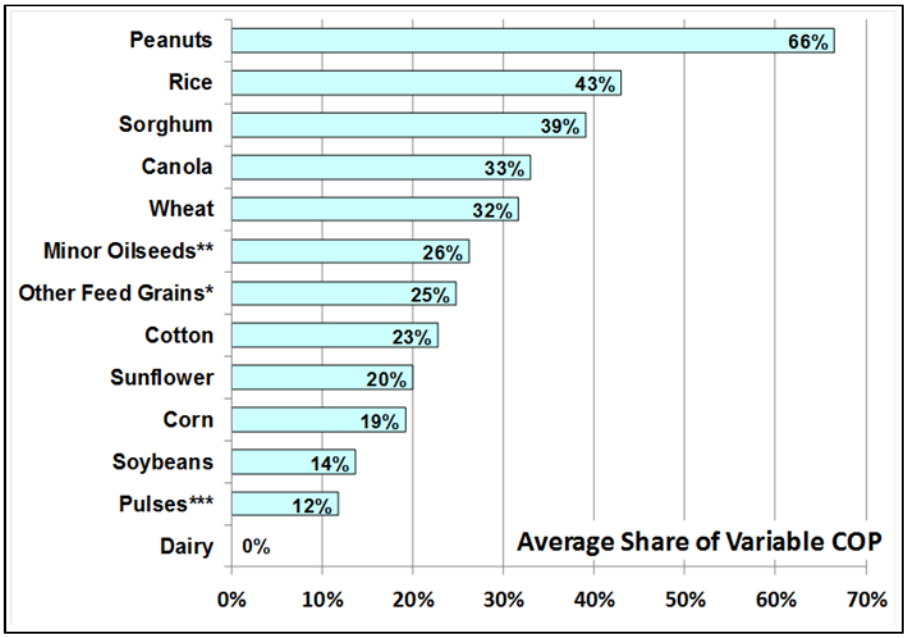
In spite of the opposition of economists, most farmers regularly advocate for support to cover their COPs. To this point, how do current levels of support compare to COPs across commodities?

When USDA payments are expressed as a share of variable COP (**Figure 14**) and total COP (**Figure 15**) for each program crop for crop years 2014-2016, peanuts, at 66%, receive higher levels of federal assistance than other program crops. Rice and sorghum also receive higher levels of federal support relative to other program crops by this measure. Their average federal payments represent variable COP shares of 43% and 39%, respectively. Corn—the largest crop grown in the United States and the largest recipient of total CCC and FCIC payments—has 19% of its variable COP covered by farm payments. Payment rates for soybeans and pulse crops are lower at 14% and 12% of variable COP, respectively.

When payments are expressed as shares of total COP, peanuts and rice still rank first and second, but there is some shifting of position among the other program crops.

However, it is dairy—with no net support payments under the 2014 farm bill—that ranks last by the COP measures, with USDA outlays representing 0% of either variable or total production costs.

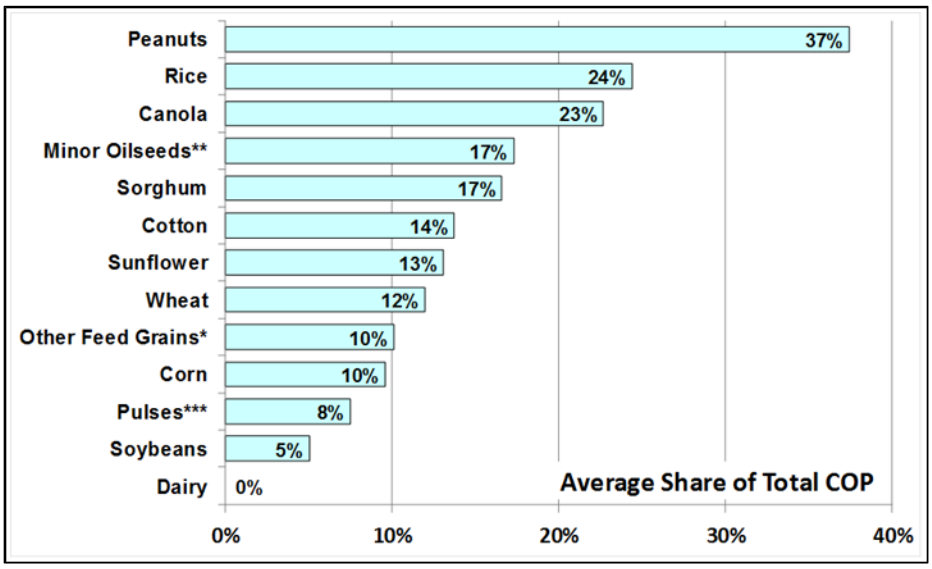
Figure 14. CCC and FCIC Outlays as Share of Variable COP by Commodity



Source: CRS calculations for crop years 2014-2016 using CCC program data from FSA, CBO's June 29, 2017, baseline of farm programs, and crop insurance data from RMA as of April 24, 2017.

Notes: COP = Cost of Production. *Other feed grains include sorghum, barley, and oats. **Minor oilseeds include sunflower, flaxseed, canola, rapeseed, mustard, safflower, crambe, and sesame. ***Pulse crops include dry peas, lentils, and large and small chickpeas.

Figure 15. CCC and FCIC Outlays as Share of Total COP by Commodity



Source: CRS calculations for crop years 2014-2016 using CCC program data from FSA, CBO's June 29, 2017, baseline of farm programs, and crop insurance data from RMA as of April 24, 2017.

Notes: COP = Cost of Production. *Other feed grains include sorghum, barley, and oats. **Minor oilseeds include sunflower, flaxseed, canola, rapeseed, mustard, safflower, crambe, and sesame. ***Pulse crops include dry peas, lentils, and large and small chickpeas.

Support Levels Compared to Market Prices

The development of the farm safety net—and the establishment of commodity price protection levels inherent in target prices—is the result of a process that involves the voice of concerned citizens and consumers, lobbying activities by stakeholder groups, political pressures, and inputs from the research community and other experts. With respect to stakeholders, the various industry, trade, and producer groups that represent the major program crops have seen their cost structures increase substantially since 2006 as higher commodity prices and competing uses have bid up the price of important inputs such as land, fertilizer, and seed. They have also seen increased competition resulting from trade agreements and the integration of China, India, and Brazil into the global agricultural markets. Several extreme weather events, such as the widespread U.S. drought of 2012, have also occurred. These many factors imply that the large capital investments needed to operate a farm are subject to substantial underlying risk. As a result, many commodity interest groups argue for an expanded safety net with a revenue support target that does not shift dramatically following any single market event. Ultimately, many farm groups point to COPs as the relevant reference point for setting target prices.

In contrast, economists John Groenewegen and Kenneth Clayton argued in 1982 that "the level of price support should be established below trend market prices."[45] One can think of the trend market price as reflecting the long-term equilibrium market price. The logic of providing a "safety net" may be used to set support prices at some level below the long-term equilibrium price. Currently, the law specifies fixed support levels under PLC and MAL without consideration for market price trends. Paraphrasing from Groenewegen and Clayton, trend market prices as a reference point should not cause the support program to attract additional resources into the sector but would provide a cash flow to farmers when market prices deviate substantially and temporarily below trend levels. Possibly in recognition of this logic, the last time that USDA proposed a farm bill to Congress in January 2007, it suggested that MAL rates be set at 85% of the five-year Olympic average market price for covered crops, with maximum loan rates as established in the House-passed version of the 2002 farm bill (H.R. 2419, 110th Congress).[46] The WTO dispute settlement ruling against U.S. cotton programs in 2005 further suggested that by giving price support levels a market context, as suggested by the formulation of a moving average, they would be more likely to be found in compliance with WTO rules.[47]

How do current support prices vary across major program crops in comparison to market price trends? This is evaluated by three different measures. First, support prices (MAL loan rates and PLC reference prices) are compared with average farm prices under the 2014 farm bill. Then, the level of "price protection" provided under the MAL and PLC programs is measured as the percent of monthly farm price observations below the MAL loan rates and PLC reference prices established under the 2014 farm bill for each program crop. An extended nine-year period from January 2008 through May 2017—intended to reflect long-term market conditions—is used to evaluate this second measure.[48] Finally, monthly market price data are used to evaluate the policy

[45] Ibid.

[46] USDA, 2007 Farm Bill Proposals, undated but released January 2007. Available to congressional clients from CRS upon request.

[47] CRS Report RS22522, *Potential Challenges to U.S. Farm Subsidies in the WTO: A Brief Overview*.

[48] An extended observation period of monthly data—from January 2008 to May 2017—is needed to allow sufficient price variation and subsequent comparisons of price protection across commodities and to better reflect long-term market conditions.

parameters needed to obtain equal levels of price protection across program crops since January 2008.

Support Levels as a Share of Average Farm Prices

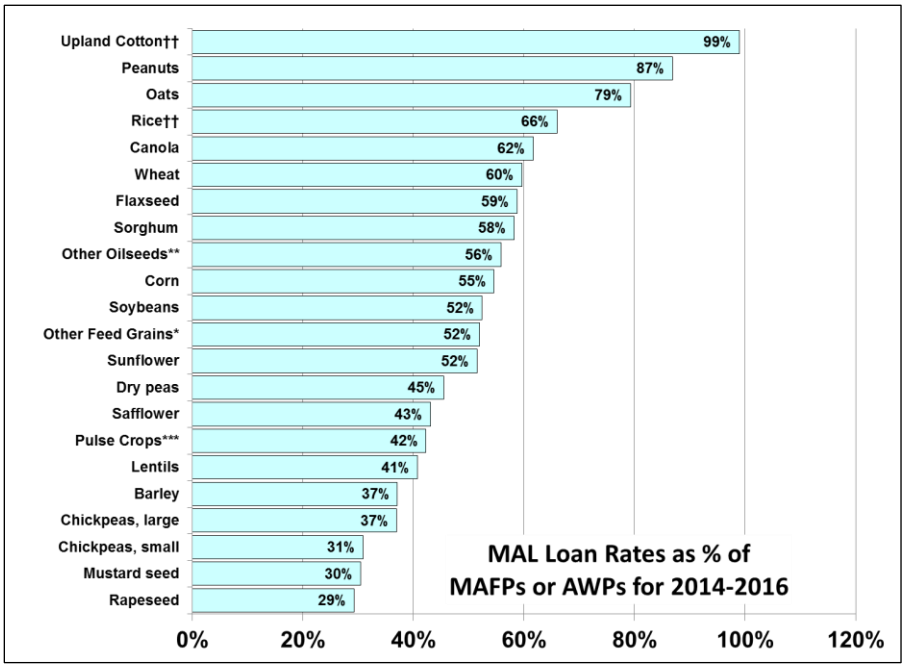
MAL loan rates and PLC reference prices are expressed as a percentage of monthly average farm prices (MAFPs) under the 2014 farm bill (2014 through 2016) (see also **Table 5**).[49]

A comparison, by commodity, of MAFPs with MAL loan rates provides a general sense of the level of relative price protection across program crops (**Figure 16**) for the crop years 2014 through 2016. Upland cotton and rice prices are evaluated against monthly averages of their respective AWPs. The MAL program does not use monthly prices as a basis for payments but rather weekly AWPs for cotton and rice and daily posted county prices for the other program crops. Using a monthly national average price data smooths out daily (or weekly) and regional variation from the market price data and provides only a general approximation for how often a commodity has been eligible for MAL benefits. However, MAFP and AWP data is readily available and facilitates ease of comparison for this exercise.

The MAL loan rates for program crops range between 29% and 99% of the MAFPs or AWPs. Upland cotton, peanuts, and oats appear to have loan rates that are higher compared with their AWPs or MAFPs during the 2014-2016 period, whereas loan rates for barley, chickpeas, mustard seed, and rapeseed are lower as a percentage of monthly prices.

[49] A comparison based on market prices necessarily assumes that the markets for these commodities are efficient and fully reflect all of the market information embodied in both the U.S. and international marketplaces. The United States is generally viewed as having a global comparative and competitive advantage in grain and oilseed production. As a result, U.S. grain and oilseed prices are generally viewed as representative of world market prices. In contrast, cotton and rice prices are determined largely in markets outside the United States. Therefore, USDA uses international reference prices adjusted to a U.S. location (AWPs) for cotton and rice.

Figure 16. MAL Loan Rates as a Percent of Average Farm Prices



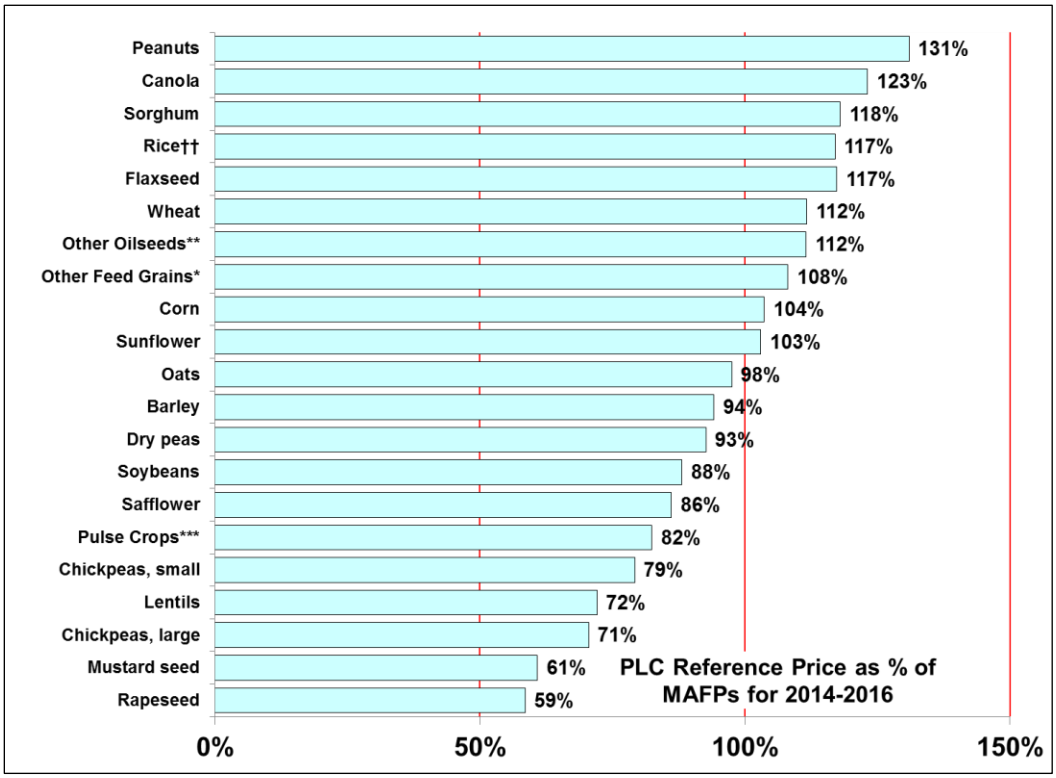
Source: CRS calculations using monthly average AWPs for upland cotton and rice and MAFPs for all other program crops for the crop years 2014-2016 from NASS and program parameters as specified in the 2014 farm bill and shown in **Table 5**.

Notes: *Other feed grains include sorghum, barley, and oats. **Minor oilseeds include sunflower, flaxseed, canola, rapeseed, mustard, safflower, crambe, and sesame. ***Pulse crops include dry peas, lentils, and large and small chickpeas. ††Upland cotton and rice MAL loan rates are measured against monthly average AWPs for the period. MAFPs are used for all other comparisons.

Similarly, a comparison, by commodity, of MAFPs with PLC reference prices provides a general sense of the level of relative price support across program crops (**Figure 17**). The PLC program uses 12-month season average farm prices (SAFPs) to calculate the level of payments (if any), rather than monthly prices. As a result, a comparison of the monthly market price with the PLC reference prices captures more variation than would occur with an annual average. Thus, it provides an indicator of the level of counter-cyclical income support provided across program crops—not of potential payments across crops.

The reference price for peanuts represents 131% of MAFPs. Canola ranks second behind peanuts at 123%. About half of the program crops—including soybeans, barley, and all pulse crops—have PLC reference prices that are less than their average farm prices.

Figure 17. PLC Reference Price as a Percent of Average Farm Prices



Source: CRS calculations expressing PLC reference prices as a share of MAFPs by program crop for the crop years 2014-2016. MAFP data is from NASS and program parameters are as specified in the 2014 farm bill and shown in **Table 5**.

Notes: *Other feed grains include sorghum, barley, and oats. **Minor oilseeds include sunflower, flaxseed, canola, rapeseed, mustard, safflower, crambe, and sesame. ***Pulse crops include dry peas, lentils, and large and small chickpeas. ††Rice MAL loan rates are measured against monthly farm prices for the period. Monthly farm prices are also used for all other comparisons.

Measuring Price Protection: January 2008 to May 2017

The frequency with which monthly AWPs or MAFPs fall below the loan rate suggests how often a particular commodity is eligible for MAL benefits. When the marketing loan rate is above the market's equilibrium price, it acts as a floor or support price. Similarly, the frequency that MAFPs fall below the PLC reference price represents a measure of the price protection provided by the PLC program. To evaluate program price protection under the MAL and PLC programs, an extended data period—January 2008 through May 2017—is used to provide a larger, more representative sample of the underlying market conditions and to avoid the price effects that might occur during any single year.

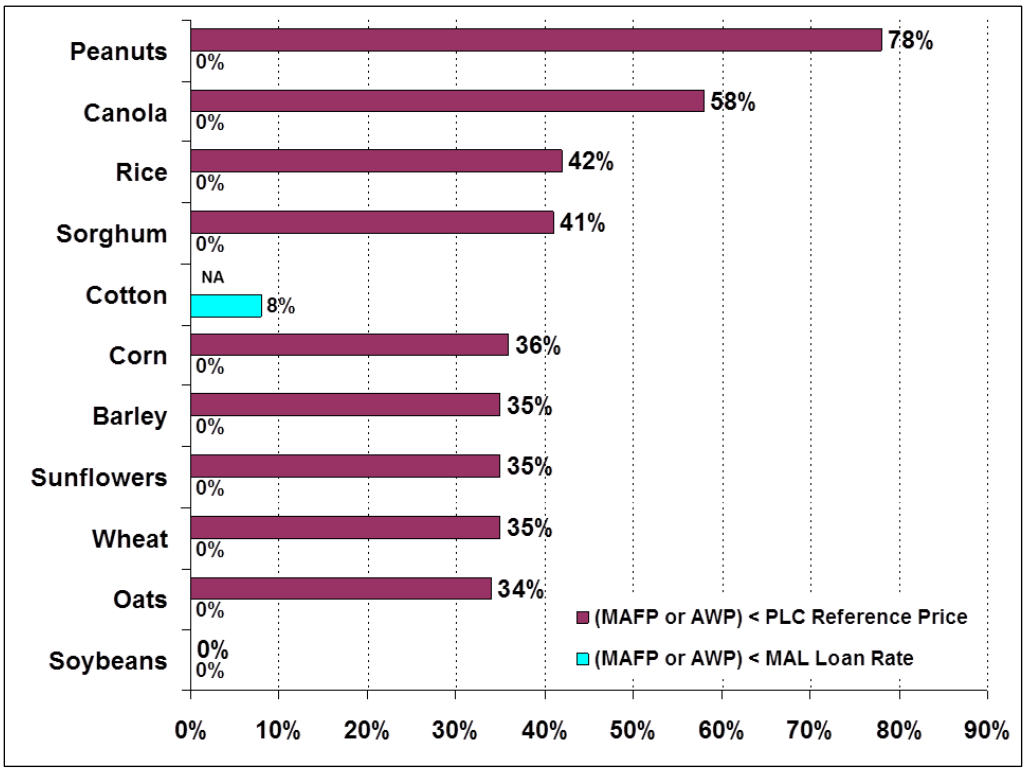
The current set of MAL loan rates were initially established under the 2008 farm bill (P.L. 110-246) and have not been adjusted to reflect the rise in market prices that occurred from 2006 through 2013 (**Figure 3**). As a result, market prices have been consistently above MAL loan rates

for most program crops since January 2008. Only upland cotton had prices (AWPs) that fell below its loan rate—in 8% of the observations—during the period (**Figure 18** and **Table 2**).[50]

The data period (January 2008 to May 2017) includes the three years of 2011-2013, when farm prices sustained record or near-record highs for most program crops. Because this three-year period of sustained high prices immediately preceded the 2014 farm bill, it likely played a role in the establishment of relatively high PLC reference prices when compared to the counter-cyclical payment (CCP) program target prices from the 2008 farm bill (P.L. 110-246).[51]

The percentage of MAFPs falling below the PLC reference price during the reference period (January 2008 to May 2017) varies from 0% for soybeans to 78% for peanuts (**Figure 18** and **Table 2**). In other words, no PLC payments would have been made over the data period on soybean base acres, whereas monthly peanut farm prices were below their reference price of $26.75 per cwt. (78% of the data period). In addition, 58% of canola prices were below their PLC reference price. For the remaining program crops, MAFPs were below their respective PLC reference prices for 34% to 42% of the observations.

Figure 18. Frequency Monthly Farm Prices Are Below Support Levels Since 2008



Source: CRS calculations compare monthly AWPs to cotton and rice MAL loan rates and MAFPs to loan rates for all other comparisons. All PLC reference prices are compared against MAFPs. Data for the period January

[50] This data outcome is the result of using monthly average prices rather than daily posted county prices or weekly AWPs used by USDA to operate the programs. During 2014 to 2016, nearly $1 billion in MAL benefits have been paid out to producers, including cotton ($700 million), wheat ($136 million), and peanuts ($79 million) (**Table 6**).

[51] For a comparison of PLC reference prices with CCP target prices, see Table A-1 from CRS Report R43448, *Farm Commodity Provisions in the 2014 Farm Bill (P.L. 113-79)*, coordinated by Randy Schnepf.

2008 to May 2017 for MAFPs are from NASS, and monthly AWPs are from FSA. Program parameters are from the 2014 farm bill shown in **Table 5**.

Notes: NA = not applicable, as cotton does not have a PLC reference price.

Hypothetical Equity Adjustments to Program Parameters

One potential approach to establishing parity of relative price protection across program crops would be to adjust each crop's respective MAL loan rate or PLC reference price until an equal portion of monthly farm price observations is below the adjusted level. This analysis builds on the concept of a "market-based" safety net that uses market price trends as the key factor in setting support levels.

The choice of any particular threshold for MAL and PLC price protection is purely arbitrary. However, by comparing the rates at which each commodity's monthly market price falls below relevant farm program parameters, a rough approximation is revealed about how current program parameters vary from more parity levels of price protection. This approach ignores all of the other potential policy reasons for setting each commodity's MAL and PLC support levels and focuses strictly on the price protection component of each program.

Hypothetical 20%-, 25%-, and 30%-Price Protection MAL Loan Rates

Three price protection rates are examined for MAL loan rates—20%, 25%, and 30%. In other words, the current MAL loan rates for each program crop are adjusted such that 20%, 25%, and 30% of the monthly farm price observations for data period (January 2008 to May 2017) fall below the respective loan rate for each crop. The resulting parity parameters and the percent adjustments needed to achieve parity are presented in **Table 2** for each of the three price protection rates.

As mentioned earlier in the discussion surrounding **Figure 16**, market prices have moved significantly above MAL loan rates since 2006 such that current MAL loan rates are offering only minimal price protection. Further, to achieve price protection at any of the three levels examined (20%, 25%, or 30%), MAL loan rates would have to be raised for all program crops.

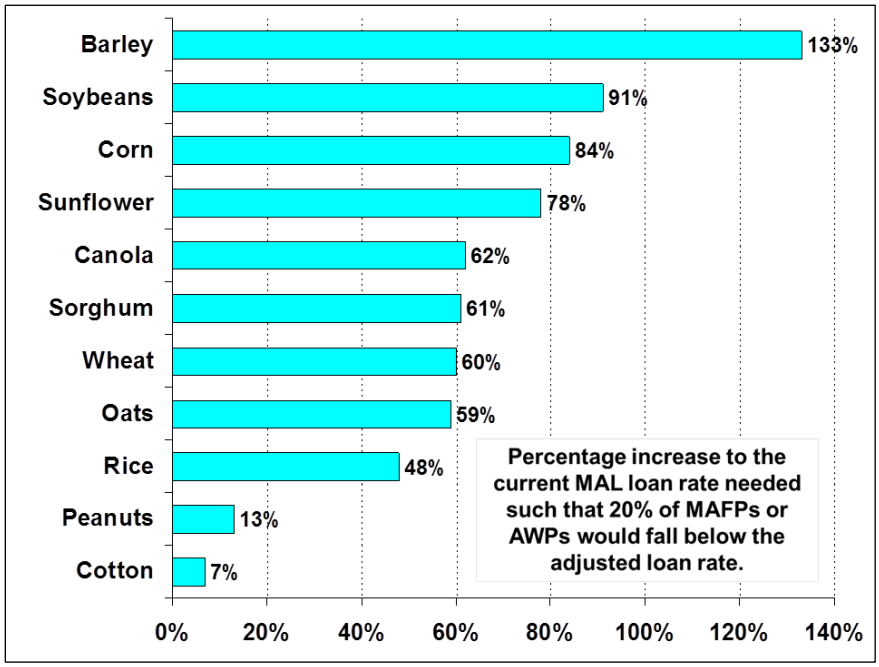
Results for the 20% price-protection level are displayed in **Figure 19**. To achieve price protection parity, the barley loan rate would have to be raised by 133%, soybeans by 91%, corn by 83%, and sunflowers by 78%. Cotton and peanut loan rates would require the smallest increases at 7% and 13%, respectively, suggesting that cotton and peanuts already have substantial price protection relative to other program crops.

Hypothetical 35%-, 40%-, and 45%-Price Protection PLC Reference Prices

The statutory PLC reference prices are adjusted such that 35%, 40%, and 45% of the monthly farm price observations are less than the PLC reference price during the same data period (January 2008 to May 2017). The resulting parity parameters and the percent adjustments needed to achieve parity are presented in **Table 3** for each of the three price protection rates.

Results for the 40% price-protection level are displayed in (**Figure 20**). To achieve the hypothetical 40% price-protection level, PLC reference prices for peanuts, canola, and sorghum would have to be lowered: peanuts by 19% from $26.75 to $21.55 per cwt., canola by 14% from $20.15 to $17.40 per cwt., sorghum by 3%, and rice by 1%. In contrast, PLC reference prices for the other major program crops would have to be raised to achieve a 40% price-protection parity rate: soybeans by 19%, oats by 17%, wheat and barley by 5%, and corn and sunflowers by 3%.

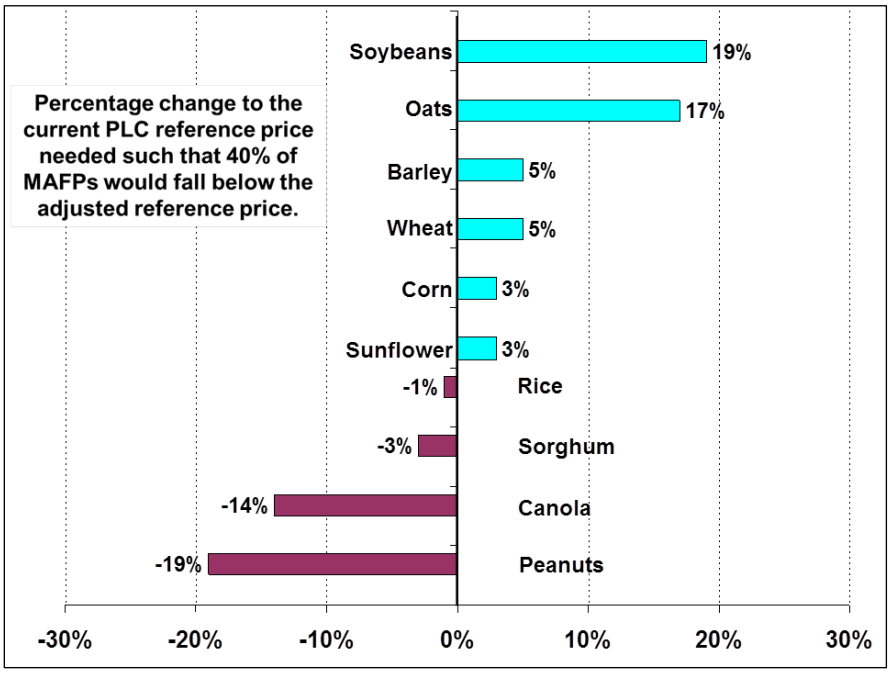
Figure 19. Hypothetical Adjustments to Equalize MAL Loan Rates



Source: Data are MAFPs for the period January 2008 to May 2017 from NASS and monthly AWPs from FSA. MAL loan rates are from the 2014 farm bill and shown in **Table 5**.

Notes: CRS calculations are based on AWPs for cotton and rice, and on MAFPs for all other crops.

Figure 20. Hypothetical Adjustments to Equalize PLC Reference Prices



Source: Data are MAFPs for the period January 2008 to May 2017 from NASS. PLC reference prices are from the 2014 farm bill and shown in **Table 5**.

Notes: CRS calculations are based on MAFPs and PLC reference prices all comparisons.

Cottonseed as a Hypothetical Program Crop

Upland cotton is absent from the list of covered commodities in response to a WTO trade dispute with Brazil. Although the 2014 farm bill gave upland cotton its own separate program—the Stacked Income Protection Program—in response to its exclusion from PLC program eligibility, the U.S. cotton sector has actively sought to regain cotton's former status as a "covered commodity" but on the basis of cottonseed rather than cotton lint. In September 2015, the National Cotton Council proposed that the Secretary of Agriculture designate cottonseed as an "other oilseed." Under this proposal, cottonseed would be eligible for support as a minor oilseed with a PLC reference price of $20.15 per cwt. For comparative purposes, two minor oilseeds—sunflowers and canola—are included in the calculations presented in **Table 2**.

During the debate preceding the FY2017 appropriations bill (H.R. 244,114th Congress), a new proposal emerged for including cottonseed as a covered commodity with its own policy parameters—a MAL loan rate of $8.00 per cwt. and a PLC reference price of $15.88 per cwt.

This latter proposal was revised with a lower PLC reference price of $15.00 per cwt. and the same market loan rate and was included in the Senate Appropriations Committee's FY2018 appropriations bill (S. 1603, §728, 115th Congress). These latter proposed cottonseed program parameters (MAL loan rate of $8.00 per cwt. and PLC reference price of $15.00 per cwt.) have been included in **Table 2** and **Table 3** for comparison with other program crops.

The proposed cottonseed MAL loan rate of $8.00 per cwt. represents 99% of MAFPs during 2014 to 2016, while the proposed PLC reference price of $15.00 per cwt. represents 151% of MAFPs. Thus, both parameters would represent high levels of protection relative to all other program crops. Under the various protection levels of 20%, 25%, and 30% examined for MAL loan rates (**Table 2**), cottonseed would need the smallest adjustment upward to achieve parity with other program crops. Similarly for the three PLC protection levels examined—35%, 40%, and 45% (**Table 3**)—cottonseed would need the largest decrease from its proposed level of $15.00 per cwt. compared with the other program crops.

Conclusion

This report compares rates of federal support across program crops using several different analytical approaches. While there are numerous other valid methods for comparing program support levels, the analytical approaches used here provide reasonable bases for making initial comparisons. There may be little or no practical or theoretical justification for equalizing support rates, total payments, or payments per harvested acre. In fact, some critics say the subsidies themselves are not justified. However, to the extent that farm support is a key part of congressional debate, support levels among crops are likely to be a consideration. Large disparities in the relative levels of protection among program commodities can influence resource allocations and cropping decisions, potentially resulting in unintended market consequences that may have regional implications.

To the extent that the January 2008 through May 2017 time period reflects long-term market conditions, then the parity price-protection method of comparison evaluated in this report suggests that peanuts (and cottonseed when included as a hypothetical program crop) receive significantly higher price protection levels under both the MAL and PLC reference price programs as compared to the other program crops under the 2014 farm bill. Canola, sorghum, and rice also have greater support levels relative to the remaining program crops by these measures. In contrast, soybeans and pulse crops receive relatively lower price protection.

The choices of loan rate (20%, 25%, and 30%) and reference price (35%, 40%, and 45%) protection levels used in this analysis are arbitrary. However, the relative outcomes remain consistent under other levels of protection.

Note that results based on market conditions that prevailed in the past are not necessarily indicative of future outcomes. Changing market circumstances in the years ahead could lead to materially different relationships across support payments for program crops.

Table 2. Comparison of MAL Program Loan Rates and Monthly Farm Prices, by Commodity

Data are monthly for the period January 2008 through May 2017

	All Wheat	Corn	Sorghum	All Barley	Oats	Soy-beans	Rice	Sun-flower	Canola	Peanuts	Cotton-seed†
Units	$/bu.	$/bu.	$/bu.	$/bu.	$/bu.	$/bu.	$/cwt.	$/cwt.	$/cwt.	$/cwt.	$/cwt.
# of observations	113	113	113	113	113	113	113	113	111	113	62
Loan Rate	**2.94**	**1.95**	**1.95**	**1.95**	**1.39**	**5.00**	**6.50**	**10.09**	**10.09**	**17.75**	**8.00**
% MAFP < Loan Rate	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%
Adjusted Loan Rates (LR*)											
20% Price Protection	**4.71**	**3.57**	**3.13**	**4.54**	**2.21**	**9.54**	**9.65**	**18.00**	**16.30**	**20.10**	**8.54**
% Change: LR to LR*	+60%	+83%	+61%	+133%	+59%	+91%	+48%	+78%	+62%	+13%	+7%
% MAFP < LR* = 20%	20%	19%	20%	20%	20%	20%	20%	20%	20%	20%	19%
25% Price Protection	**4.85**	**3.61**	**3.18**	**4.70**	**2.29**	**9.70**	**9.95**	**19.00**	**16.61**	**20.40**	**8.80**
% Change: LR to LR*	+65%	+85%	+63%	+141%	+65%	+94%	+53%	+88%	+65%	+15%	+10%
% MAFP < LR* = 25%	25%	26%	24%	25%	25%	25%	25%	25%	26%	24%	24%
30% Price Protection	**5.00**	**3.66**	**3.28**	**4.83**	**2.35**	**9.79**	**10.55**	**19.60**	**16.80**	**20.71**	**9.30**
% Change: LR to LR*	+70%	+88%	+68%	+148%	+69%	+96%	+62%	+94%	+67%	+17%	+16%
% MAFP < LR* = 30%	30%	31%	30%	30%	30%	29%	30%	29%	29%	31%	29%

Source: All calculations are by CRS using monthly average farm prices received from NASS. NASS reports cottonseed farm prices only for August through February. Months with no data are excluded. Thus, there are only 62 monthly farm price observations for cottonseed during the data period.

Notes: *Asterisks designate hypothetical adjusted MAL loan rates. Equalization is defined as setting the respective program parameter at a level where the MAFP for the selected program crops fall below it in no more than 20%, 25%, and 30% of the monthly observations for the data period for MAL loan rates. The MAL loan rate for rice is compared against the AWP as reported weekly by FSA. The MAFPs and AWPs are not adjusted for inflation. †Cottonseed is not a program crop. Cottonseed

parameters are from a proposal—included in the Senate Appropriations Committee's FY2018 appropriations bill (S. 1603, §728, 115th Congress)—to include cottonseed as a program crop with a market loan rate of $8.00 per cwt.

Table 3. Comparison of PLC Program Reference Prices and Monthly Farm Prices, by Commodity

Data are monthly for the period January 2008 through May 2017

	All Wheat	Corn	Sorghum	All Barley	Oats	Soy-beans	Rice	Sun-flower	Canola	Peanuts	Cotton-seed†
Units	$/bu.	$/bu.	$/bu.	$/bu.	$/bu.	$/bu.	$/cwt.	$/cwt.	$/cwt.	$/cwt.	$/cwt.
# of observations	113	113	113	113	113	113	113	113	111	113	62
Reference Prices (PLC)	**5.50**	**3.70**	**3.95**	**4.95**	**2.40**	**8.40**	**14.00**	**20.15**	**20.15**	**26.75**	**15.00**
% MAFP < PLC	35%	36%	41%	35%	34%	0%	42%	35%	58%	78%	100%
Adjusted PLC Reference Prices (PLC*)											
35% Price Protection	**5.65**	**3.68**	**3.53**	**4.92**	**2.60**	**9.93**	**13.25**	**20.15**	**17.20**	**21.10**	**9.75**
% Change: PLC to PLC*	+0%	-1%	-11%	-1%	+8%	+18%	-5%	+0%	-15%	-21%	-35%
% MAFP < PLC* = 35%	35%	34%	35%	35%	35%	35%	35%	35%	34%	35%	35%
40% Price Protection	**5.75**	**3.81**	**3.85**	**5.02**	**2.80**	**9.97**	**13.80**	**20.85**	**17.40**	**21.55**	**9.85**
% Change: PLC to PLC*	+5%	+3%	-3%	+1%	+17%	+19%	-1%	+3%	-14%	-19%	-34%
% MAFP < PLC* = 40%	40%	40%	40%	40%	40%	39%	40%	40%	40%	40%	39%
45% Price Protection	**5.90**	**3.90**	**4.14**	**5.10**	**2.95**	**10.21**	**14.11**	**21.70**	**18.00**	**21.80**	**10.00**
% Change: PLC to PLC*	+7%	+5%	+5%	+3%	+23%	+22%	+1%	+8%	-11%	-19%	-33%
% MAFP < PLC* = 45%	45%	45%	45%	45%	45%	46%	46%	45%	45%	45%	45%

Source: All calculations are by CRS using monthly average farm prices received from NASS. NASS reports cottonseed farm prices only for August through February. Months with no data are excluded. Thus, there are only 62 monthly farm price observations for cottonseed during the data period.

Notes: PLC = Price Loss Coverage reference price. *Asterisks designate adjusted hypothetical parameter values. Equalization is defined as setting the respective program parameter at a level where the MAFP for the selected program crops fall below it in no more than 35%, 40%, and 45% of the monthly observations for the data

period for PLC reference prices. The MAFPs are not adjusted for inflation. †Cottonseed is not a program crop. Cottonseed parameters are from a proposal—included in the Senate Appropriations Committee's FY2018 appropriations bill (S. 1603, §728, 115th Congress)—to include cottonseed as a program crop with a PLC reference price of $15.00 per cwt.

Table 4. Farm Program Crop Production Data: Annual Averages for 2014 to 2016

	Million Acres			Production	Farm Price	Value	
Commodity	P	H	Unit	Million units	$/unit	$ Million	$/ac.
Corn	90.9	83.5	bu.	14,322	$3.57	$51,068	$611
Soybeans	83.1	82.4	bu.	4,053	$9.53	$38,644	$469
Wheat, All	54.0	45.9	bu.	2,133	$4.93	$10,409	$227
Cotton, Upland[a]	9.7	8.8	cwt.	72	$63.83	$4,597	$522
Peanuts	1.5	1.5	cwt.	56	$20.43	$1,145	$775
Other Feed Grains[b]	13.6	10.6	bu.	778	$3.74	$2,905	$273
Sorghum	7.4	6.8	bu.	503	$3.35	$1,672	$246
Barley	3.2	2.7	bu.	200	$5.26	$1,051	$384
Oats	2.9	1.1	bu.	75	$2.46	$183	$166
Other Oilseeds[c]	4.0	3.8	cwt.	62	$18.06	$1,112	$290
Sunflower	1.7	1.6	cwt.	26	$19.57	$506	$302
Flaxseed	0.4	0.4	cwt.	5	$17.17	$79	$211
Canola	1.7	1.7	cwt.	28	$16.37	$461	$266
Rapeseed	0.0	0.0	cwt.	0	$34.43	$2	$446
Mustard	0.0	0.0	cwt.	0	$33.13	$14	$300
Safflower	0.2	0.2	cwt.	2	$23.40	$50	$295
Rice	2.9	2.9	cwt.	213	$12.00	$2,595	$913
Long Grain	2.2	2.1	cwt.	154	$10.97	$1,687	$785
Medium Grain	0.7	0.7	cwt.	59	$15.37	$936	$1,295
Pulse Crops[d]	2.0	1.9	cwt.	32	$17.29	$549	$290
Dry Peas	1.2	1.1	cwt.	21	$11.87	$247	$223
Lentils	0.6	0.5	cwt.	7	$27.70	$200	$365
Chickpeas, Large	0.2	0.2	cwt.	2	$30.53	$72	$448
Chickpeas, Small	0.1	0.1	cwt.	1	$24.03	$31	$371
Sugar Crops[e]	na	2.0	STRV	66	$39.61	$2,615	$1,291
Sugar Beets	1.2	1.1	STRV	35	$44.58	$1,534	$1,347
Sugar Cane	na	0.9	STRV	32	$34.27	$1,081	$1,219
Dairy (Milk)	na	na	cwt.	2,090	$19.10	$39,846	na

Source: NASS, various reports; and ERS, Farm Income and Wealth Statistics, cash receipts.

Notes: P = planted, H = harvested, bu. = bushel, cwt. = hundredweight or 100 lbs., bln = billion, ac. = acre, STRV = Short tons raw value. Shaded rows aggregate commodities listed in the following intended rows.

a. Cotton is measured in 480-pound bales. The data have been converted to cwt. to facilitate comparisons.

b. Other feed grains include sorghum, barley, and oats.

c. Other oilseed crops include sunflower, flaxseed, canola, rapeseed, mustard, safflower, crambe, and sesame. However, crambe and sesame crops are excluded from totals due to insufficient data.

d. Pulse crops include dry peas, lentils, and large and small chickpeas.

e. Sugar crops include sugar beets and sugar cane.

Table 5. Farm Prices, Market Loan Rates, and PLC Reference Prices

(Annual average for crop years 2014-2016)

		Farm Price	Market Loan Rate		PLC Reference Price	
(Commodity	Unit	$/unit	$/unit	% of SAFP[a]	$/unit	% of SAFP
Corn	bu.	$3.57	$1.95	55%	$3.70	104%
Soybeans	bu.	$9.53	$5.00	52%	$8.40	88%
Wheat, All	bu.	$4.93	$2.94	60%	$5.50	112%
Cotton, Upland	cwt.	$63.83	$52.00[b]	99%	na	na
Peanuts	cwt.	$20.43	$17.75	87%	$26.75	131%
Other Feed Grain[c]	bu.	$3.74	na	52%	$4.06	108%
Sorghum	bu.	$3.35	$1.95	58%	$3.95	118%
Barley	bu.	$5.26	$1.95	37%	$4.95	94%
Oats	bu.	$2.46	$1.39	39%	$2.40	98%
Other Oilseeds[d]	cwt.	$18.06	$10.09	56%	$20.15	112%
Sunflower	cwt.	$19.57	$10.09	52%	$20.15	103%
Flaxseed	cwt.	$17.17	$10.09	59%	$20.15	117%
Canola	cwt.	$16.37	$10.09	62%	$20.15	123%
Rapeseed	cwt.	$34.43	$10.09	29%	$20.15	59%
Mustard	cwt.	$33.13	$10.09	30%	$20.15	61%
Safflower	cwt.	$23.40	$10.09	43%	$20.15	86%
Rice	cwt.	$12.00	$6.50	66%	$14.00	117%
Long Grain	cwt.	$10.97	$6.50	66%	$14.00	128%
Medium Grain	cwt.	$15.37	$6.50	66%	$16.10	105%
Pulse Crops	cwt.	$17.29	$7.23	42%	$14.10	82%
Dry Peas	cwt.	$11.87	$5.40	45%	$11.00	93%
Lentils	cwt.	$27.70	$11.28	41%	$19.97	72%
Chickpeas, Large	cwt.	$30.53	$11.28	37%	$21.54	71%
Chickpeas, Small	cwt.	$24.03	$7.43	31%	$19.04	79%
Refined Sugar Beet	cwt.	$32.05[e]	$24.09[f]	75%	na	na

Source: NASS, various reports, and ERS, Farm Income and Wealth Statistics.

Notes: SAFP = season average farm price, na = not applicable, bu. = bushel, cwt. = hundredweight or 100 lbs. Shaded rows represent aggregation of the commodities listed in the following intended rows.

a. Average AWPs are used for upland cotton and rice, instead of farm prices.

b. The marketing loan rate for upland cotton is the average of the farm-price received for upland cotton for the preceding two years but within a range of $45/cwt. and $52/cwt.

c. Other feed grain includes sorghum, barley, and oats.

d. Other oilseeds include sunflower, flaxseed, canola, rapeseed, mustard, safflower, crambe, and sesame. Crambe and sesame are excluded from the totals for other oilseed crops due to insufficient data.

e. U.S. wholesale refined beet sugar price, Midwest markets, *Milling & Baking News*, as reported by ERS in the *Sugar and Sweeteners Yearbook Tables*.

f. Raw sugar cane has a marketing loan rate of $18.75/cwt.

Table 6. Annual Average Farm Support Outlays by Program and Commodity

(average annual outlays in $ millions for crop years 2014-2016)

Commodity	Total: CCC + FCIC	FCIC[a]	CCC[b]				
			Subtotal	MAL	PLC	ARC-CO	Other[c]
Corn	$5,812	$2,211	$3,601	$0	$101	$3,500	$0
Soybeans	$1,945	$1,288	$657	$0	$3	$654	$0
Wheat, All	$1,997	$810	$1,187	$45	$635	$507	$0
Cotton, Upland	$1,016	$463	$553	$233	na	na	$319
Rice	$694	$52	$642	$0	$637	$6	$0
Peanuts	$529	$41	$488	$26	$461	$0	$0
Other Feed Grains[d]	$470	$185	$286	$0	$228	$57	$0
Sorghum	$387	$141	$245	$0	$205	$40	$0
Barley	$64	$38	$26	$0	$17	$8	$0
Oats	$20	$5	$15	$0	$6	$9	$0
Other Oilseeds[e]	$176	$80	$96	$0	$87	$9	$0
Sunflower	$56	$35	$21	$0	$13	$8	$0
Flaxseed	$9	$4	$5	$0	$4	$1	$0
Canola	$107	$38	$70	$0	$69	$0	$0
Rapeseed	$0	$0	$0	$0	$0	$0	$0
Mustard	$1	$1	$0	$0	$0	$0	$0
Safflower	$2	$2	$0	$0	$0	$0	$0
Crambe	$0	$0	$0	$0	$0	$0	$0
Sesame	$1	$1	$0	$0	$0	$0	$0
Pulse Crops[f]	$35	$31	$5	$0	$1	$4	$0
Dry Peas	$33	$31	$2	$0	$1	$1	$0
Lentils	$1	$0	$1	$0	$0	$1	$0
Chickpeas, Large	$2	$0	$2	$0	$0	$2	$0
Chickpeas, Small	$0	$0	$0	$0	$0	$0	$0
Sugar Crops[g]	$27	$27	$0	$0	na	na	$0
Dairy (Milk)	($4)	$0	($4)	na	na	na	($4)
TOTAL	**$12,698**	**$5,187**	**$7,510**	**$305**	**$2,154**	**$4,736**	**$316**

Source: FCIC data is for the crop years 2014 through 2016 from RMA, *Summary of Business* data, as of April 3, 2017. CCC outlay data includes MAL and "Other" program outlays for 2014 through 2016, and PLC and ARC-CO for crop years 2014 to 2015 from FSA. PLC and ARC-CO data for 2016 is forecast by CBO in their June 29, 2017, baseline for USDA programs.

Notes: na = not applicable. For details on the farm programs, refer to "Commodity-Specific Farm Safety-Net Programs." Shaded rows represent aggregation of the commodities listed in the following intended rows.

a. These data are the federal subsidies associated with premiums for crop insurance policies. Other FCIC subsidies are not included.
b. MAL represents the benefits associated with the market assistance loan program including LDP, MLG, forfeiture, and commodity certificates. Data for the PLC and ARC-CO programs for 2016 are forecasts from the CBO June 29, 2017, baseline.
c. Other includes CCC outlays associated with upland cotton production (including the CTAP, CGCS, and EAAU programs) and net outlays under the MPP program.
d. Other feed grains include sorghum, barley, and oats.
e. Other oilseed crops (in addition to soybeans and peanuts) also include sunflower, flaxseed, canola, rapeseed, mustard, safflower, crambe, and sesame. However, insufficient data are available for the crambe and sesame crops, so they are excluded from the totals for other oilseed crops.
f. Pulse crops include dry peas, lentils, and large and small chickpeas.
g. Sugar crops include sugar beets and sugar cane.

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